Sustain the Abilities of the Future SMEs' Empirical Study

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Abstract. Sustainability of the enterprise is crucial to support long-term business survival and development. Unpredictable events such as Covid-19 highlights sustainability issues in enterprises. This empirical study aims to investigate sociotechnical sustainability in real world work practices. The focus is on employee involvement and problems in work practices concerning the economic, environmental, social, and technological area. The study draws on findings from the 2019 and 2020 analyses on sustainability development in employees' work practices. Overall, there seems to be a lack of integration of sustainability in work practices and this does not support the employees in their efforts to co-create a sustainable future for the enterprise.

Keywords: Empirical study · Sustainability analysis · Work-practices · Sociotechnical analysis

1 Introduction

The research focuses on sustainability in small and medium enterprises (SMEs) based on empirical study. The study draws on findings from two studies one in 2019 and another in 2020 discussing then possible concerns with the current epidemic situation. The continuous development of abilities is a priority challenge in SMEs to sustain their long-term future development. Pandemic and crises situations, for instance, the Corona Virus (Covid-19), demonstrate the need for the business to support multiple sustainability aspects of SMEs in both the present and the future. Due to Covid-19, the flexibility' necessity to build a new way to work from home, tested enterprises' ability to sustain the business [1]. Therefore, the situation highlighted weaknesses to sustainable development.

In this context, technologies combined with social involvement in work-practices seem to increase their relevance to support the enterprises' sustainability. Integration and equilibrium between technologies and employee' knowledge seem to be crucial to adapt to changes [2]. From a socio-technical perspective, appreciation of both social and technological aspects is essential to remain flexible and competitive in a continually evolving context [3]. Hence, the document focuses on an empirical study where sustainability in the economic, environmental, social, and technological area in employee work

practices, were analyzed. Moreover, the study explores sustainability by emphasizing both employee involvement and problems that they face in their work-practices.

The 2020 study is based on dataset resulting from individual trainee analysts project. The project involved 26 trainee analysts, each of whom engaged a different SME. The primary purpose was to gain real world understanding of work practices in SME's. Trainee analysts' investigation developed through semi-structured interviews based on multiple preset questionnaires to develop useful information directly from employees.

Therefore, each trainee analyst interviewed at least two employees (2–4), multiple times, from the same SME to explore enterprise' work practices. Overall, 26 trainee analysts interviewed 86 employees from January 2020 until April 2020 in 26 different enterprises. This analysis relies on data gained thanks to the sustainability questionnaire from Socio-Technical Toolbox (STT) 2020 [4], which tried to incorporate a systemic approach in the research. The questionnaire is composed of 46 questions, set up to be asked directly at the employee, divided into four parts: economic sustainability, social sustainability, environmental sustainability, and technological sustainability.

Additionally, this research also concerns the previous 2019 sustainability analysis project. This was conducted in a similar fashion as the 2020 study, but based on a dataset which contains information about 148 employees in work practices in 40 different SME's, involving 46 individual trainee analysts. That information relied on semi structured interviews, observations and a sustainability' questionnaire of STT 2018 [5], which was based on Triple Bottom Line sustainability vision [6]. Hence, questionnaire 2019 composed of 24 questions divided into the following parts: economic sustainability, social sustainability, and environmental sustainability.

Although the two studies are based on different years' datasets there is the possibility to discuss and compare results regarding sustainability problems. Including the analysis of the level of attention to the creation of value for the future concerning the environmental, economic, and social sphere. Nevertheless, the time gap between the two analysis, the differences in enterprises and involved individuals, the results are similar between the studies.

The next section will describe the background of the STT project and outlines how previous work provided the basis for the empirical study. Subsequentially, the authors will show the empirical study, which started with a comparison between 2019 and 2020 analysis. Then the analysis will focus on the investigation of employee involvement and problems that they face in sustainability work practices. Furthermore, the last part of the analysis will explore employee suggestions to solve the problems that they face in work practice. The paper will then conclude discussing the findings and potential for further work.

2   Background

The analysis purpose is to explore employee work practices to uncover sustainability' issues to change them in orientation to business excellence. Hence, to achieve the scope of the project, STT is the guideline base of the empirical study as offers *"a collection of tools, techniques, and methods which can be used to support organizational change in practice"* [5:3]. This toolbox aims to give tools to discuss work-systems which is the

primary concern of organizational change. Furthermore, STT has been used on SMEs, which are the core of this analysis, and other types of businesses over two decades. The STT has approximately 30 variety of method analysis to support the exploration of work-systems (Sustainability Analysis is one of these). Additionally, to support the methods of the analysis, STT comprises five main areas of study each of them has its questionnaire of interest [interaction, sociotechnical, sustainability, change-potential, information, and cyber-security].

The empirical study relies only on the sustainability part of the toolbox. In this regard, STT's sustainability questionnaire and analysis were modified after the first sustainability analysis done in 2019 in order to develop the current second analysis, which relates to the new 2020 version of the toolbox. The graph (see Fig. 1) shows the process described above, which concern the sustainability questionnaire 2020' creation that is the base of this empirical study. The main changes concern the introduction of technological sustainability and systemic perspective in sustainability analysis and related questions in the questionnaire (one reason to make it explicit was that we experienced that analysts and employees tended to take the sustainability of the technology aspect for granted and thus also often forgot about it).

Following the sociotechnical approach, technological sustainability should be an essential focus as it concerns *"how work practices in a Human Activity System are related to and influence use and change of technological resources"* [4:38].

Technology which is not appropriate and integrated into work could create an issue in practice to the whole system. Therefore, not just development of technology but in particular development of technology use, must be integrated into the social employee and business context, if they are intended to support work in practices and systemic sustainability.
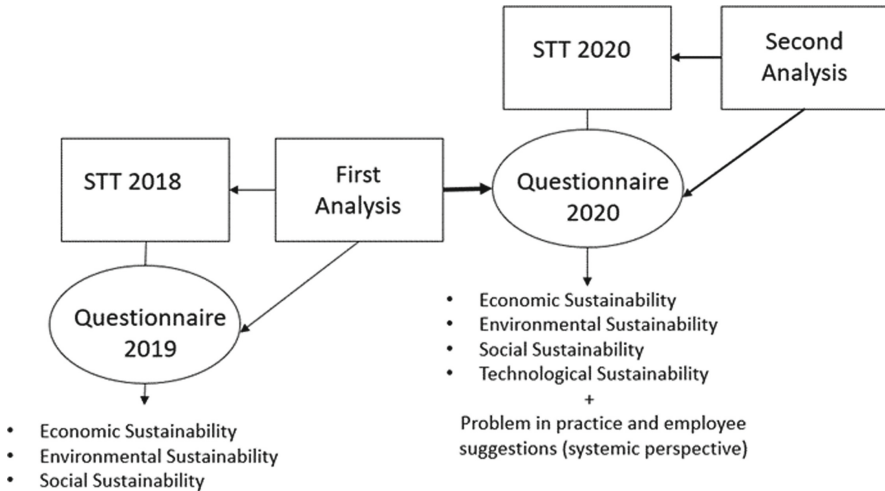

Fig. 1. The creation process of Sustainability Questionnaire 2020.

Systemic perspective in sustainability analysis emphasizes the importance of taking into consideration (integrated) interaction and interconnection of different sustainability areas related to employee' work (in context of the actual work practice). Systemic perspective highlights the need to understand the problematical situation of sustainability in employee' everyday work practices, to change them to improve the whole (work) system starting from employees' point of view. Hence, the sustainability questionnaire includes questions that investigate the problems in employees' work practices and their suggestions on solutions in each of sustainability' area.

3   Empirical Study

The empirical study relies on sustainability' questionnaire contained in STT 2020 [4]. The primary aim of the analysis is to understand if enterprises pursue sustainability in practice. Subsequentially, the analysis focuses on the involvement of employees in sustainability' areas work practices emphasising their point of view.

Hence the analysis explores employees' vision on problems that they face in sustainability practices and their suggestions to solve them. To achieve these scopes, authors focused on the meaning that specific questions aimed to investigate. All employees' responses were categorised and collocated in a range schema according to the question coherence. More employees show coherence and personal involvement in answers, and higher should be the integration of sustainability in practices.

The authors used the same categorisation and ranges method used in the previous first analysis to facilitate the findings' comparison [7]. Therefore, conforming to the previous categorisation, each employee answer was collocated to a range' schema. Subsequentially, to the specific answer, was attributed the mean value of its belonging range (for instance 10, 30, 50, 70 and 90). Thus, more as the answer shows more coherence and personal involvement in sustainability practices higher is its range value. The range schema used in ascending order is the following:

- 0 – 20,
- 20 – 40,
- 40 – 60,
- 60 – 80,
- 80 – 100.

Subsequentially, to evaluate the behaviour of the whole business for each question, the mean was calculated using the number of employees and their average range values. The resultant value was then, re-placed in the range schema describing the general question-related behaviour of the whole enterprise.

3.1   Second Sustainability Analysis

The first approach to the analysis was to investigate the behaviour of enterprises concerning sustainability in their current practices. The study started analyzing questions (see Table 1) intending to uncover the level of problems in all sustainability' areas. The

Table 1. Questions that aim to identify the problem in all sustainability areas.

Sustainability area	Question
Economic	Is local budget surplus carried over to next year?
Social	Is there someone else who can do your job if you are away?
Environmental	Does your job require specific environmental considerations?
Technological	Does your job require specific technological knowledge?

level of the problem is reflected in the knowledge of employees in practice regarding economic, social, environmental, and technological sphere.

The results show a minimum gap between that economic area with 60,87% and environmental area with 57,69%. Those areas present the most significant sustainability problem compared to the other areas. Instead, the social area shows the lower problem having a percentage of 19,23%. Furthermore, analysis concerning technological area ranks the latter in the middle of the four problematical sustainability areas and shows that this field has almost the same percentage (30%) between answers placed in the highest and lowest range.

Despite the different sizes of the sample examined compared to the previous analysis, the economic and environmental areas, which are usually the primary perception of sustainability, maintain their minimum gap still being the most problematic areas. Likewise, social sustainability is still the area which presents the minimum problem in enterprises' sustainability behavior. In this context, as the etymology of word sustainability suggests that it is essential to sustain the ability of the enterprise to create value to achieve long-term future development. Hence, to achieve this information, the analysis focuses on the questions below (see Table 2).

Table 2. Questions that aim to identify the ability to create future value in all sustainability areas.

Sustainability area	Question
Economic	Are you expected to keep spare financial reserves/resources?
Social	Do you get personal mentoring by an expert in your job?
Environmental	Do you get training/advice in environmentally friendly practices?
Technological	Do you get update training on the new technology?

The analysis shows that the technological area has the most considerable attention in the sustainment of employees' ability to create future value with the respective percentage of the high of 45,57% and medium-high 44,30% ranges. The environmental sphere ranks right behind the technological one having a percentage of 45%, and then there is the social area with 30% of high attention to the future. However, considering the percentages in the medium-high and lowest range, the social area in comparison to environmental (respectively having 5% and 20% in the lowest range) presents a higher ability to create

value for the future. Instead, the economic sphere has the most critical situation having 36% in the lowest range, and further none of employees interviewed highly expect to keep spare financial resources as shows the miss presence of values in the highest range.

In comparison to 2019 findings, the economic field still results to be the area with critical attention to the future having the lowest results. In a pragmatic sense, economic value is the one that allows the development of the enterprise, but results show on the contrary that is the last to be pursued. Basically this suggests that there is a lack of incentive for employees to be financially prudent with business budgets. However, enterprises seemed to increase their attention to the environmental area on the one hand while at the same time decrease it in the social area on the other hand. Overall, despite factors such as test sample, size sample, time pass, there are only small differences in the results, the overall findings from 2019 and 2020 analysis seem to be coherent with each other.

3.2   Involvement in Practice

The involvement of each employee in sustainability practices is essential in the evalua-tion of sustainable practices of the whole enterprise. The authors hypothesize that if the employee, who is the smallest part of the enterprise' system, is involved in all sustainabil-ity areas in work practices, there is the interconnection between all areas and integration of the sustainability concept in practice. Hence, if the involvement exists in employee work practices, the enterprise should be oriented toward sustainable development.

Table 3. Questions that investigate the involvement of employees.

Sustainability area	Question
Economic	Is your work involving financial decisions?
Social	Are you involved in training of others in your job?
Environmental	Are you personally involved in recycling as part of your job?
Technological	Do you personally use technology in your job?

Questions in the table above (see Table 3) lead to uncovering if the employee is personally involved in sustainability practices in his/her job. The graph below (see Fig. 2) highlights that sustainability in economic and environmental areas have the lowest involvement of employees in work practices. Instead, analysis shows that the technological area presents the highest employee' involvement placing 22 enterprises on 26 in the highest range.

The environmental and economic sphere, in comparison to 2019 analysis, seems to decrease its involvement in practices. In 2019 the environmental area showed the highest number of enterprises which have the highest level of involvement of employee in practices (15 enterprises on 40) sub sequentially followed by the economic sphere. Instead, the social area seems to increase the level of involvement of employee in work practices. Overall, even though different sizes of samples affected the comparison, none

of the enterprises showed the highest involvement of employees in each sustainability area instead both samples present a low number of enterprises in the highest involvement levels ranges.

Compared to results concerning future value, the technological area, which involves the most employees in practices is also the one on which the enterprises pay the highest level of attention to the creation of value for the future development. Furthermore, from a systemic perspective, the employee could be considered the smallest part who personifies the entire system. Therefore, if the employee is not involved in all four areas, effective sustainability is not pursued in practices as they miss the interaction between the different single sustainability areas, which together as a whole could improve and benefit the development of enterprise. In this context, analysis emphasizes that only 2 out of 26 enterprises involve each employee in all the areas of sustainability. Half of those enterprises additionally show a medium-high level of attention directed towards the creation of value for the future.
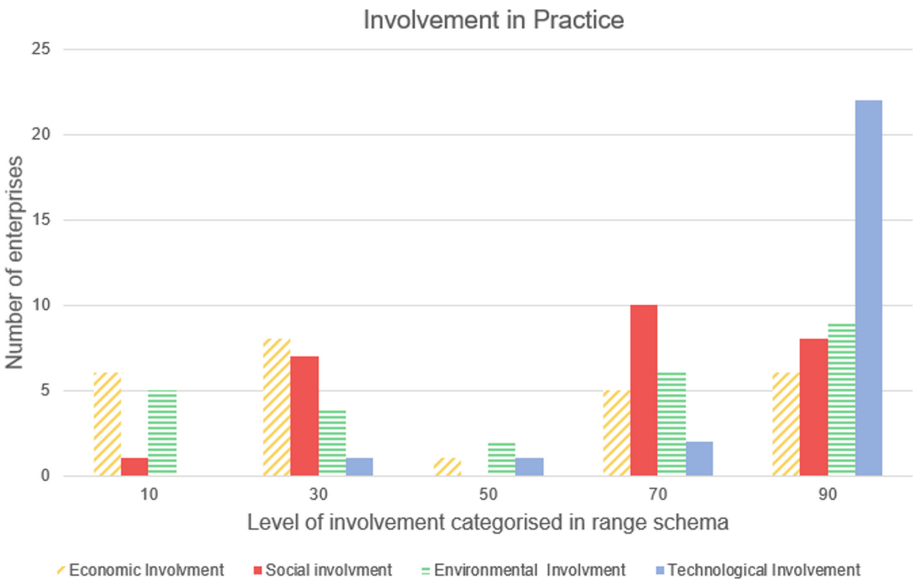

Fig. 2. Level of employee' involvement in work-practices in each sustainability area.

3.3   Problem in Practice

This area of the study relies on the new area' inquiry concerning 2020 research. In the previous paragraph, the problem was analysed under enterprise vision to sustainability to future development (see Table 2). Here, the authors intend to investigate the problem in work practices from employees' point of view. Hence, the focus is to understand if there is any problem in employees' sustainability work-practices and if they think to act in their job following sustainable practices analyzing questions below (see Table 4).

Furthermore, problems observed in all sustainability areas will be compared to problems in practice.

The graph (see Fig. 3) shows that the problem in the environmental area is serious as employees think that their job does not need specific environmental considerations. However, employees also assert to conduct their job respecting the environment showing low problems in practice. In this case, there could be a double problem deriving from enterprise and context, including a disconnection between aspiration and practice.

Table 4. Questions that investigate problem in practice.

Sustainability area	Question
Economic	Do you think to have the appropriate grade of freedom and responsibility in the work-related resource management?
Social	Do you think that your work is done respecting the environment?
Environmental	Do you think that the enterprise gives you the appropriate training for the various work activities?
Technological	Do you have any problem in the use of technology?

Enterprise seems to be unable to convey environmental sensitivity and knowledge concerning environmentally friendly practices to their employee. Additionally, employees, affirm to develop eco-friendly work while, at the same time, they do not express any environmental consideration about their job, do not pay attention to the environment also in their life context. Therefore, the whole context that surrounds the employees seems not to involve them to pursue environmental consideration from their personal to the enterprise context.
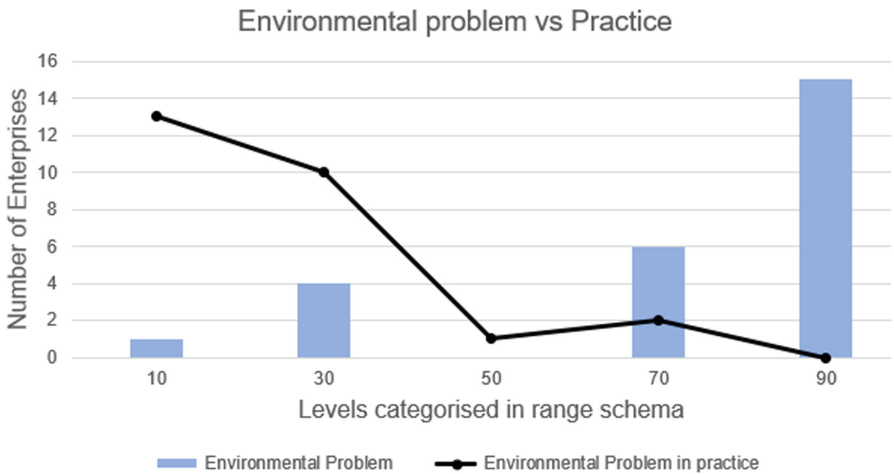

Fig. 3. Comparison between problem and problem in practice in environmental area.

The analysis illustrates that the economic area, as the environmental one, shows (see Fig. 4) a high sustainability problem and a problem in practice placed in the lowest range from employees' perspective. Indeed, even though employees believe to have the appropriate grade of freedom and responsibility in their job, they have low freedom on the financial and resource. Hence, employees seem to be passive as they do not want responsibility concerning the economics sphere, as they are used to receiving orders and passively using the information and resources received.
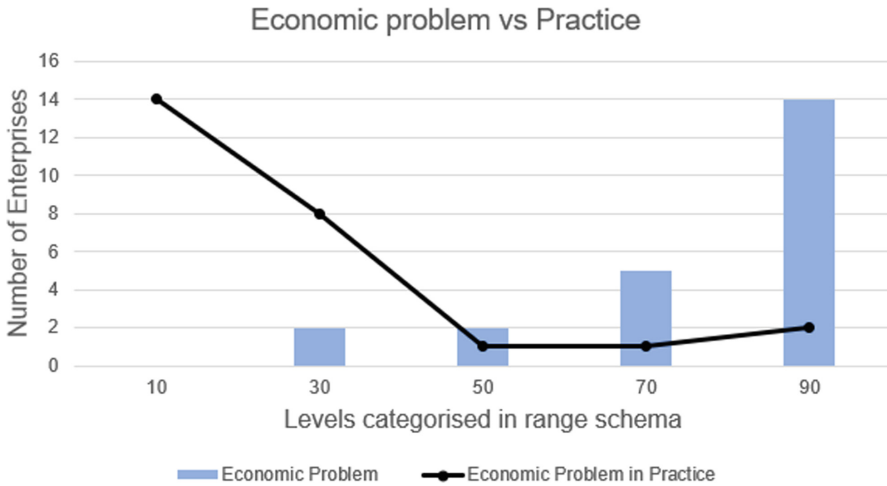

Fig. 4. Comparison between problem and problem in practice in economic area.

The technological area (see Fig. 5) highlights that the problem in employee work practices is lower than sustainability problem for the enterprises. Although employees do not show knowledge concerning technology used in their work practices, they affirm to use those technological tools do not experience any issue. Therefore, enterprises seem to give intuitive technology tools but not the appropriate knowledge to use it.

Furthermore, the graph below (see Fig. 6) describes the relationship between involvement in practice, decision making related to the technological field and the problem that employees have in practice. The graph shows two different scenarios:

- The case of "β" and "ε" enterprise highlight that if employees are fully involved in both work-practice and decision-making process which concerns technology to use in their job, problems in practice seems to lower as are placed in the lowest range.
- In contrary, enterprises "α", "γ", and "δ" underline that when the employees' involvement in decision is low problems in practice tend to increase.

Hence, the involvement of employee in the decision concerning technological tools seems to be a crucial point to avoid problems and increase collaboration in practice.

The analysis on social area shows (see Fig. 7) coherence between results from the sustainability problem and problem in practice. Furthermore, even if there is a high
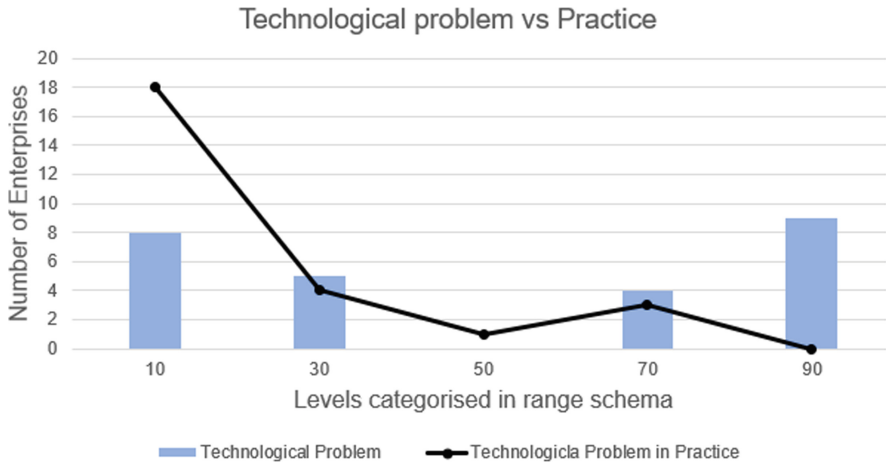
Fig. 5. Comparison between problem and problem in practice in technological area.

involvement of the employee in social sustainability work-practices and a large number of enterprises placed in the lowest range concerning the problem, the percentage of the enterprises with great attention to future social value seems to be low.
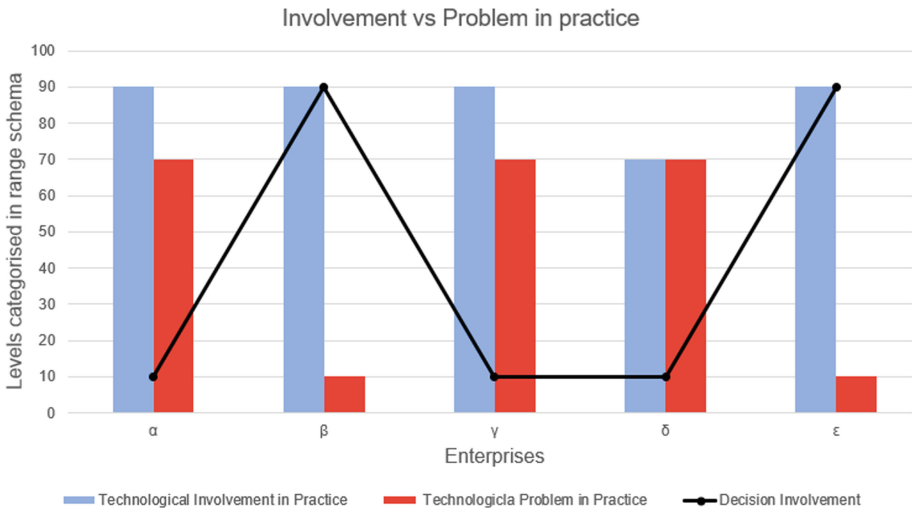

Fig. 6. Involvement of the employee in decision making and work-practice compared to the problem in practice concerning technological area.

However, upon closer inspection, there is a high involvement of employees in only a part of social sustainability work practices. Accurately, employees receive personal mentoring from an expert and are involved in training others; however, enterprises do not seem to include employees to external-stakeholder collaboration. Indeed, results show

a high percentage of enterprise which do not collaborate with the local community and neighboring business. This lack of collaboration could underline the lack of attention of the enterprise to community relationship and ultimately loss of local support for their business.
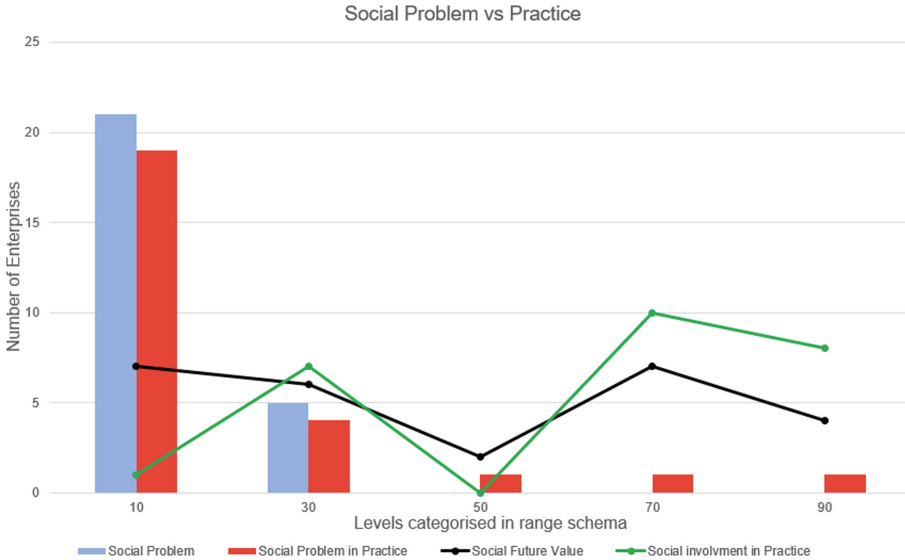

Fig. 7. Involvement of the employee in decision making and work-practice compared to the problem in practice concerning technological area.

3.4   Employee' Suggestions

The study will then directly investigate problems that employees underlined and their suggestions to solve them, aiming to improve their working life. Overall, employees were able to point out the problems that they face in work-practice concerning each sustainability area; however, they do not give any suggestions to solve them. Employees seem to be passive users in the enterprise as they are used to receiving orders and implementing them instead of being integrated into a proactive and collaborative vision.

This managerial method does not allow employees to be proactive. Instead, this method could lead them to be inactive, and thus they could become insensitive to give any suggestions. This perspective could be a problem for the enterprise as it could impede collaboration and integration practice. However, some employees gave some suggestions.

Concerning the economic area, employees suggest increasing the communication between them and management in order to make management understand their real work needs. Furthermore, employees suggest having more financial and resource freedom to deal with less bureaucracy to achieve their work needs and work better. Regarding the social sphere, the employees' suggestion is to receive full training. Employees require

extended time and knowledge, and further, they seem to prefer individual training as the information received will be more effective. Concerning the environmental area, employees suggest incrementing the re-cycling policy reducing the paper waste. In this regard, employees propose to reduce prints having a technological work device. In the technological area, only three employees out of 88 proposed suggestions to possible solve problems. They suggest having external service for the enterprise concerning technologies and having additional training on them.

4   Discussion

Unpredictable events highlight the importance of resilience and flexibility of enterprises and human systems. Covid-19 causes dangerous respiratory diseases and, the vector of transmission is people. The virus, due to its facility of transmission epidemic, caused the lockdown in the world. Findings in Sect. 3 highlight the disconnection to sustainability, and this has an impact on every crisis. The world pandemic situation stood out the "*lack of planning and preparation for the lockdown which has starkly demonstrated the importance of resilience: the ability for human systems to anticipate, cope, and adapt*" which is sustainability roots [7]. Besides, this event sheds light that we are all part of the system being interdependent [8]. Hence, the virus points out lacks which could undermine sustainability in enterprises' practice. Covid-19 affected each area of systemic sustainability, highlighting their inter-dependencies.

Concerning the environmental area, researches seem to confirm that virus is carried out in pollution environments where there is a particulate matter [9, 10]. The particulate matter is in the air and develops in industrially polluted areas increasing the spread of the Covid-19 [10]. In this context, the lockdown of the world has potentially made us more conscious of the environmental damage that enterprises cause. Given the closure of enterprises reduced their pollutant work-practices, finding alternative ways to implement their business, pollution decreased, affecting the environment positively. Hence, there are ways to reduce pollution in favor of the environment. Enterprises have to focus on environmentally friendly work practices and understand the importance to have a healthy environment. Additionally, not only enterprises but the entire context to reduce crowding in closed space, for instance, metro and bus, encourage the use of bicycles to both the health of the environment and the individual. However, plastic pollution, concerning virus protective clothing, for instance, plastic gloves, is increasing due to the unsustainable behaviors of single individuals in their life context.

In this scenario, Covid-19 points out the importance of the social sphere highlighting the fundamental attention to the individual that enterprises and communities should have. Due to the pre-existent lacks in social sphere difficulties in the relationships between employee and enterprise increased. The pre-existent missed communication leads to an increment of the level of stress of employees. Therefore, the lack of presence of physical interaction demonstrates problems regarding employees' involvement and mental health in both life and work context. If an employee feels understood and comfortable and safe in their work context, he is likely to contribute passionately in his work. This dangerous situation before any pragmatical concern for enterprises highlights the value of employees. Enterprises who are adopting physical security measures or adapting their

work in smart ways through technology highlight that they care not only for their business but also for their employees. Hence, employees became the central focus of enterprises valuing their health and knowledge to work together for a common goal. Each brick is crucial to building a house, so do each employee to the business, but this is only possible if the business is robust enough to cope with the changed business situation.

Besides, the complexity' of the situation underlined the importance of care to local communities and the importance of all stakeholders. For instance, Versace, Prada, Gucci, and Armani converted their business to produce useful materials for the world emergency, increasing their social value in the community [11, 12]. Giorgio Armani affirmed that "*the moment we are going through is turbulent, but it also offers us the unique opportunity to repair what is wrong, to regain a more human dimension*" which pursues the authenticity focusing not only on profit but also on different value creation [13].

Regarding the economic sphere, Covid-19 captured the no presence of economic sustainability showing most problems in practices. Economic sustainability, under a pragmatic perspective, is the first to be pursued. Hence, when there is a miss in practices is also the first area to be affected. Enterprises are not prepared to face the pandemic situation under economic sustainability perspective as they do not have sufficient diversification and flexibility in their business model and practices. Businesses which are based and dependent only on physical shops or services suffer majorly do not having the possibilities to carry on their activities. However, businesses that have an online presence do not seem to be affected in the same grade by the crisis. Economic sustainability could be achieved following the Nintendo example, which invests in different kinds of businesses involving managers in long-term prospects treat them as family members in the company and trusting of their teams [14].

In this context, technology use and adaptation seems to be essential to pursue business goals. Covid-19 pushed the limits of technologies, highlighting ways how technology could be useful to pursue sustainability in practice. This pandemic period accelerated technological innovation in almost every field, effecting long term changes in businesses [15]. Technological tools, now more than ever, are crucial to reducing distances to able smart working to increase social sustainability and individual health. Overall, from the pandemic situation caused by Covid-19 emerges the need to develop businesses under a more sustainable vision underlying lacks and possible changes to implement in practice. In this context, a holistic and socio-cultural approach based on dependencies to context is crucial to pursue organizational changes.

5   Conclusion

One of the main themes coming out of this research was that employees are not involved directly in key decision-making aspects within the context of their professional work. Abilities and capabilities in practice are the essential concern that underpinned competitive advantage designed to support enterprise development in incessant changes a context full of un-predictable events. One of the events which caused changes and had the most influence is the Covid-19 virus. The latter highlighted the missing ability and capabilities of enterprises to face critical situations pointing out their sustainability lacks. In this context, abilities, capabilities, and the involvement of each stakeholder in practice

are crucial to achieving a common development goal. The involvement, capability and the ability of each employee are essential to able flexibility. Hence, employees should have responsibilities, resources and be valued in their practices both in knowledge and abilities to trigger their proactive actions which could be essential to sustain and support the business in the long term.

The study emphasizes the lack of proactivity of employees, highlighting that the current managerial approach could be counterproductive as a way to support the business resilience and robustness long term. Employees overall suggest increasing knowledge sharing and communication, which are the fundamental factors underpinned to collaboration. Collaboration is the base for community support, evolution and progress being essential to develop competitive advantages. In the movie "Beautiful mind" Nash suggests that *"best result will come when everyone in the group doing what's best for himself and the group"* [16]. Hence, enterprises need to work together and collaborate with their stakeholders into the respect of sustainability goal. However, analysis of employee vision underlined that they are not fully involved and integrated into sustainability work practices and emphasize a significant lack of collaboration in practice.

In future research, it could be interesting to understand how and at what level employees feel involved in sustainability introducing direct questions in the future oriented questionnaire. It could be useful to understand in what way employees would like to be involved in each sustainability areas. A question aims to explore the level of involvement, for instance, could be "How much do you feel involved in the economic sphere to a scale from 1 to 5? And How?". Furthermore, a future analysis could concern how Covid-19 impact on sustainability in practices comparing the current and future practices from employees' point of view. To this scope, questions that could be integrated into the 2021 questionnaire will focus on the development of any changes in sustainability practices. For instance, "Do you notice any changes regarding environmental practices before and after Covid-19? If yes, can you describe it?".

In conclusion, enterprises do not seem to integrate sustainability in work practices in any significant way, and used technology solutions do not seem to be integrated into an overall business oriented sustainability vision.

According to sociotechnical perspective, balance technology and the human factor enables the development of enterprises. Employees knowledge join to technological tool permits enterprises to be flexible and capable to face a critical situation. Therefore, it is crucial to involve employees to co-create and have a future regenerative development [17]. This inclusion could improve not only enterprise context but also employee life context introducing sustainable vision to the whole system. Enterprise benefits on drawing on the full knowledge and support of employees. Hence to sustain the capability and the ability of each part of the enterprise's system, and to favor co-creation, shall designate the development of sustainability in practice.

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