Learning For Sustainable Development Through Innovation In SMEs

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ABSTRACT
The aim of this article is to investigate different types of innovation companies can develop, the relationship innovation and learning/training, defined as sustainable factors in small and medium sized enterprises (SMEs). An innovative learning program for SME employees is described, which was developed and tested within a European project. The findings, also as a consequence of the learning program offered to SMEs, prove that SMEs can develop and use innovative training/learning to achieve suitable competences to improve the impact on sustainability in their organizations.

INTRODUCTION
The notion of "sustainability" is powerful and has different definitions in different contexts most of them referring on environmental aspects. In this paper we use the definition of World Commission on Environment and Development (WCED 1987), where sustainable development is defined as "development that meets the needs and aspirations of the present without compromising the ability of future generations to meet their own needs."

Sustainability achieved by innovation includes improving business operations and processes in organizations to become more efficient, reducing costs and waste (https://hbr.org/2009/09/why-sustainability-is-now-the-key-driver-of-innovation)

Thus, sustainable development became, for many companies, a goal in itself, integrated into their strategic mission and vision and now universally referred to corporate social responsibility.

The sustainability for small and medium sized enterprises (SMEs) consists of achieving a balance considering financial resources, time, competences and material resources, and social and economic environment in which it operates (Burlea-Schiopoiu, A & Remme, 2017). Lack of financial resources, time and suitable competences due also to not corresponding learning/training are often mentioned as factors that prevent SME to develop a sustainable strategy and to consider the investment in sustainability as a competitive advantage.

The aim of this article is to investigate different types of innovation companies can develop, the relationship innovation and learning/training, defined as sustainable factors in small and medium sized enterprises (SMEs). An innovative learning program for SME employees is described, developed and tested within a European project. The findings, also as a consequence of the learning

program offered to SMEs, prove that SMEs can develop and use innovative training/learning to achieve suitable competences to improve the impact on sustainability in their organizations.

LITERATURE REVIEW

Four different types of innovation mentioned in https://techblog.constantcontact.com/software-development/types-of-innovation to show various ways that companies can use: Incremental, Disruptive, Architectural and Radical.

Incremental Innovation is the most common form of innovation. It utilizes existing technology and increases value to the customer (features, design changes, etc.) within existing market. Almost all companies engage in incremental innovation in one form or another i.e. by adding new features to existing products or services or removing ones.

Disruptive innovation finds a niche and creates a new market, a value network that eventually moves up from the low end to the mainstream market. The companies using this type of innovation would like to attract as many customers as possible while developing a product that (due to digital technologies) is accessible to more people.

Christensen (1997) argued that disruptive innovations can hurt successful, well-managed companies, others countered that "constructive" integration of existing, new, and forward-thinking innovation could improve the economic benefits of these same well-managed companies, once decision-making management understood the systemic benefits as a whole. Christensen (1997) distinguish between "low-end disruption", which targets customers who do not need the full performance valued by customers at the high end of the market, and "new-market disruption", which targets customers who have needs that were previously unserved by existing incumbents.

Architectural innovation means taking the lessons, skills and overall technology and applying them within a different market. This innovation increases new customers as long as the new market is receptive. The risk involved in architectural innovation is low due to the reintroduction of a proven technology. It requires tweaking to match the requirements of the new market.

Radical innovation is what more people think when considering innovation. New industries (or swallows existing ones) involves creating revolutionary technology. The airplane, for example, was not the first mode of transportation, but it is revolutionary as it allowed commercialized air travel to develop and prosper. It is important to find the type(s) of innovation that suit each company and turn those into success.

Following the OECD (2010) definition of innovation, three different types of innovation outputs can be mentioned: product, process, and organizational (or managerial) innovation (https://www.oecd.org/site/innovationstrategy/defininginnovation.htm).

Product innovation refers to the introduction of a new (or significantly improved) product or service in the firm's portfolio offered to the market, influencing i.e. sales and product quality. Process innovation involves the introduction of new methods of production, which may influence different performance measures (e.g., production costs, product quality, and productive capacity). Organizational innovation consists of changes in the management of available resources and

routines in the activities carried out by the firm, thus influencing i.e. productive capacity, efficiency, and product quality.

Often managers choose between the largely social benefits of developing sustainable products or processes and the financial costs of doing so. Companies that have started to innovate go through five distinct stages of change. They face different challenges at each stage and must develop new capabilities to tackle them like follows https://hbr.org/2009/09/why-sustainability-is-now-the-key-driver-of-innovation:

Viewing Compliance as Opportunity
The first steps companies must take on the long march to sustainability usually arise from the law. Enterprises that focus on meeting emerging norms gain more time to experiment with materials, technologies, and processes.

Making Value Chains Sustainable
Companies develop sustainable operations by analyzing each link in the value chain. First they make changes in obvious areas, such as supply chains, and then they move to less obvious suspects, such as returned products.

Designing Sustainable Products and Services
At this stage executives start waking up to the fact that a sizable number of consumers prefer eco-friendly offerings, and that their businesses can score over rivals by being the first to redesign existing products or develop new ones. In order to identify product innovation priorities, enterprises have to use competencies and tools they acquired at earlier stages of their evolution.

Developing a new business model
It requires exploring alternatives to current ways of doing business as well as understanding how companies can meet customers' needs differently. Executives must learn to question existing models and to act entrepreneurially to develop new delivery mechanisms. As companies become more adept at this, the experience will lead them to the final stage of sustainable innovation, where the impact of a new product or process extends beyond a single market.

Creating Next-Practice Platforms
Next practices change existing paradigms. To develop innovations that lead to next practices, executives must question the implicit assumptions behind current practices.

In connection with sustainability needs, they will drive future disruptive innovations. Innovations that disrupt established businesses exist since a long time but many future examples will be driven by the sustainability challenges the world faces. Disruptive innovation (Christensen, 1997), as a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, sometimes can displace established competitors.

When companies would like to innovate faster than their customers' needs, most some of them tend up producing products or services that are actually too sophisticated, too expensive. An innovation that is disruptive allows many consumers access to a product or service that was historically only accessible to people with a lot of money or a lot of skill.

Characteristics of disruptive businesses include lower gross margins, smaller target markets, and simpler products and services that are not attractive as existing solutions referring performance metrics.

A disruptive business model can generate attractive profits, but it is necessary that companies do not neglect sustainable goals.

In order to achieve cutting-edge innovation, disruptive innovation and sustainable grow should be not alternative to one another, but rather complementary measures. (https://online. campbellsville.edu/ business/sustaining-innovation-vs-disruptive-innovation/)

Disruptive innovations have transformed society through the ages, from the horse-drawn plough to the first steam engine to the personal computer and the smartphone. They improve lives, but the impacts can be often in ways that are quite unexpected.

Sustainability is now the driving force for the emergence of many disruptive technologies.

IMPLEMENTING LEARNING PATHS FOR SUSTAINABILITY

Every company interested in sustainability through innovation and change should develop critical achieving learning capabilities to meet its goals. It helps to increase the rate of innovation leading to new products and processes, as well as cost savings from energy efficiency and reduced materials use and waste. At the same time, companies can strengthen and reinforce existing organizational learning efforts when sustainable development objectives become part of a corporate vision. Employees should understand and identify with the values represented by sustainable development; it often aligns personal values with business goals, so staff bring exceptional energy to efforts in sustainable development if they have suitable competences.

For these reasons, linking a sustainable development initiative with a culture of learning and change is critical to company success (https://www.adlittle.com/sites/default/files/prism/1998_q4_13-17.pdf).

Smith and Yanowitz (https://www.adlittle.com/sites/default/files/prism/1998_q4_13-17.pdf) underlines three elements of organizational learning which are essential to success when companies make innovation; compelling aspirations, a focus on collaboration and rethinking, and a whole-systems approach to solutions and follow-through. The collaborative effect of these three elements, interplay with the core issues of sustainable development, can build capability for innovation.

Compelling Aspirations

Linking a company's aspirations with personal visions creates a „pull" for change, which is far more powerful than the „push dynamic of traditional, highly directive management".

Rethinking and Collaboration

The benefits of vision and aspiration that bring together collective and personal values, the power of people breaking free from their mental and organizational feelings .are great. Companies that align with sustainable development will need new mental models for thinking about their

businesses and new ways to reach across internal and external boundaries to meet sustainable development challenges.

Whole-Systems Outlook

Sustainable development is essentially about systems thinking – driven by a newly reenergized appreciation that the economic, environmental, and social spheres are interdependent. Actions to meet goals in one of these spheres affect the others and are helped or hindered by them.

Knowledge and skills will have not more impact in the classroom but achieving them in real-time to groups and teams in companies help to develop approaches for building the business and improving performance.

LEARNING FOR SUSTAINABILITY IN SMES

The terms 'learning' and 'training' are often commonly used, but Kitching (2007) differentiates between 'what employers do (provide training)' and 'what employees do (learn)' (https://doi.org/10.1080/13678868.2019.1658368). In this part the view of employees is considered as far as possible as so much research and literature in the SME arena only considers the employers' perspectives (Higgins, Mirza, and Drozynska 2013; Susomrith and Coetzer 2015).

Stabile and Ritchie's (2013) underlined that training is a one-dimensional, often low-level, task concerning a specific skill or behaviour while learning is a multi-dimensional approach which seeks to develop an individual and/or to solve a problem which may result in a persistent change in behavior and increased skill levels, perhaps through physical transformation in the brain or self-directed development. Learning is a 'responsive, rhetorical and argumentative process that has its origins in relationships with others' (Holman, Pavlica, and Thorpe 1997).

SMEs are considered organizations with up to 500 employees (EC, 2014) but they are not a homogenous group. Factors such as the skills and infrastructure necessary to develop and support suitable learning environments are different in a micro-SME, with less than ten employees, to such requirements in a mid-sized (European) SME, with between 100–150 employees, and different in a Medium Enterprise with nearly 250 employees (Attwell 2003;).

It is important to consider also other issues which could influence such an organization's approach to innovation and learning, sector/industry, its maturity as an organization and whether or not it has a Human Resources (HR) manager/department. Also important are the owner-manager's vision for innovation and his/her desire for it to grow, both of which are likely to change as time progresses and as the SME grows and moves through different organizational stages (Chartered Institute for Personnel and Development (CIPD) 2015; Innes and Wiesner 2012; Saunders, Gray, and Goregaokar 2014).

 The link between innovation and SME business performance has been extensively analyzed, and, in most cases, shows the existence of significant impacts of innovation on alternative business performance indicators. Some research finds positive effects while others reveal negative effects. Spence (1999) describes SMEs as enterprises focused on operational duty and quite disconnected from the general business environment, reactively responding to urgent issues. Many SMEs view sustainability as a risky activity, an investment with no significant financial return. It is not probably

that SME invest a significant amount of money in a sustainable innovation program, as they would receive less publicity for the social responsibility actions, as opposed to large companies (Lee et al., 2016).

There is not much reported research into learning/training in SMEs also not in relevant academic journals (Nolan and Garavan 2016; Short and Gray 2018). SMEs still play a vital part in economies throughout the world. They comprise approximately 99% of all businesses, provide over 50% of employment and can generate around 50% of national turnover (European Commission 2019; Federation of Small Businesses 2019).

Due to their lack of homogeneity, individual SMEs often have their own language and customs (Devins and Gold 2002) which can hinder any research into their behaviour. Additionally, the lack of learning in SMEs can arise from the inherent nature of SMEs which may hide such learning as much learning in SMEs is socially situated (Devins and Gold 2002) and appears to take place as part of their everyday, operational business. Learning is an integral part of everyday lives. SMEs are also typically seen as informal organizations (Roy 2009) which is reflected in their learning, although employees often seem to consider that 'only formal training is "real" training' (Coetzer and Perry 2008). Nature of learning in SMEs can result in it being overlooked (Geldenhuys and Cilliers 2012; Higgins and Aspinall 2011; Van Woerkom and Poell 2010).

Sheenan, Anonioli and Della Torre (2016) arrived at the conclusion that learning/training and development, together with strategic human management practices are the only practices significantly correlated with all three performance indicators: innovation, financial results and employee turnover.

Kotey and Folker (2007) underlined that despite the fact that SME's owner/managers tend to acknowledge the importance of training and development in improving a company's performance, SMEs are generally reluctant to do not provide formal employee training.

The learning/training of employees in SMEs is mostly informal as an unplanned activity and usually achieved through on the job training and there is usually little or no provision for employee development that involves releasing the employee from the job for short periods of time. Owners–managers of SMEs have the responsibility for a systematic approach to training based on needs assessment of the employees (Burlea-Schioüpoiu, 2017) but, they consider formal learning/training as too expensive, they tend to take into account the cost of the training as well as the lost productivity while the employee attends the training.

The SMEs usually think on a short-term horizon, due to the high levels of risk and uncertainty they face in their daily activities. Considering that the benefits from training and development are usually long-term, investment in employee training and development appear unattractive for SMEs. Furthermore, SMEs face the risk of losing the trained employees to competitors, mainly because of the limited internal promotion opportunities that an employee has within their own organizations.

SMEs which started to be innovative often become more profitable, they enjoy greater customer loyalty, they see a growing commitment from their employees, and they more readily cement their relationship with suppliers.

One survey found that 70 per cent of SMEs that had adopted a sustainable business approach did so to secure new business, while 54 per cent did so simply to save money (https://www.cpacanada.ca/en/business-and-accounting-resources/financial-and-non-financial-reporting/sustainability-environmental-and-social-reporting/publications/sustainable-business-practices-key-elements-smes.

In connection with sustainability, it is important that SME learn about
- the importance of taking a broad view of sustainability
- how to define what sustainability means to company
- how to engage all stakeholders
- the importance of communicating the strategy widely across the company
- how small changes can make a big difference
- how to tie sustainability to profitability
- that the biggest sustainability investment is usually in the management of time

ACHIEVING COMPETENCIES FOR SUSTAINABLE DEVELOPMENT

Referring the key competencies for sustainable development, there is no agreement. UNESCO (2005) formulated in its "International Implementation Scheme" on the World Decade for ESD: "Creating a more sustainable future will not occur simply by increasing the amount of education; instead, it is an issue of content and relevance. Questioning, rethinking, and revising education from preschool through university to include more principles, knowledge, skills, perspectives and values related to sustainability in each of the three realms—environment, society, and economy—is important to our current and future societies. This should be done in a holistic and interdisciplinary context, engaging society at large, but carried out by individual nations in a locally relevant and culturally appropriate manner".

Most frequently mentioned competencies in references are interpersonal and interaction skills, ability to work in an interdisciplinary team, identify and solve problems, creativity, ability to make decisions, skills in the use of ICT, strategic competency and collaboration.

The analysis of existing publication shows that research skills are often mentioned to contribute to development of sustainable innovation, though from a general perspective, or from the sidelines of the learning process.

Data analysis is important for business. With data analysis employees will be able to make innovative decisions on customer trends and behavior prediction, increasing business profitability and drive effective decision-making. Once data analysis method is adopted in company business, the causes of particular events based on the data can be analyzed, understand the objectives and directives for own r business, and you will have technical insights of the business using an easy to understand language.

Data analyses also give rough idea on the future trends in consumer behavior that will enable to develop products and create services, maintain a sharp edge advantage over your competitors.

With a good data analysis system, the sectors of your business that are using unnecessary finances and the areas that need more financing can be determined. The ability to decide on what type of advertisement methods to use, the goods to produce and the target customers offers the advantage of costs that would otherwise be used in unnecessary activity. Data analysis makes every action precise and straight to the point to avoid filler activities that have no value added to the business.

Every problem that arises in a business can cause a major halt in the operation of the business which may cause a lot of losses that are bad for the company. Data analysis assists the organization to make an informed decision on running of the business and providing information that could help the business to avoid any occurrence of loss. The data analyzed can be used to detect a malfunction in the business system and the technical systems that show any problem in the quality and quantity of production (https://businesspartnermagazine.com/5-reasons-why-data-analysis-is-important-for-every-business/).

"Reflection" is something people don't usually allow to experience because they are too busy getting on to the next task at hand, hurrying to the next assignment, too busy grappling with the next hurdle rather than analyzing why a certain way about work just completed to be changed.

Project managers or a project team member should take time to "reflect" in a written form at regular intervals about own experiences on projects, what observations experienced when facing new hurdles, what paths of accomplishment have just be taken to reach an innovation, what thoughts would be shared with another person who might be faced with a similar challenge (https://www.projectsmart.co.uk/why-is-reflection-so-important-to-project-lessons-learned.php).

In order to provide best practices for implementing innovation SME employees should try to solve a new problem, seeking a problem-solution fit that makes a connection (the first breakpoint) with the environment (NIST). This process requires using inquiry and observation to identify the problem, experimentation and finding a solution to solve the problem.

Interdisciplinary Problem-based Learning (iPBL) combines two teaching methods: Problem-based Learning (PBL) and Interdisciplinary Learning. PBL guides students to follow seven steps to problem solving while students are assigned different roles in their group (David, 2013; Johansen, 2000; O`Brien et al., 2019).

While combining Problem-based learning and Interdisciplinary Learning, the student-centered pedagogy iPBL enhances students understanding of complex problems regarding innovation and sustainability and facilitates interdisciplinary thinking towards an integrative perspective and a holistic approach to scientific and practical solutions.

Example
The European project Smart Research as a 21st Century Skill for Business with partners from Germany, Ireland, Spain, Lithuania and Romania, supports different forms of innovation and learning/training within SMEs (Hamburg, I. & Vladut, G., 2019; Hamburg, 2019). Within an interdisciplinary learning program, the employees are introduced to workplace research skills. The purpose of workplace research is to gather information to aid business related decision-making and

it involves a systematic and objective process of collecting, recording, analyzing and interpreting data for solving problems and exploring different innovation opportunities.

As progress through each of four modules, the learn about different forms of innovation and manage a small-scale research project in own organization to allow to implement a new business innovative opportunity. Firstly, learn to identify sources of business opportunities from differing perspectives, and to design and undertake appropriate preliminary research to investigate the potential impact of these opportunities on your organization. Secondly, they should acquire the skills necessary to gather and analyses the relevant data to implement a business opportunity or an innovative idea. Thirdly, they learn how to leverage and manage resources that are available to bring a business opportunity to implementation stage. Finally, realize the skills to evaluate the impact of own research project, reflect on findings and learn from these by identifying future opportunities.

Research skills will enable to proactively seek new opportunities for own company, make data driven decisions to implement these opportunities and evaluate the impact of them on the business performance.

The program, Smart Research as a 21st Century Skill for Business, is delivered using iPBL and inquiry-based learning. The participants have a problem or a question to be answered in your workplace and apply research skills to gather the knowledge needed to address the issue or the opportunity. The learners can work collaboratively and leverage resources that are available to design and implement a workplace innovative research project.

A number of online tutorial sessions were organized. There is an online discussion board which allows to interact with tutor and fellow learners.

CONCLUSIONS

Our research and developments offer new insights into sustainability and innovation and the connections with the corresponding learning/training in SMEs.

Different forms of innovation and training are being implemented more and more by European SMEs starting to understand their potential. Due to limited resources (financial, time) particularly during the Corona time and not enough cooperation between SMEs, research and education, existing learning/training approaches have to be improved. Within our next projects we would like to work together with SMEs to help them to develop learning/training facilities to improve their innovative skills for sustainability.

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