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RESEARCH ARTICLE

Examining Job Satisfaction in the Social and Solidarity Circular Economy

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Abstract

Interest in the social dimensions of the circular economy (CE) has grown over the last decade, but empirical research on the quality of circular jobs remains scarce, hindering efforts to progress towards a just circular transition. Scholars highlight the risk that the circular transition could deepen existing inequalities, with a growing body of research calling for further investigation into its impacts on labor market transformations and its embedment with social and solidarity economy (SSE) as a potential solution towards circular justice. Building on the emergence of this new paradigm, this article contributes to the nascent literature on the social and solidarity circular economy (SSCE) by presenting an exploratory study of job satisfaction. Applying both quantitative and qualitative methods, it aims to characterize work in the SSCE and to open avenues for future research aimed at identifying the specific characteristics of work within this model. It offers two main conclusions. First, the perceived quality of circular jobs is heterogeneous because it depends on the type of organization, circular strategy and job position. Second, it remains difficult to clearly isolate characteristics that are specific to work within the SSCE, as many of its features appear to be derived from those traditionally associated with the CE and the SSE respectively. Focusing on job satisfaction and quality of work, this article provides empirical data to reinforce the emerging yet predominantly conceptual literature on the SSCE.

Keywords Circular Economy · Social and Solidarity Economy · Job Satisfaction · Circular Justice · Social and Solidarity Circular Economy

1. Introduction

Since 2010, the concept of circular economy (CE) has gained increasing attention among researchers, policymakers and in the business world (Geissdoerfer et al., 2017; Multani et al., 2020). Due to the diversity of its uses, the concept is not univocal in meaning and accommodates various definitions and features, each reflecting the interests and perspectives of those who apply it (Calisto Friant et al., 2020; Kirchherr et al., 2017; Merli et al., 2018). In its mainstream conceptualization, it can contribute to sustainable development and green growth by helping address economic, environmental, and social issues through the implementation of a material loop system based on circular strategies (Kirchherr et al., 2023).

However, it is well established that the literature on CE highlights its economic and environmental aspects, sidelining its social dimension at the risk of underestimating its rebound effects (Arnsperger & Bourg, 2016; Calisto Friant et al., 2020; Clube & Tennant, 2020; Laxmi Haigh et al., 2022; Sauvé et al., 2016; Schröder et al., 2020). These drawbacks include uneven access to the opportunities of the circular transition, unequal distribution of its impacts across regions of the globe and inclusivity issues (Clube & Tennant, 2020; Pansera et al., 2024). Particularly, the issue of employment and work in the circular economy emerges as critical, given its substantial and cross-sectoral impacts at local, regional, and international scales (Clube, 2022; Laubinger

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et al., 2020; Multani & Bachus, 2024). In light of the significant scope of the expected shifts in the job market, scholars emphasize the need for more research on CE jobs, with particular attention to the quality of these jobs, the skill sets they demand, workers' well-being and the social composition of the workforce that carries them out (Chateau & Mavroeidi, 2020; Clube, 2022; Multani & Bachus, 2024; Savini, 2025).

In response to the concerns related to the potential drawbacks of the CE, scholars have increasingly argued for a more holistic vision of circularity (Pansera et al., 2024; Savini, 2025). Among them, some argue that embedding social innovation in the CE in the shape of the social and solidarity economy (SSE) can help address concerns about the social impacts of the circular transition (França et al., 2022; Moreau et al., 2017; Souza Piao et al., 2023; Ziegler et al., 2023, 2024). From this embedment emerges the social and solidarity circular economy (SSCE). The emerging literature on the SSCE argues that the model can contribute to social justice, especially by promoting work integration, giving more attention to working conditions and recognizing the different concerns of diverse socio-demographic groups (Bellemare et al., 2022; Rebaud & Stokkink, 2016; Rijpens & de Beys, 2022). Although some empirical studies on the SSCE have been conducted over the last few years (França et al., 2022; Monciardini et al., 2023; Van Opstal et al., 2024), this literature remains predominantly conceptual.

Thus, in the pursuit of circular justice, a concept inspired by environmental justice and developed to address the neglect of power dynamics, equity, and justice in the CE (Kirchherr, 2021), our paper aims at contributing to the nascent literature on SSCE by providing new empirical data on jobs at the intersection of the SSE and the CE. Our research focuses on the working conditions and workers' well-being and satisfaction to underscore the potential contribution of the SSCE in fostering the creation of more inclusive and desirable circular jobs. We thus seek to answer the following question: how can work in SSCE organizations be characterized, and which specific SSCE features influence workers' satisfaction?

We present an original exploratory survey of job satisfaction in the SSCE conducted in the Canadian province of Quebec. Our paper contributes to the literature on SSCE, and more broadly on CE in two ways. First, it investigates circular jobs and their quality in the SSE from a worker's perspective, participating to filling the gap on nature and quality of employment in the CE (Clube, 2022; Geissdoerfer et al., 2020). Second, it provides new empirical data, both qualitative and quantitative, to the predominantly conceptual literature on SSCE and discusses the specificity of the model in regard to the literature. After providing an overview of the field, the article presents the methods and results and develops an analysis and a discussion of the impact of SSCE organizational characteristics and practices on worker satisfaction.

2. Literature Review

Given the nascent state of the literature on the SSCE, this study draws on insights from both CE and the SSE. From the CE literature, we derive a definition of circular jobs and identify specific characteristics of circular jobs. From the SSE literature, we draw on organizational practices that may foster social inclusion, diversity, and well-being at work. Finally, the job quality literature provides the analytical framework used to assess workers' job satisfaction.

2.1. Working in the CE

Assessing the quality of circular jobs first requires a clear definition of their scope.

2.1.1. Definition of a circular job Despite employment being one of the most researched topics amongst the social impacts of the CE (Valencia et al., 2023), the literature presents no common definition of a circular job. It often relies on the notion of "green job" (Horbach et al., 2015). A job is described as "green" if it depends on the environment or if it is created or redefined to align with the transition to a green economy[3]. This definition tends to neglect CE strategies other than recycling and waste recovery (Burger et al., 2019; Deboutière & Georgeault, 2015). Therefore, it is crucial to define circular employment more precisely. We adopt the sectorial definition of a circular job proposed by Burger et al. (2019): a circular job is any paid job in a company or organization directly contributing to the operationalization of the CE through the adoption of a business model based on a circular strategy.

The literature distinguishes direct and indirect circular jobs. Indirect circular jobs are jobs situated outside sectors that directly contribute to the CE but nonetheless support the circular transition by enabling, facilitating or complementing direct circular strategies. Conversely, direct circular jobs are performed in sectors contributing directly to the circular transition (Circle Economy, 2021). They encompass both core circular jobs and enabling circular jobs. Core circular jobs are associated with reducing, recycling, extending, and repairing strategies whereas enabling circular jobs support the CE through collaboration, eco-designs, and industrial ecology (Burger et al., 2019). Core circular jobs demand less formal academic education, but more technical and manual skills related to maintaining, repairing, and handling materials. Enabling circular jobs usually require more formal academic education and expertise in areas such as management, architecture, operations, design, and engineering. In general, CE jobs do not require a higher level of academic education than jobs in the rest of the economy, but more training and work experience, notably to acquire "deep skills", *i.e.* specialist skills (Burger et al., 2019; International Labour Organization et al., 2023).

2.1.2. Circular jobs in the literature Thus far, the literature has mainly examined circular employment from a quantitative perspective (Multani & Bachus, 2024; Padilla-Rivera et al., 2020). Numerous studies project quantitative employment scenarios to forecast the impact of the CE transition on the job market, with results varying depending on the regions considered and on the methodologies used (Multani et al., 2020; Padilla-Rivera et al., 2020). Nonetheless, a consensus exists on the potential of the CE for net job creation, redefinition, substitution, and destruction of existing jobs, although with an uneven distribution between sectors and geographical areas (Laubinger et al., 2020; Llorente-González & Vence, 2020; Repp et al., 2021; Vanhuyse et al., 2021; Willeghems & Bachus, 2018).

The literature also raises concerns regarding the desirability and social justice of circular employment. The quality of circular jobs remains underexplored, while occupational health and safety risks, particularly in recycling, repair, and e-waste sectors, have raised concerns among several scholars (Laubinger et al., 2020; Ribeiro-Broomhead & Tangri, 2021). Moreover, the distribution of such jobs across the population is expected to be uneven, pointing to significant social justice issues: these positions are predominantly held by workers from socially marginalized groups, including women, migrants, persons with disabilities, and individuals in precarious economic situations (Gregson et al., 2016; Multani & Bachus, 2022). Moreover, circular employment appears as gendered: low value-added, end-of-life, or informal circular activities are said to employ predominantly women, who remain underrepresented in high value-added circular activities (Circle Economy et al., 2025; Pansera et al., 2024). The concept of circular justice, introduced by Kirchherr (2021) allows greater consideration of these concerns by addressing the neglect of power relations, equity, and justice in CE research. Drawing on environmental justice, this framework emphasizes the inclusion of Global South perspectives, fair participation in decision-making processes, particularly for marginalized communities, and the equitable distribution of the costs and benefits of the circular transition. While concepts such as just

[3] A green economy is defined by the United Nations Environment Program as "A green economy is an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive. In a green economy, growth in income and employment should be driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. These investments need to be catalysed and supported by targeted public expenditure, policy reforms and regulation changes. The development path should maintain, enhance and, where necessary, rebuild natural capital as a critical economic asset and as a source of public benefits, especially for poor people whose livelihoods and security depend on nature." (UNEP, 2011)

transition and environmental justice are related, circular justice is the most directly relevant lens for examining the distributional and procedural dimensions of equity in circular economy employment within SSCE organizations. We subsequently examine the potential contribution of the SSCE to advancing circular justice, with a particular focus on work and employment conditions.

2.2. Characteristics of the social and solidarity circular economy

The SSCE draws organizational practices that may foster social inclusion, diversity, and well-being at work from the SSE.

2.2.1. The social and solidarity economy Definitions of the SSE vary across regions. However, they usually include principles of human prioritization, democratic governance, and service to community members (Harrisson & Gervais, 2007; Laville, 2001). According to the OECD, the SSE is made up of "a set of organizations such as associations, cooperatives, mutual organizations, foundations, and, more recently, social enterprises [whose] activity is typically driven by societal objectives, values of solidarity, the primacy of people over capital and, in most cases, by democratic and participative governance" (OECD, 2023). Work integration social enterprises (WISEs) are also a part of the SSE, their main purpose being to promote work integration for people who have difficulty finding employment due to disabilities, limited education, or prolonged absence from the labor market, for example (Davister et al., 2004; Lysaght et al., 2018).

Although SSE organizations are heterogeneous, certain features are broadly shared. SSE is characterized by bottom-up approaches, active citizen participation, and strong regional embeddedness (Ziegler et al., 2023). The SSE workforce is diverse, encompassing women, culturally diverse employees, both paid, volunteer and on integration pathways workers, which necessitates innovative human resource practices (Borzaga et al., 2019; Caire, 2012). Organizations often adopt democratic and participatory governance, flexibility in working hours and involvement in decision-making, which enhances employee wellbeing. The social mission also explicitely encourages the promotion of well-being in the workplace, notably through training, work–life balance, and social values (Austin et al., 2006; Harrisson & Gervais, 2007; Meyer, 2009; Ziani & Budas, 2022). Thus, the SSE promotes social innovation in human resource management and appears capable of mitigating some of the job satisfaction, working conditions and unjust distribution concerns associated with CE (Bellemare et al., 2022; Brown et al., 2020; Gauthy, 2021; Moreau et al., 2017; Villalba-Eguiluz et al., 2023).

The social and solidarity circular economy

This potential leads a growing body of literature to advocate for the advancement of the SSCE, defined as "a form of hybrid organizing that unites the [CE] and [SSE] concepts in order to maximize ecosystem functioning as well as human well-being" (Monciardini et al., 2023). The literature on the SSCE is nascent and mostly consists in the presentation of arguments in favor of combining the CE and the SSE. It highlights their shared innovation capacity, regional roots and long-standing interconnection in the recycling and second-hand industries (Bellemare et al., 2022; Gauthy, 2021; Moreau et al., 2017; Rijpens & de Beys, 2022; Villalba-Eguiluz et al., 2023). It also identifies some of the practical features of the SSCE. Although much of the literature on the SSCE remains conceptual, some very recent contributions have begun to provide empirical analyses of its work and employment conditions (Monciardini et al., 2023; Van Opstal et al., 2024), signalling the emergence of a growing research agenda in this area.

First, the SSCE offers opportunities for the creation of vocational jobs suitable for work integration. These opportunities build on the historical involvement of the SSE in the sorting, valorization, and reuse sectors (Rebaud & Stokkink, 2016; Villalba-Eguiluz et al., 2023). Second, the SSCE contributes to socially just job creation by improving employment practices and conditions, fostering greater equity and diversity (Monciardini et al., 2023; Moreau et al., 2017; Rijpens & de Beys, 2022). Third, in line with the democratic governance principles of the SSE, the SSCE increases stakeholder participation in the CE transition. However, Monciardini et al. (2023) suggest that SSCE enterprises should intentionally promote democratic practices and aim for a more horizontal governance, particularly when scaling up, otherwise risking deviating from their original purpose and values.

2.2.2. The social and solidarity circular economy in Quebec In Quebec, the SSE is defined by the 2013 Social Economy Act, which excludes for-profit enterprises with a social mission as well as organizations

providing goods or services free of charge that rely primarily on donations or subsidies. (Chantier de l'économie sociale, 2021). This definition remains close to the OECD definition of the SSE, making the Quebec social economy context comparable to the global North. The law recognizes four forms of social economy enterprises: non-profit organizations (NPOs), cooperatives, social purpose trusts, and mutual societies. As of 2021, Quebec counted 11,200 social economy enterprises employing approximately 220,000 people. Most of these are small: 65% have fewer than 10 employees, while only 2% employ 100 or more (Chantier de l'économie sociale, 2021; Institut de la statistique du Québec, 2016). Among these enterprises, 3.2% are WISEs. Quebec benefits from a historically strong social economy sector, and a recent survey indicate that Quebecers report a high level of trust in these organizations (Jagou, 2025).

Meanwhile, Quebec initiated its CE transition in 2014, building on longstanding practices such as the container deposit[4] system introduced in the 1980s (Mercier & Robitaille, 1996). In 2014, the creation of the EDDEC (Institute for Environment, Sustainable Development, and Circular Economy) formalized the province's commitment to the CE. The Quebec Ministry of Economy, Innovation, and Energy held its first circular-economy-focused consultation in 2017. Since 2021, the province has intensified its engagement through policy initiatives and reference documents, including the Government Circular Economy Roadmap 2024–2028 and the Circularity Gap Report Quebec (Jagou, 2025).

The intersection of SSE and circular economy activities is increasingly recognized in Quebec, driven by research initiatives and collaborative working groups. Over 100 social economy organizations are engaged in circular economy practices across the province, and in 2025, a new network of SSCE enterprises was formally established, reflecting the growing institutionalization of this hybrid socio-economic model (Jagou, 2025).

2.3. Measuring job satisfaction

To characterize SSCE jobs and evaluate their quality and workers' satisfaction, we adopt a job quality framework inspired by the study of job quality.

2.3.1. Studying job quality The study of job quality is a field of research on its own, and has been of growing interest since the 1990s (Bhatia & Olsen, 2023; Davoine & Erhel, 2007; Québec circulaire, 2023). The measurement of job quality lies at the intersection of three complementary perspectives: a standard approach focused on wages, a subjective approach centered on workers' self-reported satisfaction, and a socio-economic approach that considers the full range of factors shaping workers' conditions and career prospects (Erhel & Guergoat-Lariviere, 2016). Considering this and the wide range of frameworks developed accordingly, it is difficult to identify a single definition of job quality in the literature (Cloutier, 2013; Guergoat-Larivière & Marchand, 2012).

Nevertheless, there is consensus on its multidimensional nature and the broad spectrum of indicators its assessment encompasses, whether at the market, company, or occupation scale (Cloutier, 2013; Davoine et al., 2008; Guergoat-Larivière & Marchand, 2012). The frameworks usually integrate between three and ten dimensions. Both objective and subjective indicators can be used. Subjective indicators are ones that "explicitly refer to the respondent's perception, preferences, or attitudes", mostly assessing for job satisfaction (Erhel et al., 2024; Guergoat-Larivière & Marchand, 2012). Objective indicators offer a measure that does not depend on employee perceptions, such as earnings, scheduling, etc. Selecting a context-appropriate framework is crucial (Ghai, 2003).

2.4. Framework

We adopt a multidimensional breakdown of job quality into six main dimensions that integrates objective as well as subjective indicators, allowing us to characterize work and assess for job satisfaction: earnings, job stability, working hours and work-life balance, work environment and conditions, qualification and training, and social dialogue and workers' rights. This framework allows us to assess several dimensions of job quality

[4] A container deposit scheme is a system in which consumers pay a small refundable deposit on beverage containers when purchasing them, which is reimbursed when the empty container is returned for recycling, thereby incentivising collection and reducing litter.

and job satisfaction at the occupation scale. It is broadly inspired by recent European studies of job quality (Erhel & Guergoat-Lariviere, 2016; Eurofound, 2012, 2017). Figure 1 details the selected dimensions and indicators. In the job quality literature, sector-specific or regional studies often use survey methods (Hughes et al., 2003; Lowe, 2007), whereas those which focus on specific components of job quality tend to adopt mixed methods or qualitative methods (Pollet & Fonteneau, 2020; Tremblay, 2017)

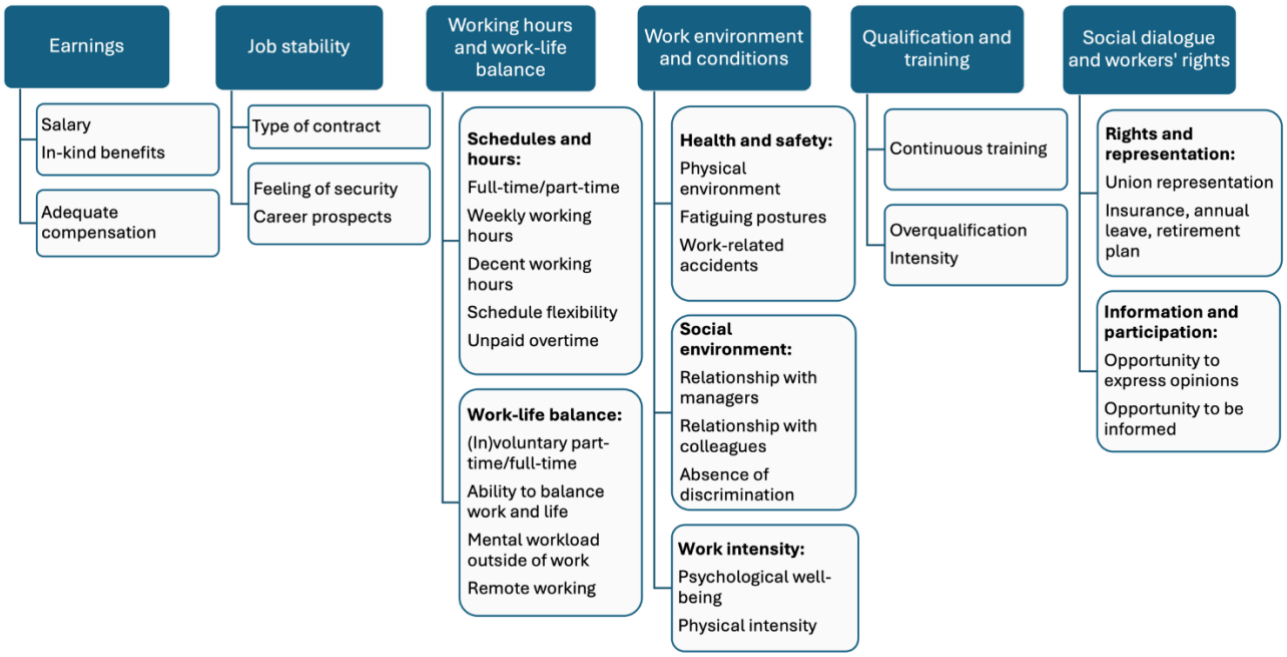

Figure 1. Job quality framework

3. Methods

This study applies both quantitative and qualitative methods. Through a survey, we collected quantitative and qualitative data to characterize SSCE work and determine which features of SSCE influence job satisfaction.

3.1. Survey

In our research, a quantitative survey allowed us to cover all the dimensions of job quality in our analytical framework across various types of jobs and organizations and for several circular strategies. By adding open-ended sections we were able to gather qualitative data to complement our quantitative data and offer more insight on workers' satisfaction. Given the absence of standardized instruments specifically designed to measure job quality in the circular economy, we sourced questions from established surveys such as the ones conducted by Eurofound (2012, 2017), the workplace employment relations survey conducted in the UK (Department for Business, Innovation & Skills, 2006), and the REPONSE survey carried out in France (DARES, 2017).

The questionnaire is divided into two parts. The first part targets participating organizations by gathering objective data on organizational practices and policies (salary, hiring), and on employee well-being. It takes about twenty minutes to complete. The second part targets employees by collecting data on job satisfaction, participation experience, and socio-demographic issues. It has about thirty questions and is designed to be completed in eight minutes. The questions and the associated variables used for the analysis are provided in Appendix A. The unit of analysis is the employee, with a categorization into five types: holders of managerial positions, analysts, executive assistants, skilled technicians, and manual operators. This typology allows to differentiate job characteristics in line with Canada's National Occupational Classification (Gouvernement du

Canada, 2022). Details on the typology can be found in table 1 below. This methodology is based on an exploratory approach that aligns with the limited information currently available on the SSCE and that paves the way for future reflection and research on this emerging topic.

Table 1. Typology of jobs used for the categorization of workers' positions

Job type	Job description
Managers	Management occupations
Analysts	Occupations that usually require a university degree
Executive assistants	Occupations that usually require a college diploma, apprenticeship training of 2 or more years, or more than 6 months of on-the-job training
Skilled technicians	Occupations that usually require a high school diploma, or several weeks of on-the-job training
Manual operators	Occupations that usually need short-term work demonstration and no formal education

3.1.1. Sampling and data We used convenience sampling for our survey because the information currently available on the SSCE is limited and because there is no exhaustive list of SSCE enterprises in Quebec. We began by identifying Quebec enterprises whose business activities respect the SSCE criteria. These were SSE enterprises whose business model relies on at least one of the 12 identified circular strategies identified by Québec Circulaire (Québec Circulaire, 2020). We were able to identify and contact by email 107 such enterprises. Their employees, including those on work integration paths, were offered the opportunity to participate in the study during work hours. However, since their involvement with an organization is not considered to be a form of paid employment, volunteers were not asked to do the survey. Organizations wishing to participate were responsible for informing their employees about the study.

The survey was conducted from January 27 to March 10, 2023. Participating organizations were invited to complete the survey online on behalf of their organization, whereas employees could do it both online and in paper format. The employee survey was available in three languages: English, Spanish, and French. Paper questionnaires were distributed either by the organizations themselves (for companies located in Quebec outside the Montreal region) or by the lead researcher (for companies based in Montreal). They were then collected and returned by mail. Using diverse data collection methods can introduce bias, but it ensures that people who lack internet access are included as participants.

In total, 26 organizations completed the survey. They were divided into two legal structures as defined by the Quebec's Social Economy Act: non-financial cooperatives and nonprofit organizations (NPOs). Not all 12 circular strategies were represented in our sample. Overall, organizations declared relying on 5 strategies: donation & resale ; recycling & composting ; repair & maintenance ; collaborative economy ; valorization & eco-design. The employee survey attracted 257 respondents, 219 of whom completed and returned the questionnaire. Incomplete responses were removed from the analysis during the data processing. Only 8 respondents identified themselves as skilled technicians. Thus, for the descriptive statistics, the 5 job categories identified above are used, but for the regression analysis, operators and skilled technicians are placed in the single category of manual workers. Additionally, to account for respondents' gender, we combined the categories of women and gender-diverse individuals after data collection. The latter group represented a very small percentage of respondents, and, given our interest in highlighting potential discrimination, it was reasonable to group gender minorities together with women.

3.2. Quantitative analysis

3.2.1. Statistical analysis After the data collection, we merged the two databases based on the respondents' declared companies and job types. The statistical analysis was conducted using Excel and Stata, with the significance threshold set at a p-value of 0.1, adapted for our study context (Bryman & Bell, 2007). Results significant at the 0.1% level are mainly interpreted to provide insights for future research. The descriptive

statistics reveal the characteristics of the five job profiles in our typology. We identify their quality specifics without evaluating or determining causes.

3.2.2. Regression analysis and dimension reduction The fragmented and heterogeneous data collected through the company survey did not allow for a robust multilevel regression analysis. Therefore, we use linear regression to identify factors affecting employee satisfaction. The dependent variables are selected using two criteria: (1) they reflect employee perceptions of their job and are therefore subjective measures of job quality, according to the definition provided by Guergoat-Larivière and Marchand (2012); and (2) they can be evaluated with the use of Likert scales to assess the feelings and experiences of employees.

Since there were a great number of dependent variables, we aimed at combining them in dimensions following the theoretical framework. We initially assessed whether the theoretical dimensions formed reliable scales using Cronbach's alpha. However, although the six-dimensional job quality framework presented in Figure 1 provides a strong theoretical reference point, it was developed drawing from different empirical and sectoral contexts. Consequently, the results indicated insufficient internal consistency for several of the proposed dimensions, suggesting that the theoretical structure was not empirically supported in this context. We therefore conducted a principal component analysis (PCA) along with the Kaiser–Meyer–Olkin (KMO) test. Finally, we confirmed each of the five new dimension's reliability by computing Cronbach's alpha.

Although the PCA identified dimensions that differ from those commonly reported in the literature and from our initial six-dimensional job quality framework, we retained these newly identified dimensions for analysis due to the exploratory nature of the study, our inductive approach, and their robust internal consistency. During the PCA, the examination of the component matrix after the orthogonal rotation revealed that the "recognition" variable, which gauges employees' feelings of acknowledgment, was significant for two factors. It was therefore excluded and became a dimension of its own. The other four dimensions identified by the PCA included the variables detailed in Figure 2. Cronbach's alphas are also reported.

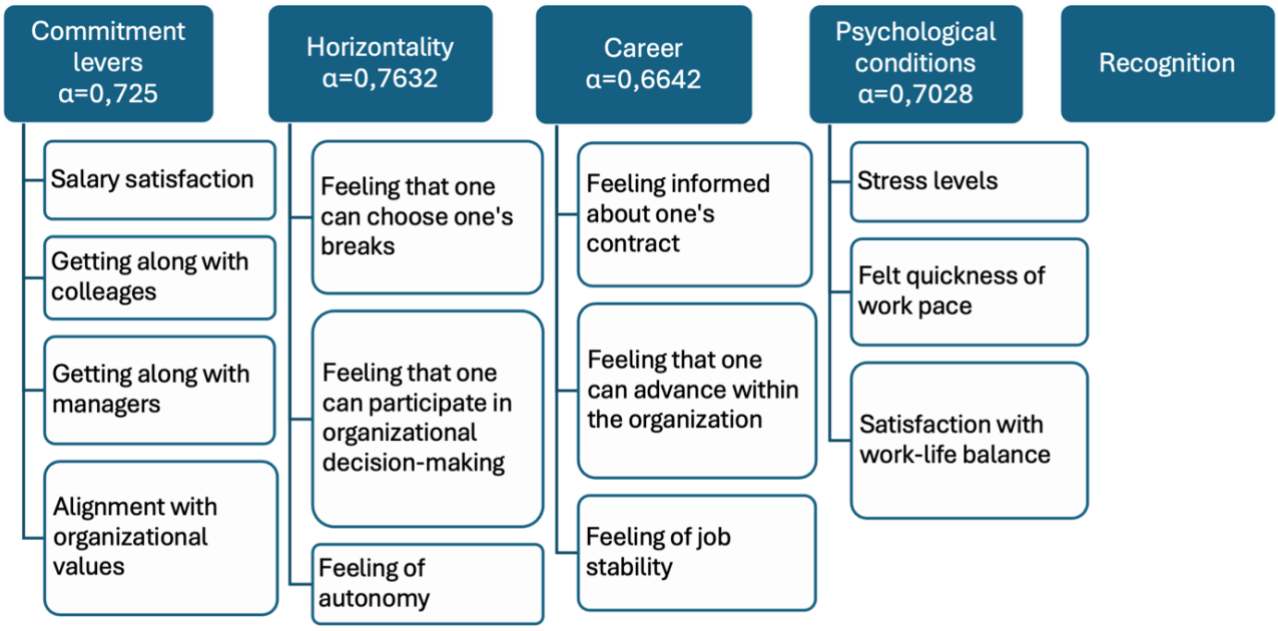

Figure 2. Construction of dependent variables for the regression analysis

The independent variables are the objective measures of job quality and organizational practices identified both in the surveys completed by the organization and in the ones completed by their employees. Choosing the explanatory variables began by pinpointing a group of independent variables that appeared to impact all the dependent variables when tested by trial and error. We use the term "the common set" to refer to these variables. We then identified other explanatory variables that only influence certain dependent variables. We describe these variables as "individual factors". The selection of individual factors as well as variables from the common set relies both on the literature on job quality and on trial-and-error testing, in accordance with our exploratory

design. Some variables were excluded from the common set due to the high variance inflation factor (VIF) induced by the significant correlation levels. Appendix B outlines the selected explanatory variables for each dependent variable along with their justifications from the literature.

To identify robust explanatory variables, we conducted three linear regressions for each dependent variable. To account for the non-independence of observations within firms, all regression models are estimated using standard errors clustered at the firm level. This approach corrects for potential intra-firm correlation in the error terms and ensures robust statistical inference. The first regression included all the variables in the common set, but none of the individual factors attached to the variables concerned. This regression was identical for all the dependent variables. The second one included the individual factors linked to the variables concerned as well as the variables in the common set that were not significantly correlated at the 0.1 threshold with the individual factors. This second regression is specific to each dependent variable and is likely to be the most accurate one. The third regression included all the variables in the common set as well as the individual factors. This regression was non-compliant, for as indicated by a VIF>3, it did not respect the principle of the absence of multi-collinearity. This was due to the correlation of some of the variables in the common set with some of the individual factors. This third regression served as a robustness check for the explanatory variables that were identified as significant. Finally, we selected the variables whose coefficients appeared to be significant in all the regressions in which they were included. We considered a coefficient significant if its associated p-value was less than 0.1 (Bryman & Bell, 2007).

In the regression tables (see Appendix C), the results are followed by three asterisks (***) for a p-value < 0.01, by two asterisks (**) for a p-value < 0.05, and by one asterisk (*) for a p-value < 0.1. All the regressions include a prior check for variable normality. Homoscedasticity is verified using the Breusch-Pagan test, and independence is confirmed using the correlation matrix and VIF to ensure the absence of multicollinearity. All the variables used in the regression analysis and all the corresponding questions in the survey are provided in Appendix C. We assess regression's explained variance using R^2 (goodness of fit) and adjusted R^2. Values around and above 0.20 indicate good explanatory power for explaining dependent variable variations in the context of social sciences broadly (Ozili, 2023). Since our exploratory study aimed to highlight a few factors influencing job satisfaction rather than explain the phenomenon entirely, adjusted R^2 values around 0.20 are deemed satisfactory. Furthermore, the p-values associated with the F-test of overall model significance are all less than 0.01, confirming the exploitability of the model for our sample size of N=219.

3.3. Qualitative analysis

The qualitative component aimed to explore employees' experiences of work in SSCE organizations and to obtain more details on organizational practices, notably what in kind benefits or work-life balance measures organizations proposed. For employees, we focused on factors influencing wellbeing, perceptions of organizational values, and opportunities for participation in decision-making. In particular, we aimed to understand both how employees experience their work and which organizational conditions support or constrain wellbeing and engagement. We analyzed open-ended survey responses from employees and organizations using NVivo and an inductive coding design. During the first coding round, the chosen codes were "well-being at work"; "prevention of violence and discrimination"; "work–life balance" and "participation". Theses codes mirrored the architecture of the questionnaire, itself being based on the literature and previous studies assessing job quality. This first round, along with a word frequency analysis on employees' responses allowed for the identification of two additional codes relevant for our analysis: "compensation" and "values and commitment". The total of six codes identified allowed us to identify recurring themes that complemented our quantitative findings.

4. Results

In this section, we present our results, beginning with qualitative analysis. The qualitative analysis is divided in a statistical analysis and a regression analysis. Then, we present our qualitative findings.

4.1. Statistical analyses

4.1.1. Organizations and circular strategy Our sample shows an overrepresentation of organizations in the waste management and sanitation service sector (13.33% of the sample versus 1.5% of the Quebec SSE), organizations in the manufacturing sector (10% versus 0.6%), and organizations in the retail trade sector (23.33% versus 5.2%) (Chantier de l'économie sociale, 2021). 20% of participating organizations are non-financial cooperatives and 80% are NPOs. 38.5% of the whole sample are WISEs.

4.1.2. Job types The distribution of job types differs depending on the circularity strategies adopted by companies. The "Recycling and Composting", "Donation and Resale" and "Repair and Maintenance" strategies employ the most operators compared to other job types. Conversely, the opposite is true for the "Collaborative economy" and "Eco-design" strategies, which employ a higher proportion of managers and analysts (see fig. 3 below).

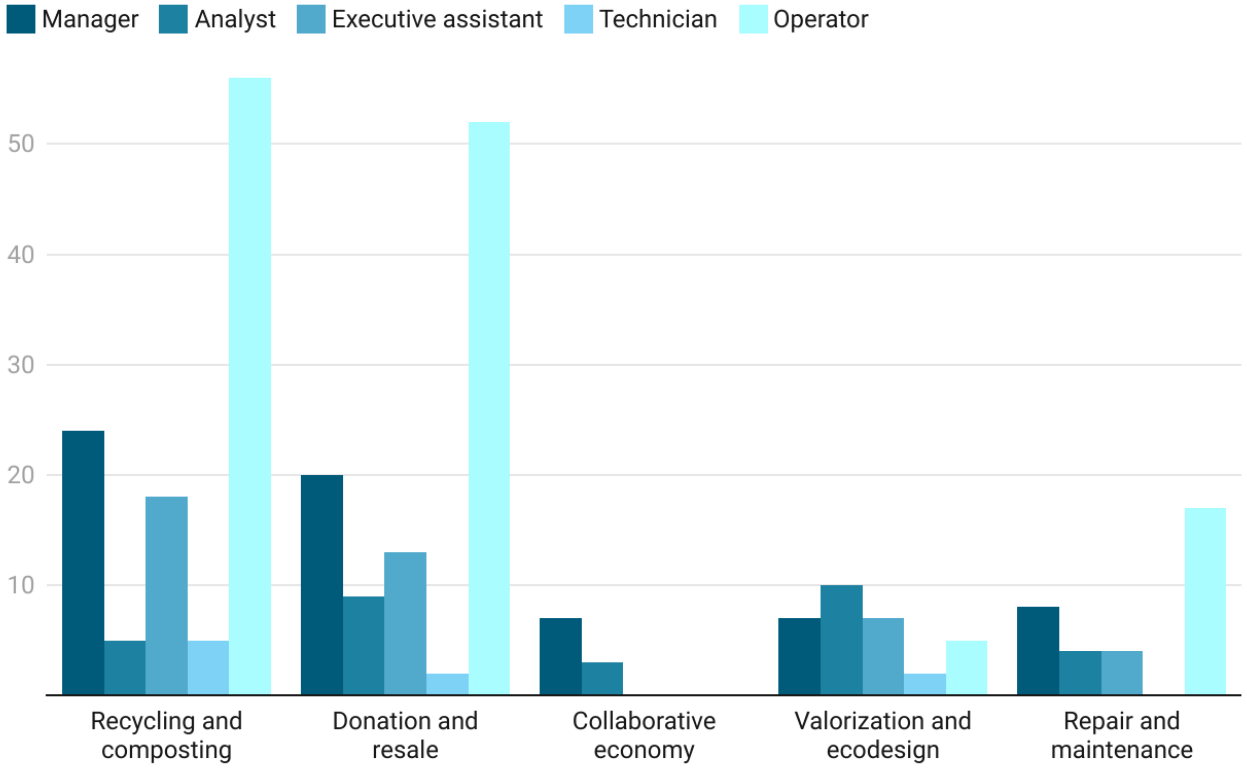

Figure 3. Number of each position type according to the circularity strategy

4.1.3. Qualifications Qualifications differ broadly across job categories. Analysts constitute the most highly educated group, with 100% of respondents holding at least a bachelor's degree. Operators display the widest range of educational backgrounds, spanning from no formal schooling to master's and doctoral degrees. All operators and skilled technicians in our sample reported having received at least one day of training, while those with no more than a primary education completed more than ten days of training. Overall, 21% of respondents considered themselves overqualified, of whom 60% were operators.

4.1.4. Socio-demographics of the workforce The demographic composition of our sample regarding gender (53.4% men and 46.6% women and gender-diverse people) differs from available data indicating that 64% of employees in SSE organizations in Quebec in 2018 were female (CSMO-ESAC, 2018). Moreover, the

gender distribution across job types is uneven. A ratio of 61% of managers and 63% of operators are men, while they represent only 16% of analysts and 41% of executive assistants (see fig. 4).

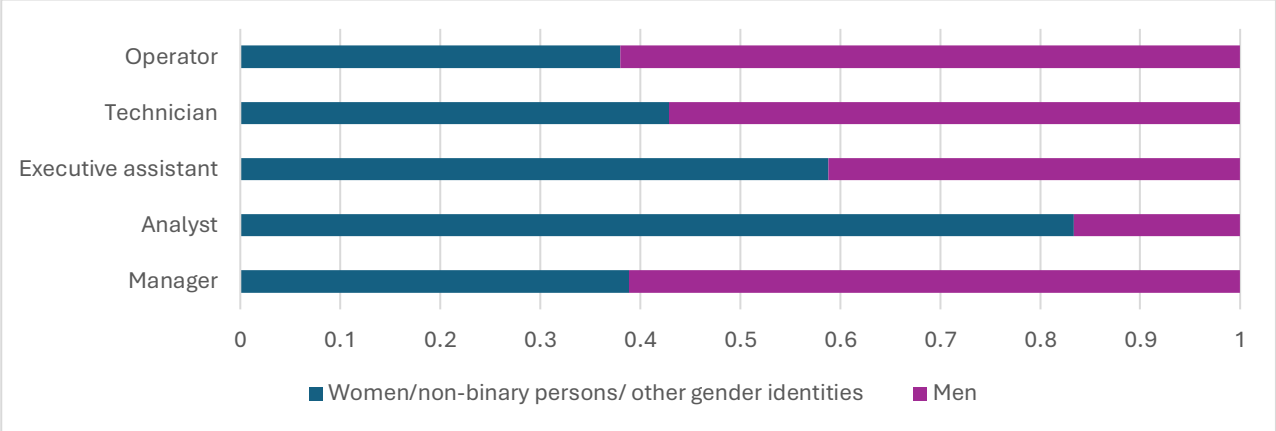

Figure 4. Gender distribution by job type

Regarding ethnocultural diversity, 38% of operators self-identify as belonging to a visible minority, linguistic minority, or indigenous group. In comparison, the figures for managers, analysts, and executive assistants are 19%, 4%, and 9%, respectively.

More statistical details for our sample are provided in Table 2 below.

Table 2. Results of the statistical analysis

Dimension	Statistics
Socio-demographics	
Job types	Operators (45%); Managers/executives (24.66%); Executive assistants (15.53%); Analysts (10.96%); Skilled technicians (3.20%)
Gender Distribution	Men (53.4%); Women and gender-diverse people (46.6%)
Ethnocultural Diversity	White (76%); Visible minority (13%); Linguistic minority (5%); Indigenous (1%); No response (5%)
Education (highest level)	Primary (9%); College (59%); University (40%)
Disabled Respondents	14% self-identified as disabled.
Children	35% have at least one child.
Organizations	
Structure	Non-financial cooperatives (20%); Non-profit organizations (80%)
Purpose	38.5% are WISEs
Circular strategies[5]	Donation & resale (54%); Valorization & eco-design (38%); Recycling & composting (23%); Repair & maintenance (19%); Collaborative economy (16%)
Job quality	
Earnings (% of employees paid a certain amount)	$14.25/h (4%); $14.25–20/h (39%); $20–35/h (36%); $35–50/h (16%); >$50/h (3%); Commission-based (2%)
Working hours and work-life balance	86.30% of employees work fixed hours.
Work environment and conditions	17% of employees are often exposed to hazards in the workplace.
Qualification	21% feel overqualified.
Training (past year)	None (5%); 1–5 days (60%); 5–10 days (16%); >10 days (19%)
Information on contract	80% feel well or very well informed about their contract
Participation in decision-making	60% report good or very good opportunities to participate

[5] Multiple strategies possible.

4.2. Regression analyses

In this section, we present the results of the linear regressions performed to test the influence of certain job and organizational characteristics on employee satisfaction. As detailed in the methods section, we performed a total of 15 regressions, that is, 3 for each dependent variable (see details in appendix C). Results are presented in table 3 and further detailed below.

Table 3. Results of the regression analyses

Dependent variable Adjusted R^2s	Significant independent variables	Positive or negative impact (*** p≤ 0.01 ; ** p ≤ 0.05 ; * p ≤ 0.1)
Commitment levers (LR1) 0.3015 ; 0.3850 ; 0.3889	Being a manager	+ (***)
	Being an executive assistant	+ (**)
	Perceived overqualification	- (***)
	Information in individual settings and spontaneous participation	- (**)
	Providing information to employees in group settings	+ (***)
Horizontality (LR2) 0.3575 ; 0.4146 ; 0.3948	Holding a manual position	- (***)
	Higher level of education completed is college	+ (**)
	Harassment, violence, and discrimination	- (***)
	Perceived overqualification	- (**)
	Public holidays are paid leave	+ (**)
Career pursuit (LR3) 0.1913 ; 0.1447 ; 0.1875	Harassment, violence, and discrimination	- (***)
	Higher level of education completed is primary school	- (*)
	Dependent children	- (*)
	Flexible schedules freely determined by the employee[6]	- (**)
	Business model based on Repair and maintenance	- (*)
	Business model based on Ecodesign or valorization	- (**)
Psychological conditions (LR4) 0.1751 ; 0.2845 ; 0.2677	Being a manager	- (**)
	Being an analyst	- (**)
	Harassment, violence, and discrimination	- (***)
	Providing information to employees in group settings	+ (***)
	Information in individual settings and spontaneous participation	- (***)
Recognition (LR5) 0.1751 ; 0.2845 ; 0.2677	Holding an executive assistant position	+ (**)
	Harassment, violence, and discrimination	- (*)
	Business model based on Maintenance and repair	- (**)

For all five dependent variables, adjusted R^2 values range from 0.14 to 0.41, demonstrating dissimilar goodness of fit across models. Overall, the harassment, violence, and discrimination had a negative impact on all dependent variables. More specifically, for **commitment levers**, which had a satisfactory explanatory variable variance, significant associations are observed with managerial status (positive), being an executive assistant (positive), perceived overqualification (negative), the provision of information to employees in group settings (positive) and in individual or spontaneous settings (negative). **Feeling of horizontality**, whose model also demonstrated very satisfactory R^2-adjustments, is negatively associated with holding a manual position, harassment and discrimination and perceived overqualification and positively associated with having a college degree and benefiting from paid leave for public holidays. **Feeling of being able to pursue a career** shows negative associations with harassment and discrimination, flexible schedules freely determined by the employee, having to take care of children, having completed a primary education at most, and business models

[6] As opposed to fixed schedules determined by the organization with no possibility of change

based on ecodesign or valorization or repair and maintenance. However, the statistical support for most of these associations remains weak with p-values between 0.05 and 0.1, suggesting that these findings should be considered exploratory rather than conclusive. **Psychological conditions** are negatively associated with being an analyst or a manager and harassment and discrimination. The provision of information to employees in group settings (positive) and in individual or spontaneous settings (negative) also have an impact on psychological conditions. Finally, **recognition** is positively associated with holding an executive assistant position and negatively associated with harassment and discrimination and working at an organization whose business model is primarily based on a maintenance and repair strategy.

4.3. Qualitative analysis

4.3.1. Well-being at work The most frequently highlighted themes regarding well-being at work were teamwork, a positive work atmosphere, and the solicitude of managers. A supportive environment was consistently described as motivating and central to the work experience. Illustrative quotes include: *"a growing company that listens to its employees"; "my colleagues are always smiling, and my supervisors too, they all have a great sense of humor, which makes work much easier"*. Overall, comments reflected strong workplace satisfaction: "*I am very happy at work*"; "*this is the first workplace with such a pleasant atmosphere*"; "*this is the best job ever!!!*".

4.3.2. Work-life balance Employees report positive experiences with work–life balance in companies offering flexible schedules. Remote working, adjustable hours, and the option to bring children to the office were frequently cited as benefits, along with managerial support for personal obligations: *"I am also fortunate to have a reduced and flexible schedule, with multiple ways to balance work and family"*. In contrast, companies without formal work–life balance policies received more critical feedback, with employees requesting greater schedule flexibility and additional family or sick leave.

4.3.3. Prevention of violence and discrimination Overall, workplace diversity is generally perceived positively by employees. However, issues related to conflicts with clients, verbal harassment, and discrimination are repeatedly reported, particularly by employees working in organizations that did not report any formal practices or policies addressing harassment or discrimination. In contrast, no such comments were expressed by employees in organizations that declared having internal equity or anti-harassment policies, recruitment policies, or training initiatives on these issues.

4.3.4. Compensation Although no survey questions directly addressed compensation, some employees raised the issue in the free-response section. Most of them criticized low pay, with some managerial positions described as effectively voluntary, using terms such as "*underpaid*", "*ridiculous*", and "*frustrating*". Illustrative comments include: "*I find that my job is not sufficiently compensated*"; "*working for a community organization or worker cooperative is a sentence to perpetual poverty*".

4.3.5. Values and commitment Although salary was frequently cited as a source of dissatisfaction, many employees emphasized their commitment to the organization's social mission and values. Pride and a sense of purpose were recurrently mentioned: "*gives meaning to my work*"; "*strong sense of belonging*"; "*I am proud to have contributed*"; "*I am truly grateful and happy to work in an impact-driven company*". Organizational values were also highly appreciated: "*embodies values that align with mine*"; "*the company's values and mission delight me*".

5. Analysis and Discussion

In this section we will discuss our findings in light of the CE, SSE, and SSCE literatures, allowing us to reflect on the extent to which they can be generalized to CE or SSE contexts, or are specific to SSCE.

5.1. Types of jobs and working conditions

This section provides a descriptive overview of SSCE employment and highlights its diversity, thereby setting the stage for the more detailed analyses presented in the sections that follow. Our findings suggest that the distribution of job types in the SSCE varies according to the circularity strategies adopted by organizations. "Recycling and composting" and "Donation and resale" strategies are the most labor-intensive, whereas "Collaborative economy" and "Valorization and ecodesign" strategies exhibit a higher concentration of managers and analysts. These results are consistent with the CE literature that suggest that the CE requires a broad spectrum of skill levels, and that the chosen strategy shapes the composition of the workforce. Circular jobs reflect the heterogeneity of circular tasks, demanding diverse skill sets (Burger et al., 2019; Laubinger et al., 2020; Ribeiro-Broomhead & Tangri, 2021).

Accordingly, our data indicate that working conditions vary according to job type, organizational size and type, and the circular strategies adopted. Holding a **managerial position** exerts a positive effect on commitment levers relative to manual occupations (LR1). This finding is consistent with the higher salary satisfaction and stronger alignment with social company values reported by managers compared to operators. By contrast, **working as a manager or an analyst** has a significant negative effect on psychological working conditions relative to manual labor (LR4). This may be explained by the higher level of responsibility typically associated with such positions: they both often occupy key roles in the coordination and design of products and services, which, particularly in small organizations whether from the SSE or the private sector, entail substantial cross-functional work (Forth et al., 2004). Conversely, **holding an executive assistant position** exerts a significantly positive influence on commitment levers and perceived recognition at work relative to manual occupations (LR5). Brun & Dugas (2005) identify five forms of recognition-related interactions, that executive assistants appear to benefit from more often than other positions. While both of these findings do not appear to be specific to either the CE or the SSE, they may be reinforced in the context of the SSCE, where organizations are embedded in more intensive territorial cooperation dynamics (Ziegler et al., 2023). In such contexts, organizations engage in a greater number of inter-organizational relationships, which increases coordination, planning, and flow-design demands. As a result, responsibilities associated with analyst positions are expanded, while executive assistant roles are exposed to more frequent opportunities for recognition through interactions both within and beyond the organization. This interpretation is not strongly supported by the statistical results and should therefore be considered a direction for future research aimed at assessing whether this effect is specific to SSCE or to CE more broadly. Finally, our regression analyses reveal that employees who have **manual jobs** as operators or qualified technicians are significantly less inclined to have a sense of horizontality at work than employees with other job positions (LR2). We will later discuss the implications of this result.

These heterogeneous working conditions reflect the diversity of both SSE and CE contexts. However, it is possible that such variation is mediated by the intersection of the two models and therefore exhibits characteristics specific to the SSCE. As our data do not allow us to draw firm conclusions in this regard, we encourage future research to adopt comparative approaches in order to identify the specific effects of the embedment of these two models on working conditions. Moreover, although this observation may not be particularly disruptive, it underscores the diversity of realities encompassed by the concepts of "circular employment" and "circular work." It therefore points to the need for a more nuanced understanding of circular jobs and challenges the tendency to conceptualize them as a homogeneous whole.

5.2. Work integration social enterprises (WISEs) and diversity in the workforce

Compared to the SSE as a whole, our sample shows an overrepresentation of organizations in the waste management and sanitation service sector, organizations in the manufacturing sector, and organizations in the

retail trade sector (Chantier de l'économie sociale, 2021). Moreover, WISEs represent 38.5% of our sample, a clear overrepresentation compared to the 3.2% of WISEs in the Quebec SSE as a whole (Chantier de l'économie sociale, 2021). These overrepresentations suggest a close relationship within our sample between SSCE organizations and work-integration activities and highlight the longstanding partnership between the CE and the SSE, specifically in sectors historically forsaken by the private sector such as waste management and secondhand retail (Rebaud & Stokkink, 2016). They reaffirm the reciprocal relationship between the two models and therefore the relevance of the SSCE, particularly in the case of WISEs. WISEs benefit from opportunities created by the CE by offering relatively simple tasks that contribute to processes that are otherwise complex to automate. In turn, they support the CE by fostering the inclusion of more marginalized populations and by promoting regional circular economies (Van Opstal et al., 2024). These organizations also play a key role in workforce training, which constitutes a necessary condition for the development of more just circular jobs (Burger et al., 2019): in our sample, employees with no more than a primary education received at least ten days of training during the past year.

The strong presence of WISEs in our sample also reflects the wide range of qualifications among respondents, spanning from postgraduate degrees to no formal education. Operators encompass the broadest spectrum of qualifications, with some holding postgraduate degrees, others having no education, and many situated between these two extremes. Notably, 21% of respondents reported feeling overqualified, of whom 60% were operators. This substantial share of overqualified operators, combined with their diverse educational backgrounds, may point to unrecognized foreign credentials, alternative training pathways, or difficulties in securing employment commensurate with their qualifications. These patterns underscore the diversity of experiences and trajectories among individuals in such positions, a diversity that reflects particularly the specificity of WISEs but also the broader context of the SSE, where organizations are more likely to employ individuals who are overqualified, from immigrant backgrounds, criminalized, or living with a disability (Binhas, 2022; Lysaght et al., 2018; Van Opstal et al., 2024).

Although women make up the majority of the SSE workforce (64% of employees in Québec SSE organizations in 2018 (CSMO-ESAC, 2018)), the demographic composition of our sample differs, comprising 53.4% men and 46.6% women, non-binary individuals, or individuals with other gender identities. This divergence reflects the specific sectoral profile of SSCE activities. While the broader SSE is highly feminized, many CE activities involve manual and operational tasks that remain historically more men-dominated (Circle Economy et al., 2025). Such occupations account for a large share of our sample, which might account for the overrepresentation of men in our sample. This observation is further reinforced by the overrepresentation of men among operators and by the predominance of men in managerial roles, in contrast to executive assistant and analyst positions. These findings contribute to ongoing debates on the gendered distribution of employment opportunities in the CE. They should be discussed in light of the literature, which states that circular activities with low added value such as recycling, reuse, and waste management employ mostly women, whereas they are underrepresented in high added-value activities (Pansera et al., 2024; van der Velden, 2021). They also point out to the necessity of conducting further research on gender in the CE and on the relevance of integrating feminist frameworks, such as care ethics, to conceptualize and operationalize the circular transition (Berry et al., 2021; Palm et al., 2024)

5.3. Employee satisfaction

5.3.1. Benefits and organizational values The open-ended survey responses indicate that some organizations allocate funds for healthcare, well-being, and leisure or cultural activities. The regressions (LR2) also show that benefiting from a paid leave on public holidays enhances the sense of horizontality. The open-ended responses also highlighted essential benefits such as flexible working hours, remote work options, and managerial understanding when employees face personal challenges. This result, although not specific to the SSCE nor the CE, is directly linked to the context of SSE, where retention doesn't rely on salaries, which are notoriously lower than in the private sector, but on in kind benefits, employees participation, organizational values, etc. (Harrisson & Gervais, 2007; Richez-Battesti et al., 2011). Accordingly, while concerns about remuneration stood out in the responses to the open-ended survey questions, respondents often praised benefits like flexible working hours and expressed satisfaction with the organization's social mission. The open-ended

responses frequently indicated a sense of pride and belonging, and an alignment with the organization's values. In line with the literature, this result underscores the need to implement practices that fully reflect key organizational values and emphasizes the contribution of the SSE in providing meaningful CE jobs, notably through sense of social purpose at work (Monciardini et al., 2023; Moreau et al., 2017).

At the same time, while alignment with organizational values and a sense of social purpose may compensate for lower salaries and foster pride and belonging, this carries important social justice implications. Individuals who are committed to the SSCE's environmental and social mission may be financially constrained from accepting low-paying positions, effectively steering them toward private-sector jobs that may conflict with their values. Moreover, by providing socially and environmentally meaningful work primarily at low wages, these organizations risk placing the burdens of ecological and social responsibility disproportionately on marginalized, racialized, or economically disadvantaged groups, who are already least responsible for ecological degradation yet bear its consequences most acutely (Farrell, 2012 ; Simcock et al., 2021 ; Sovacool et al., 2021). In this way, meaningful work within the SSCE, while socially and environmentally valuable, can reproduce broader inequities, offering a trade-off between personal fulfillment and materially alleviating economic conditions.

5.3.2. Democratic and horizontal governance Another characteristic of organizations of the SSCE is their aim for democratic and a more horizontal governance, drawn from the SSE (Ziegler et al., 2023). However, this characteristic also depends on several factors. The impression of being able to participate in decision-making appears to be more prevalent among cooperative employees than NPOs employees. Since cooperatives have governance principles that are rooted in horizontal management, this disparity can probably be attributed to differences between the structural and operational models of these two types of enterprises. However, it is essential to consider the relationship between participation and the size of organizations. On average, cooperatives in our sample are smaller than NPOs and establishing more horizontal and participative management practices is generally easier when it is done on a smaller scale. Research suggests that implementing participatory governance becomes more challenging in larger enterprises, whether in the SSE or in the private sector (Forth et al., 2004; Monciardini et al., 2023). Our findings are consistent with the literature, with employees' impression of being able to participate in decision-making gradually decreasing as their organizations become bigger. Therefore, democratic decision-making doesn't appear as intrinsic to SSCE organizations but rather a feature drawn from the SSE that requires further nurturing and development to fully realize the democratic potential of the SSCE (Monciardini et al., 2023; Van Opstal et al., 2024). However, further research on governance arrangements specific to SSCE organizations would be valuable, as they may be mediated by characteristics of circular governance (Esposito et al., 2023; Minoja & Romano, 2024).

Our regression results reveal a notable pattern related to democratic and horizontal governance. Both commitment levers and psychological conditions are positively associated with the provision of information in group settings, while they are negatively associated with information delivered in individual or spontaneous contexts. This suggests that the modes through which information circulates within organizations are consequential for employee experiences. More broadly, it indicates that organizations may be able to shape workplace environments by structuring their communication practices and governance arrangements in ways that support more favorable conditions for employees. At the same time, these results point to a potential area for growth within SSCE organizations: while many explicitly aspire to more democratic forms of governance, they may still be in the process of identifying the concrete practices and organizational arrangements through which such aspirations can be effectively realized.

Further, our regression analysis (LR2) reveals that employees who have manual jobs as operators or qualified technicians are less inclined to have a sense of horizontality at work than employees with other job positions. Three explanations can be given. First, in this regression, the number of employees in organizations is non-significant. At first glance, this may appear to contradict other studies in the literature and our own descriptive statistics. However, our horizontality variable takes into consideration not only the feeling that one can participate in decision-making, but also the ability to choose when to take breaks and the perceived sense of autonomy that comes with it. While company size significantly influences the feeling that one can participate in decision-making, it does not have the same effect on the ability to choose when to take breaks and on the perceived sense of autonomy that comes with it. Second, job positions in which employees have operational roles offer less freedom to choose or adapt schedules. This is evident in the case of operators, for they have limited control over their working hours and break times. While a flexible schedule does not guarantee better

work-life balance, having control over working hours is likely to enhance the sense of autonomy at work (Bouville, 2019). Third, the prevalence of WISEs in the SSCE may play a role in diminishing the sense of horizontality among employees with manual jobs. At WISEs, these jobs are designed for integration paths, and a higher proportion of the employees who hold them have disabilities. Due to short-term contracts and their training status, their integration into democratic governance is especially challenging (Meyer, 2009).

This third explanation could be supported by LR5, that revealed that working at an organization using the maintenance and repair strategy has a negative impact on employees' sense of recognition. This may be linked to the higher share of manual jobs (25%) in organizations adopting this strategy, as operators report the lowest sense of recognition in our sample. Since work integration most often relies on manual jobs, chances are that the negative impact of the maintenance and repair strategy on employees' sense of recognition is due to the difficult integration of people in integration paths into the democratic governance rather than an intrinsic characteristic of the maintenance and repair circular strategy. However, our data do not confirm this, and uncertainty remains regarding the interpretation of this result. Further research is therefore needed on organizations relying on the maintenance and repair strategy and on the integration of employees in integration paths into the democratic governance.

5.4. Limitations

Our sampling method introduced bias to the extent that it may have overlooked some social and solidarity organizations, particularly small businesses operating at a local level in rural areas. In addition, the sample size (219 participants) is neither comprehensive nor representative of the entire SSCE in Quebec. Exploring the sector more broadly, especially focusing on small regional organizations in the circular economy, would be a useful way to overcome this limitation.

Moreover, organizations participated in the study voluntarily and were aware that it evaluated job quality. This may have led to self-selection bias, for it may be the case that only organizations confident in their working conditions opted to participate. Since the organizations were responsible for survey distribution, it is also possible that they excluded certain employees in order to enhance results. Conversely, dissatisfied employees may have been more inclined to participate than ones with a higher degree of job satisfaction. It is also to be noted that surveying vulnerable labour-market groups entails several methodological limitations and sampling biases. Limited time availability may restrict participation, which is why companies were asked to allocate working time for survey completion. Limited access to or familiarity with computers was addressed by providing a paper-based version of the questionnaire and, in some cases, in-person assistance, which may have biased results. In addition, because volunteers were excluded from the survey, our estimates of labour intensity refer specifically to paid employment and may underestimate total labour mobilised in SSCE activities where volunteer participation is substantial.

Finally, our study is limited to the Quebec context and focuses on the SSCE. While many of our findings appear to be specific to the SSE, some results do offer insights relevant to the CE and to the SSCE as well. This geographic and sectoral focus may limit the generalizability of our conclusions to other regions or contexts, where the institutional, cultural, or policy environments might differ. Future research could extend this work by examining SSCE organizations in diverse geographic and institutional settings to assess the broader applicability of our findings and to better disentangle the contributions of the SSE and the CE to working conditions and governance practices in the SSCE.

6. Conclusion

Our paper contributes to the literature by investigating a promising approach on inclusivity and social equity within the circular transition: the SSCE, a paradigm increasingly acknowledged as viable. Rather than advancing causal or cross-sector comparative claims, this study adopts an explicitly exploratory perspective. To our knowledge, it provides the first empirical portrait of job quality within organizations operating at the intersection of the SSE and the CE in Québec, a sector that remains empirically underexplored despite its growing institutional and economic relevance. By documenting patterns of job satisfaction and their organizational correlates within this field, the paper sheds light on the internal heterogeneity of employment conditions in the SSCE. In doing so, it contributes to a better understanding of the organizational features

associated with higher-quality circular employment. Overall, our findings offer empirically grounded insights for both SSE scholarship and emerging debates on the social dimensions of work in the CE by highlighting four characteristics of work in the SSCE.

First, the quality and conditions of SSCE jobs, as well as employee satisfaction, are highly heterogeneous. They vary according to job type, organizational type and size, and circularity strategy, and therefore appear specific to the SSCE. This underscores the diversity of SSCE contexts and challenges the perception of circular jobs as homogeneous. Further research is needed to better understand the interactions among the factors shaping working conditions. Second, the SSCE demonstrates potential for generating lower- or unskilled employment of relatively good quality compatible with work integration. While this finding is partly influenced by the presence of WISEs in the sample, it also reflects structural features of the sector. Many CE activities involve operational tasks that are accessible and can be learned relatively quickly, thereby creating entry points for workers with lower formal qualifications. At the same time, the SSE may provide organizational environments oriented toward inclusion, training, and supportive work practices, which can contribute to maintaining acceptable job quality even in lower-skilled positions. SSCE organizations thus appear capable of offering training programs tailored to circular activities, contributing to the development of a workforce suited for the circular transition.Third, through the presence of WISEs in particular, the SSCE fosters a diverse workforce and an inclusive model for circular employment, highlighting its potential as a socially just employment model. This characteristic should be further acknowledged by policymakers, as the SSCE may help prevent the further marginalization of individuals engaged in occupations sometimes described as “dirty work” (Gregson et al., 2016). Fourth, SSCE organizations exhibit a willingness to adopt more participatory and democratic governance practices. However, to fully integrate all employees, including operators and individuals in professional integration programs, organizations should specifically work on their governance structures and practices. This may constitute a distinct feature of the SSCE, although influenced by both SSE and CE governance logics. This finding calls for additional scholarly attention to investigate governance structures in the SSCE.

In addition to identifying characteristics specific to SSCE work, our findings also highlight features and practices that are drawn from the SSE and CE rather than being unique to the SSCE. First, the allocation of positions varies according to the circularity strategy adopted by organizations, reflecting a feature primarily associated with the CE, where different strategies require different types of workers. Second, work in the SSCE appears to mirror gendered dynamics observed in the CE, suggesting that broader structural patterns of the CE may shape SSCE employment. This area requires further investigation. Finally, although salaries are generally low and a source of dissatisfaction, employee satisfaction is also influenced by alignment with organizational values and mission, workplace atmosphere, and in-kind benefits, reflecting characteristics of the broader SSE. Most employees report that their well-being is adequately supported at work.

In conclusion, our findings provide valuable insights into a promising socio-economic model and suggest interesting directions for future research. The SSCE appears to serve as a catalyst for a socio-demographically diverse workforce and the creation of satisfying working conditions within the CE. Nonetheless, the creation of high-quality CE employment opportunities remains a substantial challenge, even within the SSE. Consequently, policymakers have a complementary role to play in fostering high-quality CE jobs, particularly those suitable for professional integration. Furthermore, our paper being Quebec-focused, more research is needed to understand the geographical specificities of SSCE.

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Data Availability The data that support the findings of this study consist of quantitative and qualitative answers to a survey. Due to the sensitive nature of the data and the need to protect participant confidentiality, the data are not publicly available. The study received ethics approval that did not include consent for public data sharing. Limited excerpts of

anonymized data are included in the article to support the analysis. Further information about the data may be available from the corresponding author upon reasonable request and subject to ethical approval.

Declarations

Competing Interests The authors declare no competing interests.

AI Use During the preparation of this article the authors used ChatGPT 5 to improve the syntax of sentences and enhance their clarity. After using this tool/service, they reviewed and edited the text as needed and take full responsibility for all content.

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Appendices

Appendix A: Variables used for the regression analyses and the corresponding items in the questionnaire

Appendix A1. Variables used for the regression analyses and the corresponding items in the questionnaire

Variables	Corresponding question(s)	Variable name	Measuring scale
Commitment levers	B1.bis: Generally speaking, how do you find your relationships with your colleagues? B2.bis: Generally speaking, how do you find your relationship with your managers or your employer? D3: To what extent do you agree with the following statement: "The values of your company align with your own values"? D4: To what extent do you agree with the following statement: "You are well paid for the effort that you put in and the work that you do"?	Commitment	Continuous, [0;5]
Horizontality	D1: Can you take a break whenever you want? Are you autonomous in your work (possibility of changing or choosing the order of the tasks, the pace, the working methods, etc.)? Can you participate in decision-making related to the organization of work?	Horizontality	Continuous, [0;5]
Career	C2: Do you agree with the following statements? "You know the features of your contract (salary, bonuses, hiring, dismissal, working conditions, training, etc.)." "You could have a career at the company. (You could grow within the company; you have prospects for advancement.)" Your job is stable. (In the next 12 months, you are not likely to lose your current job)	Career	Continuous, [0;5]
Psychological conditions	C3: Do you have to work at a fast pace? C1: Does your job make you feel stressed? C4: Can you organize your private life in a satisfactory way?	Psychological conditions	Continuous, [0;5]
Recognition	D1: Do you feel recognized at work?	Recognition	Continuous, [0;5]
Job type	A5: What type of job position do you hold at the company?	Type of job position	Nominal 1: Manager 2: Analyst 3: Executive assistant 4: Manual job
In kind benefits	QO-13: Does your company provide benefits for each type of job position?	Salary 2	Binary
Fixed schedule	QO-D1; E1; F1; G1; H1:Are employees in each type of job position expected to work fixed hours?	Fixed schedule	Binary

Appendix A1 (cont.). Variables used for the regression analyses and the corresponding items in the questionnaire

Variables	Corresponding question(s)	Variable name	Measuring scale
Schedule determination method	QO-D2; E2; F2; G2; H2: How are the schedules of employees in each type of job position determined?	Fixed schedule	Nominal 1) Defined by the company with no possibility of change 2) Selected from various schedules proposed by the company 3) Defined by the company, but adaptable within certain limits 4) Entirely determined by employees
Paid leave on public holidays	QO- I4: On public holidays in Quebec, what policy applies to employees in each type of job position?	Public holidays	Binary
Violence, discrimination, and harassment	D5: During the past 12 months, have you been the target of threats of physical violence or physical abuse while working at the company? Have you been the victim of discrimination based on your gender, age, ethnicity, religion, or sexual orientation, or related to an illness or a disability that you have? Have you had unwanted sexual advances?	Violence	Ordinal; {0;3}
Annual training days	QO-K1: During the past 12 months, how many days of company-paid or company-organized training were offered to employees in each of the job positions?	Training	Ordinal; {1;6}
Overqualification feeling	D2: Do you feel overqualified for your job?	Overqualification	Binary
Number of employees	QO-A2: How many people currently work for the company?	Total number of employees	Continuous
Workers' rights and social dialogue	QO-K2; K3; K4; J1; I7; I6; B4: Is there an employee representative, an employee union, or a trade union representative at your company? To your knowledge, do employees sometimes perform unpaid overtime ? Does your company offer annual paid vacation? Does your company offer a retirement plan? Does your company offer group insurance? Does your company have a policy on working conditions? Does your company have a wage policy? Does the company take action to fight against discrimination and inequality? Does the company have specific measures for employees who have dependent children or who spend time helping or supporting a person with diminished autonomy? Does the company take specific action to improve the general well-being of its employees?	Rights and dialogue	Continuous

Appendix A1 (cont.). Variables used for the regression analyses and the corresponding items in the questionnaire

Variables	Corresponding question(s)	Variable name	Measuring scale
Information in group settings	QO-I8; I9: Does the company inform employees about the characteristics of their job (salary, bonuses, hiring and dismissal policies, working conditions, training, etc.)? If so, in what way? Does the company involve employees in work-related decision-making? If so, on what occasion(s)?	Group Info	Continuous
Information in individual settings and spontaneous participation		Individual participant Info	Continuous
Circular strategy	Added to database after data collection	Circular Strategy	Nominal 1) Donation and Resale 2) Collaborative Economy 3) Eco-design and upcycling 4) Recycling and composting 5) Repair and maintenance
Education levels	E2: What is the highest level of education you have completed ?	Education	Nominal 1) None 2) Primary school 3) High school or equivalent 4) Professional studies 5) College 6) University degree
Gender (identifies as a man, woman, trans woman, etc.)	E3: What gender do you identify as?	Gender	Binary
Ethno-cultural affiliation (identifies as a member of an ethno-cultural minority)	E4: Do you identify yourself as a member of a visible minority, an ethnic minority, an Indigenous person?	Ethnicity	Binary
Disability (identifies as disabled)	E5: Do you have a disability or a long-term physical or mental health problem?	Disability	Binary
Dependent children	E6: How many dependent children do you have?	Children	Continuous

Appendix B: Detail of the variables used as individual factors for each dependent variable

Dimension	Explanatory variables	Justification
Commitment levers	Socio-demographic variables (gender, ethnicity, disabilities)	Variables appeared to be significantly influential in several of the regressions carried out.
	Benefits in kind	
	Information shared with employees in group settings.	Variables were added in line with the literature on the links between job satisfaction and the degree of horizontality or social dialogue at the organization (Erhel & Guergoat-Larivière, 2016; Harrisson & Gervais, 2007; Lowe & Schellenberg, 2001).
	Information shared with employees in private settings, and there is individual and spontaneous participation	
Horizontality	Benefits in kind	Variable appeared to have a significant influence in several of the regressions carried out.
	Information shared with employees in group settings.	Variables concerning employee participation and related information were added to test the influence of organizational practices designed to improve participation or the feeling of horizontality.
	Information shared with employees in private settings, and there is individual and spontaneous participation	
	Number of training days offered by the organization each year	The employees receiving the most training days per year are the ones on work integration paths, which are short-term contracts. Their ability to be integrated into the democratic decision-making processes of an organization is limited because of the short duration of their contracts. Thus this variable is included to verify the influence of training courses on the feeling of horizontality.
Career	Benefits in kind	Variable appeared to have a significant influence on several of the regressions carried out.
	Information shared with employees in group settings.	Variables were added for elements with a direct influence on the way employees are informed about organizational issues, including their contract.
	Information shared with employees in private settings, and there is individual and spontaneous participation.	
Psychological conditions	Benefits in kind	Variable appeared to have a significant influence in several of the regressions carried out.
	Information shared with employees in group settings.	Variables were added for the measurement of the degree of control employees have over their working conditions. A greater ability to influence one's work improves job satisfaction, and exercising control over one's schedule improves work-life balance (Staines & Pleck, 1986; Tremblay, 2017).
	Information shared with employees in private settings, and there is individual and spontaneous participation.	
	Number of training days offered by the organization each year	Variable appeared to be significantly influential in several of the regressions carried out.
Recognition	Information shared with employees in group settings.	Recognition at work is achieved at both the vertical and the horizontal interpersonal level through the evaluation and formulation of (positive) judgments about one's work performance (Brun & Dugas, 2002; Gernet & Dejours, 2009). We include these variables as possible channels for communicating these work evaluations.
	Information shared with employees in private settings, and there is individual and spontaneous participation.	
	Number of training days offered by the organization each year	Recognition can also be expressed at the organizational level (Brun & Dugas, 2002). We include a "training" variable to test the impact of offering training days as a form of organizational recognition.

Appendix C: Regression tables

Appendix C1. Regression table for the commitment levers

	Commitment levers – Regression 1		Commitment levers – Regression 2		Commitment levers – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Job type: manager	0.7328	**	0.6635	***	0.6489	**
	0.0134		0.0085		0.0126	
Job type: analyst	0.2979		0.0105		0.0196	
	0.2179		0.9647		0.9456	
Job type: executive assistant	0.3756	***	0.2577	**	0.2734	**
	0.0012		0.0216		0.0178	
Job type: manual work (baseline)	0.0000		0.0000		0.0000	
Feeling that one is overqualified	-0.3263	***	-0.3346	***	-0.3321	***
	0.0026		0.0008		0.0004	
Discrimination, harassment, and violence	-0.3621	**	-0.2713	*	-0.2175	
	0.0261		0.0585		0.1116	
Education: primary school	-0.0698		-0.2194	*	-0.2590	*
	0.6736		0.0870		0.0726	
Education: high school or equivalent	0.0659		0.0225		-0.0081	
	0.6882		0.8954		0.9642	
Education: professional studies	0.1103		-0.0330		-0.0827	
	0.6517		0.9161		0.8075	
Education: college	0.2086	**	0.1384		0.1075	
	0.0131		0.3981		0.5356	
Education: university - baseline	0.0000		0.0000		0.0000	
Dependent children	-0.1407		-0.1420		-0.1392	
	0.2669		0.2548		0.2935	
Flexible schedule – Working hours are determined by the company but can be adapted to a certain extent.	0.5970		-0.1530		-0.4423	
	0.2011		0.3804		0.4777	
Flexible schedule – Working ours are freely determined by the employee.	0.0032		-0.0765		-0.1755	
	0.9920		0.7286		0.5516	
Fixed schedule – Working hours are determined by the company and cannot be changed[7] (baseline).	0.0000		0.0000		0.0000	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

[7] Since no observation was registered for them, the parameters “Flexible schedule – Working hours are determined by the company and cannot be changed” and “Flexible schedule – Working hours can be selected from various schedules proposed by the company” are not presented.

Appendix C1 (cont.). Regression table for the commitment levers

	Commitment levers – Regression 1		Commitment levers – Regression 2		Commitment levers – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Fixed schedule – Working hours can be selected from various schedules proposed by the company.	0.6744		0.0193		-0.1657	
	0.1778		0.9187		0.6194	
Fixed schedule – Working hours are determined by the company but can be adapted to a certain extent.	0.2058		0.0613		0.0295	
	0.3383		0.6342		0.8478	
Fixed schedule – Working hours are freely determined by the employee.	-0.5276	*	0.3768		1.0252	**
	0.0806		0.1133		0.0296	
Public holidays are paid leave.	0.6272	**	-0.0637		-0.7287	
	0.0015		0.8059		0.2071	
Workers' rights and social dialogue	0.0984		-0.0603	*	-0.1686	
	0.3046		0.0967		0.1066	
Recycling and composting (baseline)	0.0000				0.0000	
Donation and resale	0.1212				-0.1298	
	0.5627				0.4602	
Collaborative economy	-0.3980				-0.5729	
	0.2774				0.2181	
Eco-design and upcycling	-0.3871				0.2555	
	0.1594				0.5477	
Repair and maintenance	-0.3516				0.7662	
	0.1957				0.1415	
Number of employees in the company	-0.2828				0.1032	
	0.1355				0.5884	
Gender (identifies as a man, woman, trans woman, etc.)			-0.0938		-0.1208	
			0.4797		0.4439	
Ethno-cultural affiliation (identifies as a member of an ethno-cultural minority)			-0.2310		-0.2031	
			0.1671		0.2030	
Disability (identifies as disabled)			-0.1652		-0.1748	
			0.1037		0.0748	
Benefits in kind			-0.3297		-0.3414	
			0.1652		0.0784	
Information in group settings			0.5524	**	0.9686	**
			0.0316		0.0128	
Information in individual settings and spontaneous participation			-0.0792	**	-0.1530	**
			0.0105		0.0290	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

Appendix C1 (cont.). Regression table for the commitment levers

	Commitment levers – Regression 1		Commitment levers – Regression 2		Commitment levers – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Constant	3.9272	***	5.1975	***	6.3744	***
	0.0000		0.0000		0.0000	
N	134.0000		134.0000		134.0000	
df_m	12.0000		13.0000		12.0000	
F	0.4171		0.4913		0.5176	
R^2	0.3015		0.3850		0.3889	
R^2_a	0.7328	*	0.6635	**	0.6489	*
p	0.00		0.00		0.00	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

Appendix C2. Regression table for the feeling of horizontality

	Horizontality – Regression 1		Horizontality – Regression 2		Horizontality – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Job type: manager	0.7943	**	0.8008	*	0.7887	*
	0.0363		0.0551		0.0745	
Job type: analyst	0.6936	*	0.8088	**	0.8142	**
	0.0566		0.0337		0.0342	
Job type: executive assistant	0.7273	**	0.6871	**	0.7118	**
	0.0150		0.0113		0.0171	
Job type: manual worker (baseline)	0.0000		0.0000		0.0000	
Feeling that one is overqualified	-0.2942	**	-0.2813	**	-0.2856	**
	0.0218		0.0451		0.0480	
Discrimination, harassment, and violence	-0.3901	***	-0.3864	***	-0.3843	***
	0.0005		0.0000		0.0001	
Education: primary school	-1.0147	**	-0.4811		-0.4193	
	0.0234		0.2432		0.3297	
Education: high school or equivalent	-0.1383		-0.1700		-0.1592	
	0.3688		0.2715		0.3675	
Education: professional studies	0.0091		-0.0648		-0.0556	
	0.9404		0.6079		0.6684	
Education: college	0.3833	***	0.3062	**	0.2930	**
	0.0016		0.0101		0.0246	
Education: university (baseline)	0.0000		0.0000		0.0000	
Dependent children	-0.0212		0.0022		0.0137	
	0.8288		0.9825		0.8940	
Flexible schedule – Working hours are determined by the company but can be adapted to a certain extent.	-0.2403		-0.6974	***	-0.9697	**
	0.2838		0.0049		0.0222	
Flexible schedule – Working hours are freely determined by the employee.	-0.0189		-0.2197		-0.3739	
	0.9615		0.6778		0.5230	
Fixed schedule – Working hours are determined by the company and cannot be changed[8] (baseline).	0.0000		0.0000		0.0000	
Fixed schedule – Working hours can be selected from various schedules proposed by the company.	0.5735		0.8374	***	0.7313	*
	0.1324		0.0023		0.0620	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

[8] Since no observation was registered for them, the parameters "Flexible schedule – Working hours are determined by the company and cannot be changed" and "Variable schedule – Working hours can be selected from various schedules proposed by the company" are not presented.

Appendix C2 (cont.). Regression table for the feeling of horizontality

	Horizontality – Regression 1		Horizontality – Regression 2		Horizontality – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Fixed schedule – Working hours are determined by the company but can be adapted to a certain extent.	0.0795		-0.0249		-0.0353	
	0.8395		0.9305		0.9214	
Fixed schedule – Working hours are freely determined by the employee.	0.0952		-0.0241		0.0752	
	0.7443		0.9412		0.8217	
Public holidays are paid leave	0.9964	***	0.7152	***	0.6416	**
	0.0000		0.0036		0.0262	
Workers' rights and social dialogue	-0.1446		-0.0854	**	-0.1051	
	0.1187		0.0125		0.1462	
Recycling and composting (baseline)	0.0000				0.0000	
Donation and resale	0.0509				0.0553	
	0.8855				0.8655	
Collaborative economy	-0.2253				0.3308	
	0.4484				0.5358	*
Eco-design and upcycling	-0.1535				0.0725	
	0.5707				0.7684	
Repair and maintenance	-0.0824				0.1610	
	0.8616				0.7039	
Number of employees in the company	0.0056				0.0853	
	0.9595				0.3450	
Benefits in kind			0.4662	*	0.4554	
			0.0581		0.1984	
Information in group settings			0.1266		0.5524	
			0.2716		0.0316	
Information in individual settings and spontaneous participation			0.0130		-0.0792	**
			0.6508		0.0105	
Annual training days			-0.1107		-0.1342	
			0.2390		0.2202	
Constant	3.6234***	***	3.5719	***	3.4813	***
	0.0000		0.0000		0.0000	
N	151.0000		151.0000		151.0000	
df_m	12.0000		12.0000		13.0000	
R^2	0.4517		0.4965		0.4997	
R^2_a	0.3575		0.4146		0.3948	
p	0,00		0,00		0,00	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

Appendix C3. Regression table for the feeling that one can pursue a career at the organization

	Career – regression 1		Career – regression 2		Career – regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Job type: manager	0.3182		0.4032		0.4691	
	0.2012		0.1607		0.0720	
Job type: analyst	0.1212		-0.0837		0.2035	
	0.6907		0.8457		0.5230	
Job type: executive assistant	0.2243		0.1284		0.2703	
	0.3111		0.5627		0.2243	
Job type: manual worker (baseline)	0.0000		0.0000		0.0000	
Feeling that one is overqualified	-0.1698		-0.1629		-0.1747	
	0.2218		0.2603		0.2434	
Discrimination, harassment, and violence	-0.4310	***	-0.3687	***	-0.4156	***
	0.0000		0.0000		0.0000	
Education: primary school	-0.3436	**	-0.3991	*	-0.3930	**
	0.0193		0.0757		0.0439	
Education: high school or equivalent	0.2104		0.1837		0.2622	
	0.2493		0.3643		0.2372	
Education: professional studies	0.2313		0.1299		0.2739	
	0.3234		0.6160		0.3222	
Education: college	0.0796		0.0453		0.1534	
	0.7138		0.8536		0.5539	
Education: university (baseline)	0.0000		0.0000		0.0000	
Dependent children	-0.2325	*	-0.2475	**	-0.2195	*
	0.0669		0.0493		0.0982	
Flexible schedule – Working hours are determined by the company but can be adapted to a certain extent.	0.8650	***	0.2829		0.6261	*
	0.0002		0.3522		0.0891	
Flexible schedule – Working hours are freely determined by the employee.	-1.8965	***	-2.3015	**	-2.1920	***
	0.0006		0.0107		0.0001	
Fixed schedule – Working hours are determined by the company and cannot be changed[9] - baseline	0.0000		0.0000		0.0000	
Fixed schedule – Working hours can be selected from various schedules proposed by the company.	0.6107	***	0.3057		0.3346	
	0.0077		0.3135		0.1233	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

[9] Since no observation was registered for them, the parameters “Flexible schedule – Working hours are determined by the company and cannot be changed” and “Flexible schedule – Working hours can be selected from various schedules proposed by the company” are not presented.

Appendix C3 (cont.). Regression table for the feeling that one can pursue a career at the organization

	Career – regression 1		Career – regression 2		Career – regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Fixed schedule – Working hours are determined by the company but can be adapted to a certain extent.	0.3272	**	0.1318		0.3163	**
	0.0184		0.4982		0.0144	
Fixed schedule – Working hours are freely determined by the employee	-0.2231		-0.1082		0.0484	
	0.5561		0.6890		0.8880	
Public holidays are paid leave	0.4386	***	-0.0322		0.2585	
	0.0005		0.7639		0.2351	
Workers' rights and social dialogue	0.0660	**	-0.0575		0.0429	
	0.0488		0.2107		0.4204	
Recycling and composting (baseline)	0.0000				0.0000	
Donation and resale	-0.0442				-0.3702	
	0.7621				0.2001	
Collaborative economy	0.6700				0.7200	
	0.0726				0.1276	
Eco-design and upcycling	-1.0786	**			-1.1168	**
	0.0355				0.0149	
Repair and maintenance	-0.5089	***			-0.7410	*
	0.0014				0.0744	
Number of employees in the company	-0.1468	*			-0.0479	
	0.0932				0.6617	
Benefits in kind			-0.0940		-0.4185	*
			0.7087		0.0993	
Information in group settings			0.4175	***	0.2918	
			0.0059		0.1756	
Information in individual settings and spontaneous participation			-0.0646		0.0228	
			0.1668		0.6915	
Constant	3.5750	***	4.5386	***	3.5597	***
	0.0000		0.0000		0.0002	
N	160.0000		160.0000		160.0000	
df_m	17.0000		17.0000		17.0000	
R^2	0.3032		0.2523		0.3152	
R^2_a	0.1913		0.1447		0.1875	
p	0,0002		0,0021		0,0005	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

Appendix C4. Regression table for the feeling that the psychological conditions are good at work

	Psychological conditions – Regression 1		Psychological conditions – Regression 2		Psychological conditions – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Job type: manager	-0.3680	**	-0.3749	***	-0.3352	***
	0.0233		0.0041		0.0012	
Job type: analyst	-0.6889	*	-0.7491	**	-0.6475	*
	0.0117		0.0037		0.0103	
Job type: executive assistant	-0.1083		-0.1812		-0.1024	
	0.5535		0.3572		0.6501	
Job type: manual worker (baseline)	0.0000		0.0000		0.0000	
Feeling that one is overqualified	-0.3329		-0.3048		-0.3186	
	0.1154		0.1265		0.1169	
Discrimination, harassment, and violence	-0.5010	***	-0.4283	***	-0.4343	***
	0.0007		0.0002		0.0003	
Education: primary school	-0.3341		0.0780		0.1462	
	0.3078		0.7734		0.6451	
Education: high school or equivalent	-0.2253		-0.2764		-0.2398	
	0.2407		0.1807		0.2270	
Education: professional studies	-0.2679		-0.4019		-0.3770	
	0.2908		0.1024		0.1339	
Education: college	-0.1744		-0.2833		-0.2719	
	0.3536		0.1499		0.1835	
Education: university (baseline)	0.0000		0.0000		0.0000	
Dependent children	-0.0472		-0.0065		0.0188	
	0.7243		0.9590		0.8926	
Flexible schedule – Working hours are determined by the company but can be adapted to a certain extent.	-0.1934		-1.3364	***	-1.6624	**
	0.5950		0.0004		0.0160	
Flexible schedule – Working hours are freely determined by the employee.	0.4112	*	-0.1091		-0.3568	
	0.0627		0.7568		0.2115	
Fixed schedule – Working hours are determined by the company and cannot be changed[10] (baseline).	0.0000		0.0000		0.0000	
Fixed schedule – Working hours can be selected from various schedules proposed by the company.	-0.2314		-0.0770		-0.3392	
	0.3999		0.6345		0.1457	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

[10] Since no observation was registered for them, the parameters “Flexible schedule – Working hours are determined by the company and cannot be changed” and “Flexible schedule – Working hours can be selected from various schedules proposed by the company” are not presented.

Appendix C4. Regression table for the feeling that the psychological conditions are good at work

	Psychological conditions – Regression 1		Psychological conditions – Regression 2		Psychological conditions – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Fixed schedule – Working hours are determined by the company and can be adapted to a certain extent.	-0.0790		-0.1542		-0.1831	
	0.6613		0.1307		0.1501	
Fixed schedule – Working hours are freely determined by the employee.	-0.5757		-0.4031		-0.0925	
	0.3086		0.1888		0.7460	
Public holidays are paid leave	0.3816		-0.3579	**	-0.6267	**
	0.2637		0.0281		0.0163	
Workers' rights and social dialogue	0.1354		0.0310		-0.0049	
	0.1958		0.4194		0.9442	
Recycling and composting (baseline)	0.0000				0.0000	
Donation and resale	-0.1436				-0.1950	
	0.6737				0.1869	
Collaborative economy	0.1689				0.2741	
	0.6850				0.5026	
Eco-design and upcycling	-0.6238	*			-0.0663	
	0.0907				0.7915	
Repair and maintenance	-0.8825	**			0.0666	
	0.0153				0.8376	
Number of employees in the company	-0.1492				0.1372	
	0.2557				0.2526	
Benefits in kind			0.3645	**	0.2060	
			0.0064		0.1423	
Information in group settings			0.6573	***	0.8255	***
			0.0001		0.0074	
Information in individual settings and spontaneous participation			-0.0718	**	-0.0698	**
			0.0277		0.0217	
Annual training days			-0.0806		-0.1269	
			0.2040		0.1199	
Constant	3.7276	***	4.6955	***	4.8329	***
	0.0001		0.0000		0.0000	
N	151.0000		151.0000		151.0000	
df_m	15.0000		15.0000		15.0000	
F	0.2961		0.3847		0.3946	
R^2	0.1751		0.2845		0.2677	
R^2_a	-0.3680	*	-0.3749	**	-0.3352	**
p	0.0233		0.0041		0.0012	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

Appendix C5. Regression table for the feeling of recognition

	Recognition – Regression 1		Recognition – Regression 2		Recognition – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Job type: manager	0.2558		0.3018		0.3178	
	0.4467		0.3738		0.3532	
Job type: analyst	-0.1004		-0.0290		-0.0074	
	0.7275		0.9250		0.9801	
Job type: executive assistant	0.4956	**	0.6045	***	0.5723	***
	0.0226		0.0049		0.0079	
Job type: manual worker (baseline)	0.0000		0.0000		0.0000	
Feeling that one is overqualified	-0.1306		-0.1520		-0.1395	
	0.5202		0.4227		0.5019	
Discrimination, harassment, and violence	-0.3165	**	-0.2863	*	-0.2962	**
	0.0254		0.0655		0.0403	
Education: primary school	0.1043		0.2583		0.2676	
	0.8134		0.5760		0.5690	
Education: high school or equivalent	-0.2021		-0.2131		-0.2019	
	0.5166		0.5016		0.5330	
Education: professional studies	-0.0009		-0.0062		-0.0291	
	0.9966		0.9771		0.8961	
Education: college	0.1295		0.0667		0.0986	
	0.5747		0.7783		0.7024	
Education: university (baseline)	0.0000		0.0000		0.0000	
Dependent children	-0.2501		-0.2178		-0.2340	
	0.1412		0.1727		0.1485	
Flexible schedule - The hours are determined by the company and can be adapted to a certain extent.	0.5532		0.1114		0.5388	
	0.0816		0.7636		0.4212	
Flexible schedule-Hours are freely determined by the employee	0.4603	*	0.1388		0.1679	
	0.0994		0.7858		0.6007	
Fixed schedule – Working hours are determined by the company and cannot be changed[11] (baseline).	0.0000		0.0000		0.0000	
Fixed schedule – Working hours can be selected from various schedules proposed by the company.	0.0503		-0.0162		-0.1848	
	0.8852		0.9479		0.5523	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$

[11] Since no observation was registered for them, the parameters “Flexible schedule – Working hours are determined by the company and cannot be changed” and “Flexible schedule – Working hours can be selected from various schedules proposed by the company” are not presented.

Appendix C5 (cont.). Regression table for the feeling of recognition

	Recognition – Regression 1		Recognition – Regression 2		Recognition – Regression 3	
	Coefficient/ (standard error)		Coefficient/ (standard error)		Coefficient/ (standard error)	
Fixed schedule – Working hours are determined by the company but can be adapted to a certain extent.	0.2454		0.3361	*	0.1486	
	0.2129		0.0658		0.4321	
Fixed schedule – Working hours are freely determined by the employee.	0.1694		0.4923	**	0.2538	
	0.6449		0.0376		0.4542	
Public holidays are paid leave	0.7100	***	0.2119		0.5810	**
	0.0020		0.2866		0.0247	
Workers' rights and social dialogue	0.0939		-0.0995	**	0.1047	
	0.1532		0.0312		0.3817	
Recycling and composting (baseline)	0.0000				0.0000	
Donation and resale	-0.2749				-0.3383	
	0.3611				0.2415	
Collaborative economy	0.3177				0.5141	
	0.4835				0.3612	
Eco-design and upcycling	-0.0737				-0.1665	
	0.8052				0.6907	
Repair and maintenance	-1.0683	***			-1.1404	**
	0.0005				0.0435	
Number of employees in the company	-0.1866	*			-0.1570	
	0.0745				0.3068	
Information in group settings			0.2966		-0.0348	
			0.2050		0.8908	
Information in individual settings and spontaneous participation			-0.0832	*	-0.0201	
			0.0229		0.6684	
Annual training days			-0.0773		-0.1040	
			0.1852		0.1219	
Constant	3.7164	***	5.1452	***	4.1696	***
	0.0000		0.0000		0.0007	
N	146.0000		146.0000		146.0000	
df_m	15.0000		15.0000		15.0000	
F	0.2963		0.2792		0.3026	
R^2	0.1704		0.1639		0.1574	
R^2_a	0.2558		0.3018		0.3178	
p	0.4467		0.3738		0.3532	

*** $p \leq 0.01$; ** $p \leq 0.05$; * $p \leq 0.1$