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# Social economy entities as a place to develop green skills – research findings

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Abstract: **Background:** Inner potential of social economy entities to drive an economy toward more circularity, energy renewability, sustainable food production opens their organizational schemes to green skills generation. Organizations operating in social economy can play a key role in learning-by-doing, rising consciousness, stimulating new solutions and operations.
**Research objectives:** The aim of the research analyzed in this paper was to identify opportunities for the acquisition and development of green skills among those taking up employment or internship in social economy entities.
**Research design and methods:** Various statistical methods were used to analyze the source material and verify the hypotheses, including: descriptive statistics, Pearson's linear correlation coefficient, Kruskal-Wallis ANOVA test. Testing was performed using Statistica 13.3 software.
**Results:** The conclusions withdrawn from the research conducted confirm the existence of the potential for the development of green skills inherent in social economy entities.
**Conclusions:** The organizational nature of the analyzed entities is conducive to the emergence of skills with less specialized requirements, but with possible qualities conducive to the development of circular behavior. Developing design thinking, creativity, the ability to adapt to future creeds and building resilience are seen as particular opportunities for the development of green skills, as activities involving circular behavior followed along with the desire to acquire these skills.
Keywords: social economy entities, green skills, circular behaviours
JEL Codes: B55, I25, Q59

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## 1. Introduction

Creating a low-carbon and circular economy (CE), recycling industries, recycling management for the better quality of life (Szczygieł, 2020) call for structural changes in a majority of traditional industries and enterprises (production and service processes, product offers). Here is where the emphasis on using skills green skills is put.

The potential of innovativeness of social economy entities (SEE) to drive an economy toward more circularity, energy renewability, sustainable food production encompasses green skills stimulation. The adjustment toward green transition opens for social economy entities an important role to play within learning-by-doing schemes, rising consciousness processes, stimulating new solutions and operations. Environmentally friendly projects aiming to avoid generation of waste, keep raw materials in the economy circuit as long as possible or increase sensitivity to energy savings lead the way toward green transition. To have an effect, green skills

applied throughout an economy are indispensable. A special position is held herein by social economy entities. Their organizational schemes featured by a high degree of self-sufficiency/ self-reliance/self-sustainability, social value creation, quick assessment of the unfulfilled needs and aspirations of society naturally induce the necessity of green skills application. Creating of a range of self-supporting organizational patterns throughout the collective efforts of social economy entities teams to create social benefits support building a movement towards creating a better environment, raising a voice for a green products and practices, making people realize their responsibility, launching products and services in the markets and creating new markets of environmentally friendly products and services. Social economy types of organizations harbor potential to orientate citizens towards environmental considerations, customers toward more care about food waste, workers and enterprises to save money out of energy or water saving attitudes. The necessity of the circular economy and the benefits perceived in the short-run perspective increased the pressure to adjust skills of workers demanded by the industries concentrating on more ecologically sustainable technologies. Growing need for the skills to perform ecologically-oriented tasks introduce the green skills as a promising field to develop.

The paper includes core sections on the circular economy and green skills literature analysis and empirical results of the research that is targeted at identifying opportunities for the acquisition and development of green skills among employers or trainees in social economy entities.

## 2. Literature review: Green skills and the Circular Economy

There is an increased demand for additional skill profiles identified to be applied in enterprises, to be trained, to complement a range of existing job positions.

Therefore, workers are expected to be equipped with the skills to resolve the energy and resource allocation more efficiently. The required skills can be perceived within the dimensions concerning knowledge; tools, machinery, and technological developments; understanding and consciousness of materials used; production of goods and services (Strietska-Ilina et al., 2011).

The property of SEE is to provide small-scale, low-cost solutions adapted to local conditions (Huybrechts et al., 2012), which gives them the power to act, and stimulate them to adopt more innovative and more cost-effective attitudes. In addition, the high level of self-sufficiency, the ability to quickly assess social needs and expectations (Light, 2006), and the adaptive potential geared towards organizational structures based on value creation on the basis of team effort can provide a good ground for formulating answers to problems arising from the search for solutions geared towards stimulating a resource-efficient economy (Korsunova et al., 2018; Wastling et al., 2018), including the development and adaptation of green skills. Social entrepreneurship is marked by processes of arriving at solutions by trial and error within the framework of discovery, selection, failure, destruction with the perspective of multiplying the value of the common good (Valter et al., 2017; Dart, 2004; Peredo et al., 2006).

Social transformation in its sustainability overtones is considered to be significantly catalyzed by social entrepreneurship as the creator of innovative solutions to social problems, mobilizer of ideas, multiplier of capacities and resource (re)allocation, social changer in long-term perspective. The transformative power of social economy entities in realization of social goals is a manifestation of development, in which the need to achieve a social goal is combined at the same time with the search for new ways to social goals and new forms of economic organization. SEE in supporting production of social capital stimulate learning processes in societies

of diverse structures (Hasan, 2005). They participate in developing "effective knowledge and learning for (…) fostering a resilient future for them and their future generations" (Kong, 2019). In using business models to solve social or environmental problems (Rhoden, 2014), they play a major role in the conservation and protection of natural environment sustainability, where green skills are of a key importance. Social enterprises are conductive through their context of day-to-day practice within which citizens are oriented towards social and environmental services and products. Considering that social enterprises' primary aim and structure is explicitly environmental because of their social sensitivity, the costs of their activities (recycling, promoting organic food, saving energy), their endeavors to achieve social aims through the most environmentally sustainable manners (Smith, 2005), their exploration as a space for green skills to thrive is by all means justified.

Green entrepreneurship is an approach to the market involving solutions to tackle local problems emerging from a larger social system. It is attuned to triggering the "cascade of mutually-reinforcing changes that create and sustain transformed social arrangements" (Alvord et al., 2004).

To evolve in the green entrepreneurship domain there are green skills that define the potential to perform in profit-maximizing sphere without endangering natural ecosystem – to establish/constitute sustainable economic prosperity tracks.

Green skills designate and determine the green transition to enable environmentally friendly solutions in production, consumption and investment processes, to offer environmentally-safe products and services (Kowalska et al., 2022), and to support the circulation of products at their highest level of value.

Circular behaviors which are strictly connected with green skills depend on the easiness and effectivity introduced (Zrałek et al., 2020). Through such attitudes as the ones of households that is: using less running water and electricity, being more focused on reducing waste within the processes of buying food and other products, undertaking daily activities being of circular nature to save money as well as to caring about world environment, one can confirm the visible value of the application of small step method, not too complicated actions to undertake, soft skills with no expertise knowledge required (Szczygieł et al., 2022) which also dominate in the organizational culture of SEE.

## 3. Research Method and Material

The aim of the research was to identify opportunities for the acquisition and development of green skills among those taking up employment or internship in SEE. In this regard, not only the declaration of representatives of enterprises was taken into account, but reference was made to specific activities undertaken by social enterprises and concerning the implementation of the idea of circular economy. The article adopted the following research hypotheses:

H1: Work/activities in a social enterprise are conducive to the acquisition of selected green skills depending on the frequency with which CE implementation activities are undertaken in practice.

H2: CE implementation activities are undertaken in social enterprises based on the similarity of these activities.

The article uses data from an international survey of social enterprises carried out by a diagnostic survey method using an online survey questionnaire and an in-depth interview questionnaire. The research was conducted from March to June 2022 in four European Union

countries: Belgium, the Czech Republic, Greece and Poland. The sample consisted of a total of 81 social enterprises, of which 20 each came from Belgium, the Czech Republic and Greece, and 21 from Poland. In-depth interviews were also conducted with 15 of these entities. The sample selection for the study was purposive. The Authors used the available directories of such entities, deliberately making a sample selection by subject of activity. Entities related to the industries assumed in the project (i.e. rural development, renewable energy, reuse and recycling, sustainable housing and agriculture). The average number of years of these entities operation amounted more than 8 years (in Poland it was 7.4 years, in Belgium – 3.1 years, in Czechia – 12.8 years and in Greece – 8.5 years), with the shortest activity being 0.5 year and the longest being 32 years. The longest operating entity was located in the Czech Republic. Due to the limited size imposed by the requirements of the project, the conclusions of the analysis can only apply to the surveyed social enterprises, possibly similar ones operating in the same industries. Nevertheless, the conclusions may provide a starting point for conducting further analysis in the studied area. The Circular Economy behaviors studied included 16 potential activities undertaken by enterprises in this regard, rated on a scale from 1 (never) to 5 (always):

1) If I design my organization's product I consider its life cycle,
2) We reduce or manage post-production waste,
3) We buy recyclable products,
4) We turn off lights in unused rooms,
5) We unplug appliances when we are not using them,
6) We take care of small electronic and technical equipment, thus prolonging its life,
7) When choosing electronic and technical equipment, we are guided by its energy class,
8) We use water sparingly,
9) We use solar panels or photovoltaic collectors,
10) We use renewable energy resources,
11) We share equipment with others or use it on a rental basis (not buy),
12) We use paper more than once (e.g., printed on one side, we use it for dirty writing),
13) We use used electronic and technical equipment (e.g., leased laptop),
14) We use used furniture, repairing or refurbishing it to use again,
15) Repair broken small electronic and technical equipment (e.g. telephone, electric kettle),
16) Repair large electronic and technical equipment (e.g., computer).

Various statistical methods were used to analyze the source material and verify the hypotheses, including: descriptive statistics, Pearson's linear correlation coefficient, Kruskal-Wallis ANOVA test. Testing was performed using Statistica 13.3 software. Considering the significance level $\alpha = 0.05$, the following statistical significance was assumed: $p < 0.05$ – existing statistical significance (*); $p < 0.01$ – high statistical significance (**); $p < 0.001$ – very high statistical significance (***).

## 4. Results and Discussion

The social economy entities surveyed most often took uncomplicated actions to implement CE principles (Figure 1). The circular actions implemented most often by them were primarily related to: turning off lights in rooms that are not being used (behavior No. 4; mean 4.23) and using water sparingly (behavior No. 8, mean 4.19). The surveyed companies were least likely to take actions related to: using photovoltaic panels (behavior No. 9, average 2.1) and using renewable energy sources (behavior No. 10, average 2.21).

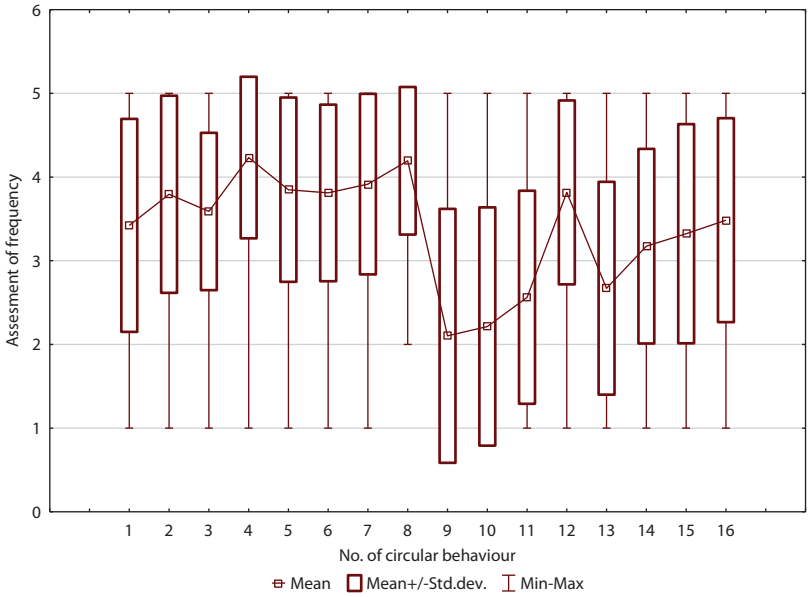


**Figure 1. Distribution of frequency of circular behaviors undertaken in surveyed social economy entities**

Source: own elaboration based on survey results.

The average frequency of engaging in all circular behaviors was 3.39 for the surveyed entities, indicating slightly more frequent (than average) activity in activities aimed at implementing CE (Table 1).

**Table 1. Frequency distribution for the average level of circular behavior**

| | Average | Standard deviation | Minimum | Maximum | Coefficient of variation |
|---|---|---|---|---|---|
| Belgium | 3.28 | 0.52 | 2.78 | 4.62 | 15.85 |
| Czech Republic | 3.19 | 0.96 | 1.38 | 4.75 | 30.04 |
| Greece | 3.27 | 0.65 | 1.69 | 4.0 | 19.69 |
| Poland | 3.76 | 0.44 | 2.81 | 4.6 | 11.74 |
| Total | 3.39 | 0.71 | 1.38 | 4.75 | 20.88 |

Source: own elaboration based on survey results.

This average provides a benchmark for verifying the assumptions made in hypothesis 1. A statistically significant moderate positive linear correlation was observed between the frequency of circular behaviors undertaken and the assessment of the possibility of acquiring green skills by employees or trainees in the surveyed companies. The value of Pearson's linear correlation coefficient was ($r = 0.442$). As for the assessment of opportunities for the development of specific skills, a statistically significant positive correlation was indicated between soft skills and the adoption of circular behavior by the surveyed companies (Table 2). This means

that in the surveyed SEE it is much easier to acquire those of the skills that do not require specialized knowledge, while the circular behavior undertaken seems to be an opportunity for their development.

**Table 2. Pearson's linear correlation coefficient value between the ability to acquire detailed green skills and the overall frequency of circadian behavior**

| Specific skills | Pearson's linear correlation coefficient |
|---|---|
| Engineering and technical | 0.2376 |
| Scientific | 0.1666 |
| Operational management | 0.2880* |
| Monitoring | 0.3160* |
| Design thinking | 0.4001* |
| Creativity | 0.5022* |
| Ability to adapt to future challenges | 0.6008* |
| Building resilience | 0.5561* |

Source: own elaboration based on survey results.

Analysis of differences in the frequency of undertaking circular behaviors by the surveyed social enterprises versus the ability to acquire specific skills showed that they were statistically significant for design thinking ($p = 0.0067$), creativity ($p = 0.0036$), the ability to adapt to future challenges ($p = 0.0003$) and building resilience ($p = 0.0013$). The results of the Kruskal-Wallis ANOVA test further indicated that the differences were in the individual frequencies of engaging in circadian behavior relative to the specific frequency of the declared ability to acquire skills. In other words, a more frequent declaration of the possibility of acquiring green skills was accompanied by a more frequent undertaking of circular practices in a given enterprise. This was particularly true for four skills (Table 3; Figure 2).

**Table 3. Results of the Kruskal-Wallis ANOVA test for differences between the ability to acquire detailed green skills and the frequency of circadian behavior**

| Szczegółowe umiejętności | The value of empirical statistics | *p* for the differences | | | |
|---|---|---|---|---|---|
| | | total | between | | |
| | | | *never* and *often* | *never* and *always* | *rarely* and *always* |
| Engineering and technical | 2.36 | 0.6691 | | | |
| Scientific | 2.32 | 0.6768 | | | |
| Operational management | 4.91 | 0.2960 | | | |
| Monitoring | 6.62 | 0.0848 | | | |
| Design thinking | 14.17 | **0.0067**** | **0.0446*** | **0.0067**** | |
| Creativity | 15.61 | **0.0036**** | **0.0186*** | **0.0100*** | |
| Ability to adapt to future challenges | 20.81 | **0.0003***** | **0.0143*** | **0.0008***** | **0.0247*** |
| Building resilience | 17.96 | **0.0013**** | **0.0249*** | **0.0158*** | **0.0479*** |

Source: own elaboration based on survey results.

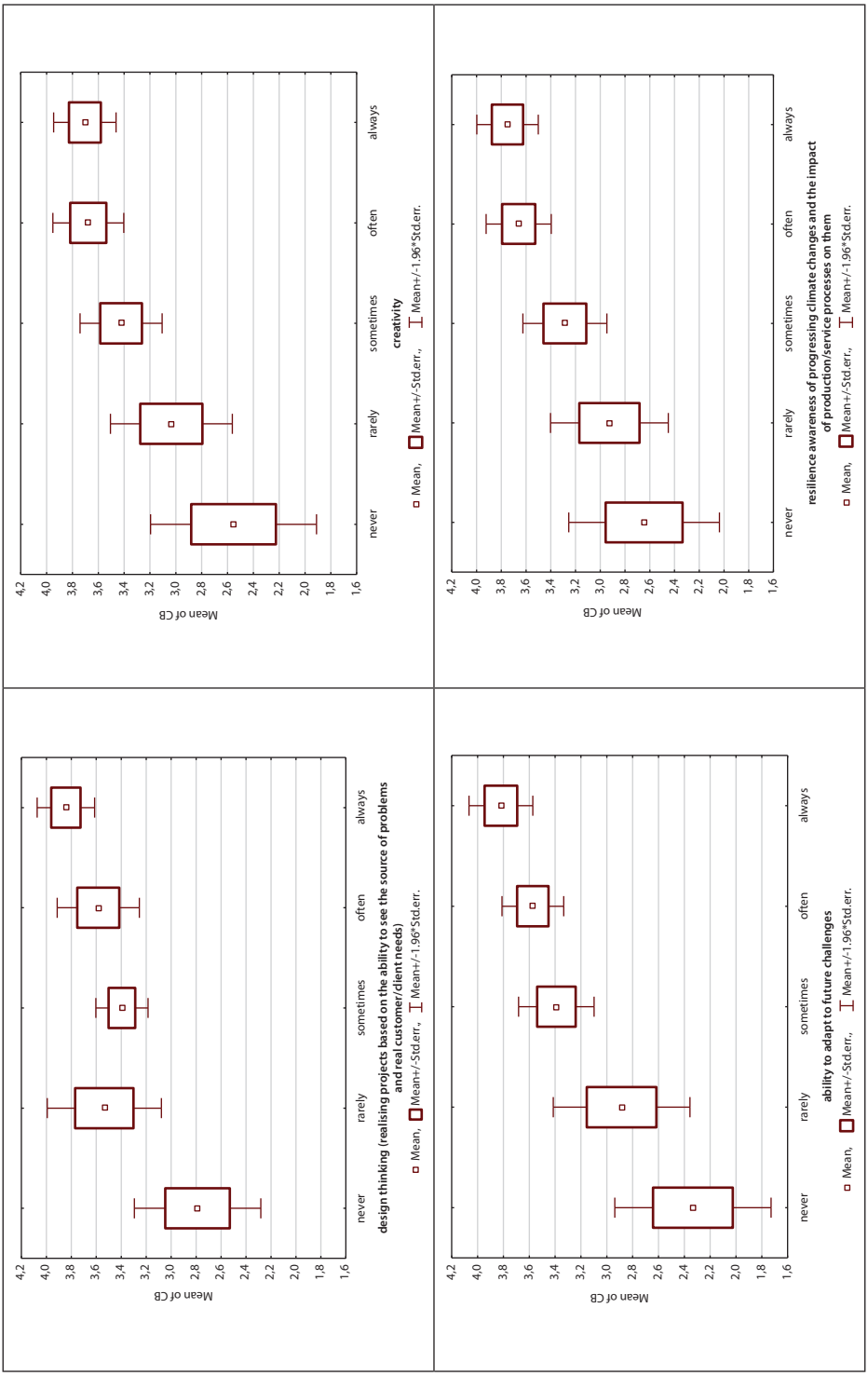


**Figure 2. Declared frequency of skill acquisition vs. frequency of circular behavior in surveyed social enterprises**

Source: own elaboration based on survey results.

On this basis, it can therefore be assumed that the relationship established in the first research hypothesis was confirmed. For those involved in work at the surveyed social enterprises, the possibility of acquiring selected green skills significantly increased if, at the same time, the enterprise declared a higher frequency of circular activities.

Analyzing the patterns of activities undertaken by the surveyed social enterprises, they were classified into similar clusters. Combining behaviors into clusters used Ward's Method, while distances were calculated as the square of the Euclidean distance. The results of this analysis indicated that circular behaviors in the surveyed enterprises could be divided into four groups (Figure 3).

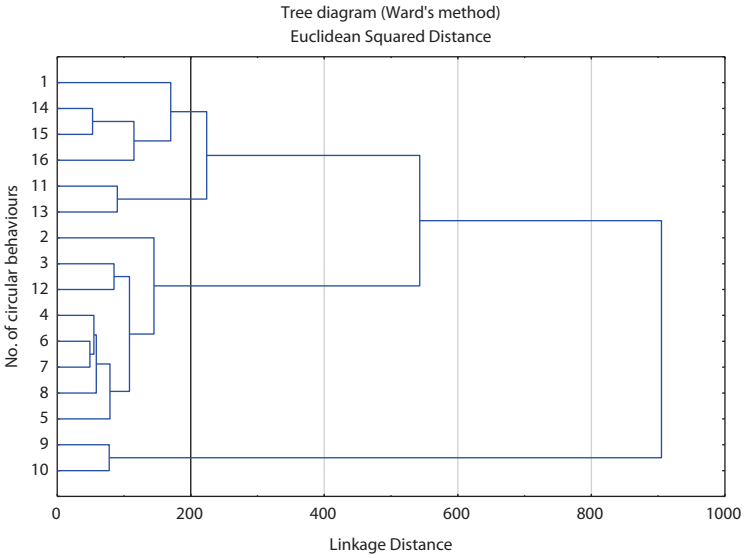


**Figure 3. Hierarchical tree diagram for the declared frequency of circular behavior undertaken in the surveyed social enterprises**

Source: own elaboration based on survey results.

Based on bond analysis, the order of formation of nodes, that is, the similarity of the frequency of undertaking circular behaviors in the surveyed companies, was indicated. Table 4 shows the behaviors included in each group and the order of formation of nodes within each group (starting with the most similar behaviors).

Included in the first group are activities related to repairing electronic equipment or furniture and guiding the design of products through their life cycle. These are related activities because repair and reuse may be accompanied by a reflection on how the product should be designed to make such activities go easily and efficiently. Hence, if social enterprises are engaged in this type of production, they can anticipate needs based on their own experience. The second group includes activities related to sharing and using used equipment. These activities, too, are marked by similarities, probably due to the business philosophy adopted. The change from „ownership" to „access to functionality" of this equipment is often the result not so much of a pro-environmental approach, but of economic viability. The third group includes activities that, although undertaken in different spheres of the enterprise's opera-

**Table 4. Grouping circular behaviors based on their agglomeration results**

| Group 1 | Group 2 | Group 3 | Group 4 |
|---|---|---|---|
| 14. We use used furniture, repairing or refurbishing it to use again<br>15. We repair broken small electronic and technical equipment (e.g. telephone, electric kettle)<br>16. we repair large electronic and technical equipment (e.g. computer)<br>1. If I design a product of my organization I take into account its life cycle | 11. We share equipment with other entities or use it on a rental basis (not buy)<br>13. We use used electronic and technical equipment (e.g., leased laptop) | 6. We take care of small electronic and technical equipment, thus prolonging its life<br>7. When choosing electronic and technical equipment, we are guided by its energy class<br>4. We turn off lights in unused rooms<br>8. We use water sparingly<br>5. We unplug devices from the contact when we are not using them<br>3. We buy recyclable products<br>12. We use paper several times (e.g., printed on one side, we use it for a dirty pen)<br>2. We reduce or manage post-production waste | 9. We use solar panels or photovoltaic collectors<br>10. We use renewable energy resources |

Source: own elaboration based on survey results.

tion, are similar in nature. They mainly concern day-to-day activities related to the daily use of equipment (care, choosing energy-efficient ones), the economical use of resources (electricity, water) or the reuse of materials (paper, post-production waste). Thus, these are activities that do not require complicated actions or large financial or organizational outlays. The final, fourth group includes activities related to the use of renewable energy sources, especially solar energy. These activities are associated with the need for large investments at the outset and require changes in the organization of the organization's operations. Therefore, the second research hypothesis, which assumed that CE implementation activities are undertaken in SEE on the basis of similarity of these activities, can be confirmed in this case as well. In other words, undertaking certain activities related to the implementation of the closed-loop economy may result in the addition of other similar activities.

Summarizing this analysis, it is worth pointing out that some correlations can be seen between specific activities aimed at implementing CE in the surveyed social enterprises (belonging to each of the clusters) and the declared ability to acquire skills (Table 5).

For the first group of activities, a correlation was found with seven skills, although the most common correlation was with the last four (design thinking, creativity, adapting to future challenges, and building resilience). Looking at the circular activities included in this group, one can find a high correlation with the development of these particular skills. In the case of the second group, the correlation with both activities was related to monitoring and resilience-building skills. The sharing of equipment and the use of used equipment can indeed be linked to these two skills, through the need to monitor changes and available offerings in the market and, for example, to optimize costs as part of building advantage (and thus resilience of the company).

**Table 5. Spearman's rank correlation results for declared rang frequencies of circular activities and skill acquisition opportunities**

| CB | Engineering and technical | Scientific | Operational management | Monitoring | Design thinking | Creativity | Ability to adapt to future challenges | Building resilience |
|---|---|---|---|---|---|---|---|---|
| Grupa 1 | | | | | | | | |
| 4 | 0.0696 | 0.0176 | 0.2019 | 0.1594 | **0.3635*** | **0.3424*** | **0.3265*** | **0.3363*** |
| 5 | 0.1405 | 0.0742 | **0.2469*** | **0.2967*** | **0.3846*** | **0.3975*** | **0.4661*** | **0.4302*** |
| 6 | 0.1665 | **0.2742*** | **0.2557*** | **0.2567*** | **0.3753*** | **0.3363*** | **0.4328*** | **0.2355** |
| | 0.2188 | 0.2342 | 0.2306 | 0.1785 | **0.4505*** | **0.4313*** | **0.3459*** | **0.4315*** |
| Grupa 2 | | | | | | | | |
| 1 | 0.2352 | 0.2121 | 0.1514 | **0.2855*** | 0.2045 | **0.3422*** | **0.3764*** | **0.4077*** |
| 3 | 0.0522 | 0.1047 | 0.2333 | **0.2960*** | 0.2089 | 0.2041 | 0.2023 | **0.2784*** |
| Grupa 3 | | | | | | | | |
| | −0.0225 | −0.0165 | 0.0421 | 0.0317 | 0.1989 | 0.1981 | **0.4040*** | **0.3534*** |
| | −0.0756 | 0.0002 | 0.1059 | 0.1512 | 0.1967 | **0.2420*** | **0.4140*** | **0.3522*** |
| | 0.0627 | 0.0556 | 0.0574 | 0.0662 | **0.2349*** | **0.2679*** | **0.3413*** | **0.2732*** |
| | −0.0209 | −0.0051 | 0.0627 | 0.0652 | 0.1475 | 0.2275 | **0.2851*** | 0.1498 |
| | −0.0015 | −0.0333 | −0.0243 | 0.1167 | **0.2486*** | 0.2391 | **0.3493*** | **0.3355*** |
| | 0.2060 | 0.2126 | 0.2268 | 0.2734* | **0.3128*** | **0.3167*** | **0.5110*** | **0.4320*** |
| 2 | 0.1274 | 0.0541 | 0.1823 | 0.0649 | **0.2404*** | **0.4212*** | **0.3805*** | **0.2726*** |
| | 0.0205 | −0.1456 | −0.0176 | −0.1232 | 0.1028 | 0.1188 | **0.2949*** | 0.1598 |
| Grupa 4 | | | | | | | | |
| | 0.1947 | 0.0862 | 0.1137 | 0.1736 | −0.0407 | 0.1382 | 0.0395 | 0.1732 |
| 0 | **0.2484*** | 0.0859 | 0.1068 | **0.2421*** | 0.0052 | 0.2409 | 0.1458 | 0.2353 |

Note: CB – number of circular behavior

Source: own elaboration based on survey results.

For the third group, circular activities were mostly related to the ability to adapt to future challenges. In this case, current, non-complex activities developed habits useful in the future. The view of the relevance of actions related to fighting or adapting to climate change is now widely accepted, so it will be necessary to make changes in the functioning of businesses and entire societies. Undertaking „today" behaviors to counteract the negative consequences of climate change, may provide an advantage „tomorrow." For the fourth group, which included activities related to the use of renewable energy sources, the correlation with engineering and monitoring skills proved to be important. In this case, there is rather little doubt that such activities require such skills and undertaking them by SEE provides an opportunity to acquire and develop them in the employees or associates of such entities.

## 5. Conclusions

The presented conclusions of the empirical research conducted within the framework of this article confirm the existence of potential for the development of green skills inherent in social economy entities.

The organizational nature of the analyzed entities is conducive to the growth on their grounds of skills with less specialized requirements. The formation of these skills is largely due to the nature of the activities undertaken by the entities. The more circular they are, the greater the likelihood of developing green skills among employees and trainees in social economy entities.

Developing design thinking, creativity, the ability to adapt to challenges and building resilience are seen as particular opportunities to develop green skills. However, they are, as it were, a result of what the entity itself undertakes. If there is an active pro-circular attitude in the entity expressed in undertaking such activities, the easier it is to acquire green skills through involvement in the activities of such an entity.

People working for the analyzed organizations had increased opportunities to acquire and develop green skills, and the activities undertaken for circularity were introduced based on the similarity of these activities, which indicates a kind of cascade process, when one activity entails another similar to the previous one.

The four groups of circularity activities identified (Table 4) showed connections to the identified skills during the study: group one of circular activities in particular with design thinking, creativity, adapting to challenges or increasing resilience; group two with monitoring skills (tracking changes, availability of market offers) and increasing resilience (optimizing costs); group three with adapting to challenges by developing useful habits; group four was correlated mainly with engineering and monitoring skills, which are required to operate technology related to renewable energy sources.

Therefore, for the organizations and the society in general, social economy entities represent a particular field of potential to develop green skills. They contribute by constituting the specific circularity–, resilience– and adaptability–led features of organizational culture. The research findings presented above indicate a link between circular activities implemented by social economy actors and the possibility of acquiring and developing green skills. Simple activities that have the effect of reducing the need for new resources can lead to the development of workers' skills potential. This is more important because knowledge of green skills (e.g. from training or awareness-raising campaigns) should be accompanied by a concrete example, even if not directly realised, of behaviour aimed at implementing circular economy principles.

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**Conflict of Interest**

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