

Committee: Economic and Social Council (ECOSOC)

Issue: Improving SMEs competitiveness and entrepreneurship in Industry 4.0 for productivity and inclusive growth and development

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INTRODUCTION

SMEs are key to strengthening productivity, ensuring inclusive growth and development; it has been proved that SMEs have greatly impacted employment creation, innovation and competitiveness. However, SMEs are currently facing critical difficulties in the digital transition, or else in transitioning toward the Industry 4.0 paradigm, a serious problem considering their potential to boost an economy. Therefore, international organizations including the UN are trying to find ways to help SMEs in this digital transition, to aid SMEs in creating more competition through new technologies and production levels.

The Industry 4.0 is a manufacturing paradigm, in a sense applying the Internet to manufacturing. The vision of this fourth industrial revolution is based on industrially planted automation and the mechanized production of items. Information Technology (IT) infrastructure allows the increase in supply chains and products by enhancing the functions of the production systems. By integrating SMEs in Industry 4.0, these smaller sized companies become more equipped and capable of handling digital transformations and highly successful technologies which can be applied in the company's processes to further innovate them. This will have a huge effect in the long run as it will improve their competitiveness and entrepreneurship and will fully adhere to their characterization of being critical components of the economic sector.

It is evident in today's society that technology has made exemplary efforts of progress and bringing innovation in our daily lives. Its exponential rise has left a positive mark in fields such as transportation, agriculture, medicine, and in our case, business. By instituting SMEs in this specialized industry, SMEs will be able to enhance their public image by claiming a technological status. This will lead to enhanced communication among the

workforce and the customers, accelerated research and development strategies and help to understand cash flow needs. Through the realm of technology, SMEs come to realize the societal demands so as to further connect with their consumers while assisting the needs they seek and providing them with the results they requested. Despite the countless opportunities that the industry offers, many manufacturers perceive its adoption as an obligation more than an opportunity and something that is relegated to an IT department rather presented as an initiative. It is essential that they acknowledge the fact that companies which embrace Industry 4.0 will allow them to remain competitive and innovative.

DEFINITION OF KEY TERMS

Industry 4.0

Industry 4.0 also called the Industrial Internet of Things (IIoT) is known to be the current trend of data exchange and automation in manufacturing technologies. It is a term that is referred as the Fourth Industrial Revolution.

SMEs

SMEs stands for Small and Medium Sized Enterprises. The European Union defines an SME as “A legally independent company with no more than 500 employees.” There is no universal definition, but businesses fall into the SME category based on their turnover, their number of employees and their balance sheet. The term may also vary in different countries and in different industries.

BACKGROUND INFORMATION

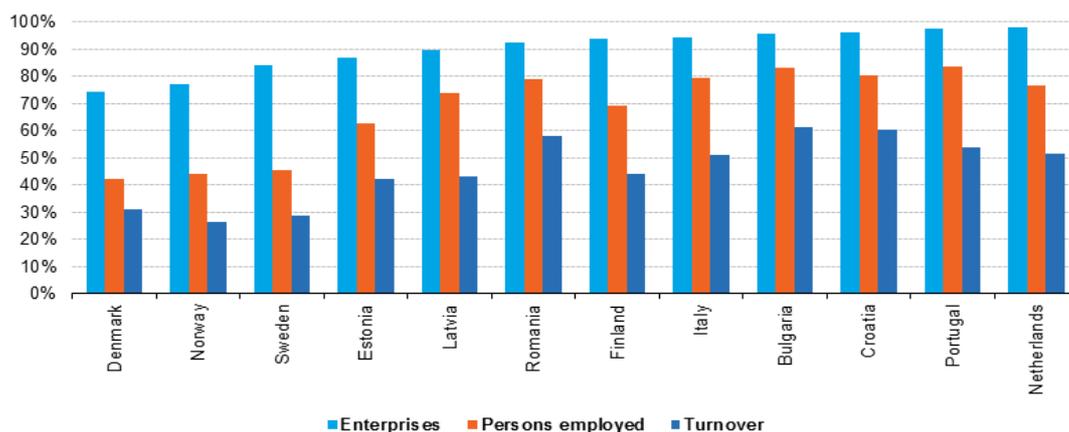
The economic and social importance of SMEs

It has been proved that SMEs’ main drive is entrepreneurship and that they are one of the most important means in accomplishing social and economic growth. SMEs help job creation, innovation and can boost increases in income levels. In order for sustainable growth to be achieved it is of significant importance that SMEs are involved. In high-income countries, SMEs contribute to over 55% of GDP and over 65% of total employment, while in low-income countries SMEs account for over 60% of GDP and over 70% of total employment. In middle-income countries, SMEs contribute over 95% of total employment and about 70% of GDP.

Apart from such enterprises being the engine of economic growth, they most definitely have generated a universal social influence. Because of their small size, they are able to easily communicate with their customers and have a direct contact with them enhancing the bond between the business and customers. This will help them assist to their needs more accurately as there is a clearer sense of the customers' needs. Furthermore, they can easily familiarize and adapt to changes in the business environment as they are flexible.

Although SMEs are crucially needed for inclusive growth and development, some limitations have been indicated such as marketing difficulties and lack of finance. There is a financial advantage of funding of larger companies that SMEs do not acquire. Furthermore, the insufficient amount of representation of female entrepreneurs has been caused by the standard way of living in LEDCs with factors including lack of education along with cultural and religious constraints.

Number of enterprises, persons employed and turnover, independent enterprises share of all enterprises with fewer than 250 persons employed



Countries participating in the 2016 Microdata linking project.



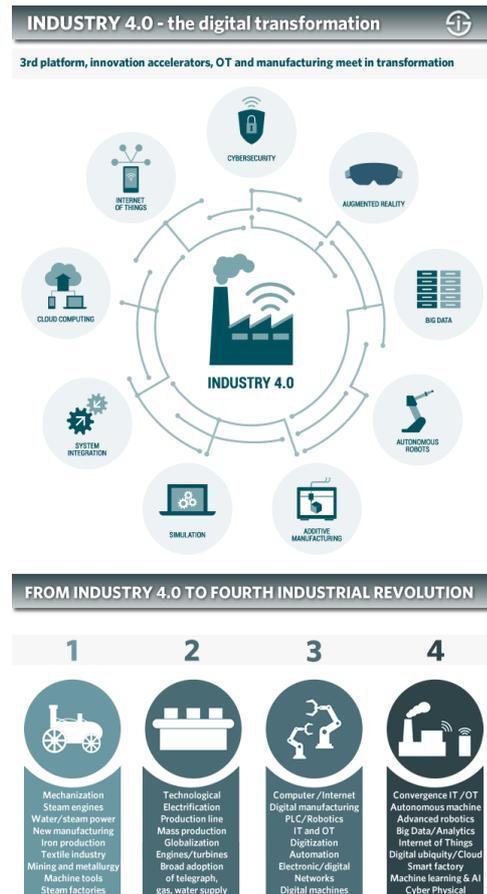
The economic and social influence of Industry 4.0

What triggered the first industrial revolution was the transformation from human labor to manufacturing mechanically. The second industrial revolution's base was electric power for the creation of mass production. The third revolution used information technology and electronics with the aim of automating manufacturing. With autonomous systems, computerized data and machine learning, Industry 4.0 has inhibited what the third revolution began to adopt. The building blocks of the industry are the nine technological trends which determine its structure. These trends are augmented reality, internet of things,

the cloud, simulation, robots, horizontal and vertical system integration, big data and analytics, cyber security and additive manufacturing.

Industry 4.0 can easily enrich the productivity of a business through its automation and streamlined manufacturing process. Not only do digital technologies provide opportunities of valued production and new business models but they are also considerably accessible in LEDCs.

Technology, however, can have negative implications if we do not have the consequences in mind. Expanding robotics and automation departments can lead to the loss of jobs since human workforce is not needed when automated machinery can replace it. Biotechnology can have controversial implications when creating advanced products such as gene drives. Artificial intelligence can deploy weapons and social media can intensify and increase the number of voices directed to cyber bullying, misinformation and hate speech, in addition to the constant connection becoming a liability. The challenges that Industry 4.0 are called to face are not only focused on applying new technologies like robotic and mechanical processes but other areas as well including customer service, logistics and management.



MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

The United States of America (USA)

SMEs are known to be the backbone of the American economy, especially since two thirds of private sector jobs in the United States come from the thirty million SMEs. Many businesses have already invested technology in most of their departments and have benefited from their advantages. Hence, the U.S. has seriously considered digitally transforming SMEs since these investments have been gradually increasing daily. Keeping in mind that a key factor of business success is competition, technology serves as a competitive

advantage. More specifically, Enterprise Resource Planning (ERP) system is one of the top technology trends.

Japan

Business dynamism in Japan's SME sector is comparatively weak due to aging owners of businesses unable to seek out a successor and weak entrepreneurial attitudes within the society, significantly among females. As a result of the low business entry rate, Japan's SME sector is comparatively recent; companies over ten years old account for three-quarters of Japan's small sized enterprises (less than fifty workers), compared to less than half in OECD (Organization for Economic Co-operation and Development) countries. These mature firms additionally realize it is challenging to grow, with a means of solely ten staff members in producing and six in services. Small firms in Japan are abundantly less productive than larger ones. Giant labor productivity gaps by firm size are mirrored in vital wage differentials between companies, as shown by the dispersion of average labor financial gain, that is much higher than the OECD average.

However, SMEs account for 99.7% of the total number of companies in Japan, hence they are an integral part of the Japanese economy. It is vital that Japan helps SMEs in this digital transition, to maintain their competitiveness. The government has in fact taken steps to renew SMEs, by increasing the utilization of the rules for private Guarantees Provided by the business executives, reforming the Credit Guarantee System, upgrading social control skills in SMEs, and nurturing entrepreneurial attitudes.

Germany

The origination of Industry 4.0 surfaced in Germany and is where its initiatives development and implementation were carried out. The term is well received in the Germanic region and was first recommended in 2003 and then publically announced in 2011 by political, business and academic representatives. The whole aim of it all was to improve Germany's competitiveness through the manufacturing industry. SMEs' important role in the economy of Germany occurs because they are responsible for a big percentage of employment and constitute a big percentage of the total amount of German companies. Statistical data from the Federal Statistical Office was released and illustrated that ninety nine percent of enterprises in Germany are SMEs. Even though SMEs have visible dominance in the economy, their operations consist of little capital equipment.

The Netherlands

The Netherlands are one of the most innovative nations and manufacturing plays a significant role in the Dutch economy as do SMEs which are an integral part, being known as the second largest form of enterprises. The manufacturing industry in the Netherlands is the basis of the recent recovery of their economy. In Northern Netherlands, manufacturing companies account for over sixty percent of all companies, that is approximately nine thousand companies. 9.9 percent of the national workforce is given employment in this sector and more than 11 percent of the workforce is employed within the industrial sector. It has been calculated that for every new job created in this sector, one and a half jobs can be created in the service sector. The Netherlands' success indicates just how well they are doing in the digital world. Nevertheless, there is still a significant number of entrepreneurs who have not been notified about the technological evolutions and need to be covered.

Indonesia

The Indonesian Government has taken several measures to support the expansion of SMEs that are expected to play an important role in job creation and gross domestic product growth. The distribution of SMEs by sector shows that the bulk of Indonesian SMEs are associated with agriculture. The second largest sector is trade, accommodations, and restaurants whereas the third largest is producing. Solely a small fraction of Indonesian SMEs receive credit from banks or different financing establishments that reflects the underdeveloped financial markets and institutions within the country.

Switzerland

It is not solely the giants of trade that are export-oriented. Swiss enterprises with fewer than 250 staff also want to expand to foreign markets. Firstly, the domestic market is just too limited. Secondly, an abundance of the demand comes from abroad and third, Switzerland's economic interaction with the EU has created access to European markets much simpler for SMEs. The more specialized a corporation is, the more international, says Baldegger. As compared with SMEs within the rest of Europe, the degree of internationalization in the European nations SMEs are distinctive, though similar trends may be seen in the European country, and to a lesser extent in Sweden, says Baldegger. However

this trend is well advanced in the Swiss region as a result of the several SMEs that are familiar with high-tech and innovation.

United Nations Industrial Development Organization (UNIDO)

This was an event that was held on the 23rd of November 2016, on the occasion of the fiftieth anniversary of UNIDO, debated Industry 4.0. The panel conversed on how the development community and UNIDO could facilitate LEDCs and transitioning economies address opportunities and challenges stemming from the Fourth Technological Revolution within the context of the Sustainable Development Goals (SDGs) and the 2030 Agenda.

Asian Productivity Organization (APO)

The Asian Productivity Organization recently conducted research on Industry 4.0 Strategies of Digitization for SMEs. A coordination meeting among all consultants, the National Productivity Council (NPC), India, and APO Secretariat was held from the 13th to the 15th of December 2017 in New Delhi. The research is an element of the plans to develop the roadmap for the Council of Europe (COE) on IT for Industry 4.0 established in 2017 under the Council.

TIMELINE OF EVENTS

Date	Description of events
1990	Employment in U.S. small businesses grew by 1.1 percent and decreased by 0.9 percent in large companies
1996	Establishment of Small and Medium Enterprise Development Corporation
2000	Introduction of SME's development plan
2000-2001	Economic recession struck again and critically affected the E.U and the U.S. however small businesses remained relatively unaffected
2004	Establishment of National SME Development Council
2008	SMIDC took over NSDC secretariat role from the Central Bank of Malaysia
2009	SMIDC Rebranded into SME Corporation Malaysia
2010	Launching of the strategic plan SME Corporation Malaysia
2012	Launching of SME master plan to drive towards achieving Vision 2020

UN INVOLVEMENT: RELEVANT RESOLUTIONS, TREATIES AND EVENTS

Several events have taken place with the initiative of globally developing the digitalized industry. Such events include:

- UNIDOs Industry 4.0 debate on their 50th Anniversary occasion taken place on the 26th of December in 2016 which led to the following conclusions:
 - The importance of building awareness of the Industry 4.0 consequences for inclusive and sustainable industrial development (ISID) and providing access to know-how, skills, education and technology.
 - The great potential of innovation management standards to assist LEDCs and economies in transition to dive into Industry 4.0. These guiding frameworks would be relevant for all kinds of organizations, regarding SMEs as well.
 - The potential of UNIDO to help in establishing multi-stakeholder information sharing platforms to raise awareness on Industry 4.0 opportunities and challenges for following ISID in LEDCs; for sharing accessible tools and techniques .
 - For innovation management; designing training curricula for new workforce skills requirements; exploring procedures and practices to support SMEs digital transformation and bridging the gender digital divide; building awareness among business associations and policy makers, the issues of new infrastructure, standards and policies that need to be developed or mainstreamed to correspond to the new technologies.
- An event during the World Summit on the Information Society (WSIS) forum in 2017: Preparing for the 4th Industrial Revolution.
- Events during the 2nd and 3rd BRIDGE for Cities events in 2017 and 2018: The belt and road initiative – Industry 4.0 in sustainable and smart cities; Urban Issue Hub (II) – Smart City: Smart Productivity and Trade – focusing on Industry 4.0 implementation in Shanghai.
- An event during the 17th Session of the UNIDO General Conference in 2017: Industry 4.0 - the opportunities behind the challenge.
- An event organized in affiliation with the Brookings Institute with a regional focus on Africa in 2018: Industry 4.0 and Africa.
- An event during the Science, Technology and Innovation (STI) Forum at the UN Headquarters in New York in 2018: Industry 4.0 and Digital Strategies- Challenges and Opportunities to achieving SDGs.
- The First Regional Conference on Industrial Development – Unlocking the potential of Industry 4.0 for Developing Countries held in Bali, Indonesia in November 2018.

Organized by UNIDO, and the Ministry of Industry and the Ministry of Foreign Affairs of Indonesia. The conference encouraged knowledge sharing to raise awareness about the challenges and opportunities of Industry 4.0, and discussed the role of multilateralism and regional cooperation in preparing countries in Asia and the Pacific for smooth transition to Industry 4.0.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

An attempt to help the integration of SMEs to industry 4.0 has been recently undertaken by the European Commission. EU countries have formed an interregional partnership for Smart Specialization on SMES Integration to Industry 4.0. As stated by the European Commission, the main goal of this partnership is to increase SMEs' absorption of specialized digital services.

On the national level, there are many countries that have taken action to support the digital transformation of SMEs, with Germany being a noteworthy case. As part of the German government's High Tech 2020 Strategy, "Industrie 4.0" is a national initiative launched in 2011 that aims to drive digital manufacturing forward "by increasing digitalization and the interconnection of products, value chains and business models."

IT integration through cyber-physical systems known as Industry 4.0 can be the answer to the issues of addressing the increasing quality of products and complexity of supply chains, providing greater flexibility for enterprise-based production systems, and specifically by SMEs. Becoming familiar with this idea involves accepting and comprehending some holistic and incorporative interpretations or approaches, and many SMEs face irrefutable obstacles. Businesses that integrate advanced technology into production lines can lead smart grid production lines, and even automation of sensible maintenance processes.

POSSIBLE SOLUTIONS

There are multiple solutions that can be implemented in order to combat the challenges of helping SMEs in this digital transition. Due to the lack of manpower SMEs have in surpassing their production capabilities and diversifying their product range, it is essential that the workforce is to be trained and aware of the existing and newly developing technologies in order to survive in such a demanding, globalized environment. Along with

this comes the awareness of change in the business and that learning and even unlearning will be a requirement.

Having the advantage of accessibility to a wider range of markets and knowledge networks can contribute to the strengthening of SMEs. A simple way to increase the capital of a company is by using invoice factoring in order to improve the plasticity of cash flow in a company. Without the proper management tools and infrastructure, it is easy for a small business to get held back. Recognizing the technological drawbacks of these businesses, it is essential that they integrate themselves more technologically by optimizing a process for their technological lifecycle rather than spending more time and money on operations.

Moreover, due to the vandalism and security threats that most businesses come to face in the modern era, we need to introduce advanced technological processes that will secure financial data and keep proprietary information and executive decisions confidential.

It is of much importance to offer technological capacity to SMEs in order to be aware of the opportunities ahead which will give them a competitive advantage. It is true that manufacturing can make it quite challenging for smaller enterprises to be on the same pace as larger companies, therefore incorporating Industry 4.0. solutions will strengthen the businesses. It must be understood that the shift of SMEs in the industry affects all departments of the business such as Human Resources, marketing, operation management and more. Thus, all members should be involved and creating a digitization team that will consist of different stakeholders from different departments should be considered in order to be aware of the events in the business. Constant communication, videos, emails and educational modules will ensure that every affiliate is on the same page and is proceeding towards the businesses mission.

Overall, when thinking of solutions to this issue we need to give considerate thought on the different magnitude of challenges that SMEs face in LEDCs versus in MEDCs. (For example, we must support LEDCs so that they can keep up with technological changes so that they are not behind by Industry 4.0). Solutions need to emphasize the need for awareness, the possibilities of online platforms and the importance of reinforcing cooperation among SMES and other stakeholders; they need to address infrastructure gaps, outdated international regulations, data security and even inequality, as in LEDCs women-owned SMEs are far less aware of digital opportunities.

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