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**SOCIAL RESPONSIBILITY OF BUSINESS IN INDUSTRY 4.0**

**SPOŁECZNA ODPOWIEDZIALNOŚĆ BIZNESU  
W PRZEMYŚLE 4.0**

**Abstract:** The purpose of this publication was to prepare content about the evolution of socially responsible business in industry 4.0. Thesis presents key areas of the responsible business at level 4.0. Thesis was created based on literary study and presents contribution of its authors into knowledge development in scope of area changes in SR on Industry 4.0 level. Thesis introduction reminds the essence of SR, at the next stage in the reference to selected conceptual approaches the image of Industry 4.0 was presented. Thesis outlines the specification of Industry 4.0 called fourth industrial revolution or industry of fourth generation. Next section of the work briefly describes studies in area of responsible business 4.0 which are currently very rare. The last part of this thesis presents the main directions of responsibility impact in industry 4.0, and discusses the conclusions regarding the challenges for SR development. The work ends with a summary together with an indication of the main directions of development of responsibility in Industry 4.0.

**Keywords:** social responsibility, Industry 4.0

**Streszczenie:** Celem niniejszej publikacji było określenie kierunków ewolucji społecznie odpowiedzialnego biznesu w Przemśle 4.0. W opracowaniu wskazano na kluczowe obszary biznesu odpowiedzialnego na poziomie Przemysłu 4.0. Artykuł powstał na podstawie studium literatury i stanowi wkład auterek w rozwój wiedzy na temat zmian obszarowych w SR na poziomie Przemysłu 4.0. Na wstępie przypomniano istotę SR, a następnie przedstawiono obraz Industry 4.0, odwołując się do wybranych ujęć koncepcyjnych. Zarysowano specyfikę Przemysłu 4.0, czyli czwartej rewolucji przemysłowej / przemysłu czwartej generacji. W kolejnej części omówiono dostępne w tym zakresie, wciąż bardzo rzadkie, opracowania dotyczące odpowiedzialnego biznesu 4.0. W ostatniej części zaprezentowano główne kierunki wpływu na odpowiedzialność w Przemśle 4.0 i omówiono konkluzje dotyczące wyzwań dla rozwoju SR. Artykuł kończy się podsumowaniem wraz ze wskazaniem głównych kierunków rozwoju odpowiedzialności w Przemśle 4.0.

**Słowa kluczowe:** społeczna odpowiedzialność, Przemysł 4.0

## Introduction

The concept of Social Responsibility (SR) is a leading trend in global economies. Global companies are increasingly becoming part of socially responsible business models. SR models evolve along with changes in the functioning of enterprises (changes in the scope of assessments and measures).

In recent years (after 2011) a new concept of industry is popularized, which is Industry 4.0 (I 4.0). The scope of SR activities at level 4.0 will change (expand). In I 4.0 companies are equipped with the latest generation of industrial robots, they have unlimited access to cloud computing and to huge data resources (called Big Data). In a cyber-physical space, producer-customer relationships (personalized products) change. Going beyond the companies, we find ourselves in a new supply chain system, which is also dominated by the latest technological solutions equipped with artificial intelligence.

## 1. Social responsibility of business– about the essence of SR

Contrary to the very popular concept of Milton Friedman in the 1970s that the only social responsibility that an enterprise has is to increase profits and make its owners - wealthy shareholders<sup>1</sup>, corporate social responsibility is a concept aimed at voluntary activity that takes into account social and ethical interests and respect for the natural environment not resulting from obligations related to legal and formal requirements<sup>2</sup>.

Corporate social responsibility is a set of activities that contribute not only to building a responsible image of the company, but above all to activities for the benefit of society. Socially responsible enterprises build transparent relations with employees and all interested parties. Business cannot be at the expense of employees, the environment and society, but must take into account the interests of individual groups<sup>3</sup>. SR assumes various ranges, from activities related to abandoning (or refraining from) harming others, to preventive actions of negative business effects and ancillary to those in need. All these activities affect the creation of a positive image of the company and facilitate (help) consolidate business success<sup>4</sup>. The introduction of the SR strategy in companies increases the value of companies on the market<sup>5</sup>. In SR non-statutory aspects of commercial operations are assessed.

Trying to define SR, one should assume a large range of individuality of individual creators over explaining the essence of responsible business, especially in terms of individual industries and the type of business. In the literature on the subject we will not find one convergent definition of the idea of corporate social responsibility, but many ways to describe and interpret it<sup>6</sup>. SR is not a single program or symbolic action for the benefit of other people or organizations, but a complex concept of managing companies<sup>7</sup> that constantly improve their development tactics through dialogue with stakeholders. SR is the idea of being a responsible company on a global market, and even something more than just an idea, because it relates to the implementation of real actions for the natural environment, employees and their families, local and supra-local communities<sup>8</sup>.

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<sup>1</sup> V. Sivarama Krishnan, *In defense of social responsibility of business*, "Mustang Journal of Business and Ethics" 2011, Vol. 2.

<sup>2</sup> Co to jest CRS?, <http://odpowiedzialnybiznes.pl/pl/baza-wiedzy/o-csr/co-to-jest-csr.html> [access: 20.01.2018].

<sup>3</sup> K. Basu, G. Palazzo, *Corporate Social Responsibility: a process model of sensemaking*, "Academy of Management Review" 2008, 33(1), p. 102.

<sup>4</sup> Compare D. Chandler, *Strategic Corporate Social Responsibility: Sustainable Value Creation*, Sage, London 2016; A. Rasche, M. Morsing, *Corporate Social Responsibility: Strategy, Communication*. Cambridge: Governance, Cambridge University Press, 2017.

<sup>5</sup> J. Wołoszyn (ed.), *Spółeczna odpowiedzialność biznesu w obszarze przedsiębiorczości*, Wydawnictwo SGGW, Warszawa 2012.

<sup>6</sup> Por. E. Stawicka, *Ekonomiczna efektywność społecznej odpowiedzialności w biznesie*, [w:] J. Wołoszyn (ed.), *Spółeczna odpowiedzialność biznesu...*; R. Koneczna, *CSR i jego narzędzia jako element strategii firmy – praktyczny przewodnik*, Wydawnictwo IGSMiE PAN, Kraków 2014.

<sup>7</sup> M. Bąk, P. Kulawczuk (ed.), *Spółeczna odpowiedzialność biznesu w małych i średnich przedsiębiorstwach*, Warszawa 2008.

<sup>8</sup> J. Adamczyk, *Spółeczna odpowiedzialność przedsiębiorstw. Teoria i praktyka*, PWE, Warszawa 2009.

Activities for the natural environment are changing towards a circular economy. It should be understood as a circular economy in which the amount of waste is limited to (almost) zero, and the product is used repeatedly<sup>9</sup>. It has always been that technological progress has destroyed certain environmental components. Extremely radical changes that are taking place in Industry 4.0, in which technology will create a new era of prosperity, will force radical actions for environmental protection so that it is not too degraded by the industry's attitude to rapid automation and robotization of production and production-support processes. The sustainable development model already implemented (Agenda for Sustainable Development) will be modified to combine sustainable development with the innovations of Industry 4.0.

Social expectations include, inter alia, respecting and supporting human rights, eliminating discrimination or controlling the company's environmental impact, and promoting ecology among customers<sup>10</sup>. As part of social expectations, the company also undertakes and supports employee volunteering activities. Employees engaged in the benefit of local communities take on the important challenge of building shared values in the company.

SR also means exceptional care for meeting employees' expectations through such activities as employee development, care for working conditions, ensuring fair remuneration, investments in improving occupational health and safety. Enterprises that run a socially responsible business conduct social consultations on matters important to employees, cooperation of employers with employees at individual stages of implementing changes in the organization, try to employ employees from the local market, inform employees about the company's financial results, apply fair incentive systems and ensure equal access to raising employee competences through training (equal opportunities policy)<sup>11</sup>.

Social responsibility can be interpreted as responsibility for business decisions made with a very wide spectrum of business effects for current and future generations. A new generation of employees has appeared on the labor market - employees of the Z generation also often called XD. Due to the fact that it is a generation of new technologies and the Internet, they fit very well into the concept of Industry 4.0. Generation Z, however is a generation largely related to the profession and not necessarily to the workplace. It is a generation that requires a lot of responsibility from the employer, especially in the field of development programs<sup>12</sup>.

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<sup>9</sup> R. Janikowski, Środowiskowe aspekty czwartej rewolucji przemysłowej, *Studia i Prace WNEIZ USnr 47/2 2017*, p. 73, DOI: 10.18276/SIP.2017.47/2-06.

<sup>10</sup> W. Ociecek, B. Gajdzik, *Spółeczna odpowiedzialność przedsiębiorstw produkcyjnych*, Wydawnictwo Politechniki Śląskiej, Gliwice 2010.

<sup>11</sup> B. Gajdzik W. Ociecek, *Soft restructuring process in metallurgical enterprises in Poland*, „Metalurgia” 2015, Vol. 54, Iss. 4, p. 729-732

<sup>12</sup> B. Gajdzik, W. Ociecek, *Spółecznie odpowiedzialne zarządzanie w przedsiębiorstwach hutniczych*, „Hutnik – Wiadomości Hutnicze” 2008, 75(11).

Responsible business is a concept that is constantly changing and developing; new areas of business and non-business assessment are being introduced. In accordance with the requirements of SR companies present annually responsible business reports, which are publicly available through the websites of individual enterprises and the websites of organizations that are interested in the development of SR. The companies inspire each other to expand their activities beyond core business to other people and organizations in need. The development of industry creates new opportunities for the development of SR. The essence of every business according to the assumptions of SR is transparency, which brings with it credibility and responsibility for implemented actions towards others.

## 2. General assumptions of the concept of Industry 4.0

Klaus Schwab, creator and president of the World Economic Forum in Davos, announced in his book *The Fourth Industrial Revolution*, published in 2016, that the fourth industrial revolution leading to Industry 4.0 has already begun<sup>13</sup>. Idea I 4.0 appeared for the first time during the Hanover trade show in 2011, inspiring German companies to act by establishing a working group to coordinate design work in this field. In 2013, the German federal government joined the initiative<sup>14</sup>. Currently, a wide promotional campaign is being carried out and more countries are joining further initiatives related to I 4.0. The implementation of changes in companies at the I 4.0 level was started mainly by large international companies due to the high costs of industrial investments.

Industry 4.0 should be understood as a common term connecting technology and the organization of the value chain (collective term for technologies and concepts of value chain organization)<sup>15</sup>. Industry 4.0 aims to combine material and digital resources. In enterprises, OT (operations technology) and IT (information technology) are united<sup>16</sup>. The basis of I 4.0 are intelligent systems that are cross-linked and vertically connected with other processes within the enterprise and horizontally associated with value-creating networks that can be managed in real time from the moment of placing the order to the coordination of sales logistics<sup>17</sup>. I 4.0 is associated with the development of wireless connectivity, artificial intelligence,

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<sup>13</sup> K. Schwab, *The Fourth Industrial Revolution*, World Economic Forum. Deloitte. *Czwarta rewolucja przemysłowa*, tłum. A.D. Kamińska, Wydawnictwo Studio Emka, 2018, p. 13.

<sup>14</sup> K. Schwab, *The Fourth Industrial...*, p. 14-15.

<sup>15</sup> M. Hermann, T. Pentek, *Design Principles for Industrie 4.0 Scenarios: A Literature Review*, Technische Universität Dortmund Fakultät Maschinenbau, Working Paper, 2015, No. 01.

<sup>16</sup> J. Gracel, *Czwarta rewolucja przemysłowa – zmiana już tu jest*, „Biznes i Produkcja” 2016, No. 14.

<sup>17</sup> M. Götz, J. Gracel, *Przemysł czwartej generacji (Industry 4.0) – wyzwania dla badań w kontekście międzynarodowym* KNUV 1(51): 217-235, za: K. Schwab (2016), *The Fourth Industrial Revolution*, The World Economic Forum, Cologny, Switzerland, 2017.

automation, nanotechnology, 3D printing, biotechnology, etc<sup>18</sup>. New values - „4.0 values” - will appear on the market, which are contained in highly specialized and personalized products.

Cyber physical systems (CPS) are important for the development of I 4.0. With the development of CPS, the boundaries between individual market participants disappear. CPS systems have the following features (called six design principles)<sup>19</sup>:

- interoperability, i.e. the ability to communicate with employees, factory infrastructure and cyber-physical systems, including industrial robots and products;
- visualization - means the possibility of creating a certain virtual equivalent of the real world that would be able to monitor actual physical processes;
- decentralization - understood as the ability of cyberphysical systems to act autonomously in pursuit of personalized products;
- the real-time attribute means that data is collected and analyzed on an on-going basis as it occurs, allowing for faster analysis and response;
- service orientation- is understood however, as the possibility of sharing and using the services of CPS systems and employees (thanks to the Internet of services) to other process participants, also outside of the company;
- modularity, i.e. the ability to change production characteristics by replacing or adding ready-made modules to the process and expanding individual modules.

### 3. Responsible business 4.0 - about its essence

Responsible company 4.0 is an organization that — striving to increase revenues and generate profit — does not forget about its environment and stakeholders. Conducting its activities, it listens to trends that shape the modern world, invests in them and manages them actively. It applies good civic practices, carries out the mission contributing to positive social change (both inside and outside the organization), sets an example to other companies and promotes a culture of cooperation at every level of the organization.<sup>20</sup> The 4.0 organization introduces radical innovations that bring to production a new value that CPPS can generate. There is a very close relationship between the fourth industrial revolution and the SR. The digitization of industrial production has a direct impact on employment and thus on society. It is forecasted (assumed) that industrial production will be fully automated by 2028. National governments are already developing Industry 4.0 plans, e.g. the Industry 4.0 plan introduced by the Italian government in the 2017 Stability Act, which opens opportunities for thought and action in the area of social responsibility.

<sup>18</sup> K. Schwab, *The Fourth Industrial...*, p. 31-40.

<sup>19</sup> M. Hermann, T. Pentek, *Design Principles for Industrie 4.0...*

<sup>20</sup> Deloitte Global Human Capital Trends Report 2018.

According to the Deloitte Global Human Capital Trends 2018 report, the popularity of the responsible company is the result of several factors such as the strength of the individual, fulfillment of social mission and technological changes. Previous studies of this company show that the vast majority of young people (29-35 years of age) believe that enterprises are obliged to pursue economic goals and success in addition to financial goals, and the company's position on the market should also be seen in this aspect.<sup>21</sup>

In Industry 4.0 there is the problem of involvement in solving the problems of unreliable markets. In this new approach, the management and efficiency of individual countries implementing industry 4.0 become essential in this new approach<sup>22</sup>. An industrial policy that aims to reorient national economies towards the fourth generation industry should take into account the preservation and restoration of jobs or try to improve the competitiveness and added value of domestic production<sup>23</sup>. During deep changes leading to I 4.0, questions are raised: Will people lose their jobs because they have been replaced by machines? Will the number of new specialists required by digitization (data scientists, automation specialists, application developers or intelligent devices, programmers, system integrators, etc.) be greater or smaller than today's factory employees? Will the increase in productivity and competitiveness be enough to guarantee new jobs for people in companies that are losing to competitors and must cut the workforce? Various analyzes indicate that despite the disappearance of many jobs as a consequence of the Fourth Industrial Revolution the net employment effect should be positive<sup>24</sup>. Work in the IT industry attracts new professional groups. Information Technologies (IT) is a heterogeneous segment, attracting people not only related to software, its development, sales and support but also humanists and economists with analytical and decision-making skills and other database administrators.

Revolution 4.0 changes many areas of business, especially the working environment in connection with the new production and communication technology: M2M, P2P, and M2P<sup>25</sup>. Proponents of the view that I 4.0 is a revolution even lean towards the opinion that we are dealing with a change on such a scale that we can even talk about „life 4.0”. Major changes concern not only the industry, but also the

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<sup>21</sup> <https://www.deloitte.com/us/en/pages/about-deloitte/articles/millennial-survey.html>

<sup>22</sup> J. Micklethwait, A. Wooldridge, *The Global Race to Reinvent the State*, Penguin Press, London 2015.

<sup>23</sup> M. Götz, J. Gracel, *Przemysł czwartej generacji (Industry 4.0) – wyzwania dla badań w kontekście Międzynarodowym*, KNUV 2017, 1(51), 217-235.

<sup>24</sup> R. Berger, *The Industrie 4.0 transition quantified. How the fourth industrial revolution is reshuffling the economic, social and industrial model*, Roland Berger, Monachium 2016.

<sup>25</sup> U. Holtgrewe, *New new technologies: The future and the present of work in information and communication technology*, New Technology, Work and Employment, Vol. 29, No. 1, 2014, pp. 9-24; M. Lorenz, M. Rüfmann, R. Strack, K.L. Luetk, and Bolle, *Man and Machine in Industry 4.0. How Will Technology Transform the Industrial Workforce Through 2025?*, Bcg.perspectives, available, 2015, at: <https://www.bcgperspectives.com/content/articles/technology-business-transformation-engineered-products-infrastructure-man-machine-industry-4/>.

functioning of public administration, health care, the labor market, and thus such issues as commuting, working time, organization of jobs, training, etc.<sup>26</sup>

#### 4. Responsibilities at level I 4.0

Nowadays, corporate social responsibility is important for companies due to three main trends increased wealth, increased social expectations, and free flow of information due to globalization. The first refers to wealthy consumers who are able to choose products that buy and expect personalized products (in line with their expectations, needs, physical characteristics, etc.) - customization. The second relates to the increase in consumer expectations - for example, in terms of transparency associated with access to information and data. Finally, globalization changes the relationship between consumers and companies (Fig. 1)<sup>27</sup>.

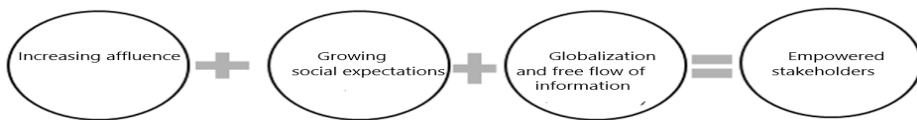


Figure 1. Influences of trends on CSR

Rysunek 1. Wpływy trendów na CSR

Source: J. Álvarez Hierro (2017). *Analysis of Corporate Social Responsibility in the Technology Industry. Focus on Google's Role and Corporate Social Responsibility Initiatives*. Comillas Pontifical University, School of Humanities and Social Science, Madrid, April 2017, p. 5, on the base of Egyptian Corporate Social Responsibility Center, 2007, p. 3.

New areas of CSR in Industry 4.0 are emerging along with the growing importance of internet communication and the development of CPS. Technological changes in responsible enterprise 4.0 are marked by three basic trends (Fig. 2):

- Big data and data protection in cyberspace (cyber security), including personal data and their proper use,
- networking of the workplace (direct communication will be replaced in favor of online platforms, messengers and social media),
- integration of people, artificial intelligence and robots (there will be an increase in the importance of artificial intelligence in work processes, due to which new employees' competences, technical competences, competences related to solving

<sup>26</sup> L. Čemohorska, and A. Putnová, *Společenská odpovědnost firem ajakji merit?*, Brno, Akademické nakladatelství CERM, 2012; *Corporate Social Responsibility*. Retrieved February 14, 2016, from <https://www.eea.europa.eu/policy-documents/com-2001-366-final-green>.

<sup>27</sup> J. Álvarez Hierro, *Analysis of Corporate Social Responsibility in the Technology Industry. Focus on Google's Role and Corporate Social Responsibility Initiatives*, Comillas Pontifical University, School of Humanities and Social Science, Madrid, April 2017, p. 5, on the base of Egyptian Corporate Social Responsibility Center, 2007, p. 3.



complex problems will become more important<sup>28</sup>) and the reorganization of jobs and the use of Big Data in planning processes will take place and making decisions<sup>29</sup>.

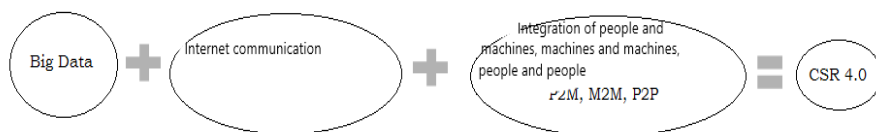


Figure 2. New trends in Industry 4.0 and CSR  
Rysunek 2. Nowe trendy w Przemysle 4.0 a CSR

Source: Own source based on Deloitte Global Human Capital Trends Report 2018.

According to the latest Deloitte Millennial Survey, organizations are expected to set goals related to their impact on the environment through creating jobs, contributing to positive social change and improving people's lives, creating innovative solutions, products and services, protecting the natural environment, and ensuring the well-being and development of employees. The three most important goals of enterprises – generating financial profit, increasing efficiency and focusing on the sale of products and services – were ranked last in the opinion of young employees. The respondents also pay attention to the diversity of work and the position of the employer on the market, looking for the best companies for professional development<sup>30</sup>.

Responsible enterprise 4.0 is also an aspect of corporate responsibility towards generational changes. Companies must create a new development plan for an employee striving for continuous development and challenges, not necessarily associated with one workplace but more with a specific profession. To retain a 4.0 employee, the company must create new, individual and flexible career paths and think about new forms of employment and a personalized way of rewarding employees. An example of meeting the above assumptions is the turquoise organization, where one of the most important assumptions is taking into account and strengthening the creativity of employees. A new model of teamwork appears in the turquoise organization, taking into account above all, self-improvement, in which the lack of central control and the role of the leader focus on being a mentor<sup>31</sup> and moderator, honesty, empathy. The work is based on the principles of freedom, partnership and openness. This type of organization seems to be the answer to the challenges of a responsible company 4.0 that fits into the organizational model based on the values indicated earlier<sup>32</sup>.

<sup>28</sup> *Inżynierowie Przemysłu 4.0 (Nie) gotowi do zmian?*, Raport Astor, 2017.

<sup>29</sup> Raport Deloitte Global Human Capital Trends 2018.

<sup>30</sup> <https://www2.deloitte.com/pl/pl/pages/zarzadzania-procesami-i-strategiczne/articles/odpowiedzialna-firma-4-0.html>.

<sup>31</sup> These types of bands also operate under the Agile and Scrum philosophy, compare <https://www.scrum.org/resources/scrum-guide>.

<sup>32</sup> F. Laloux, *Pracować inaczej*, Wyd. Studio Emka, Warszawa 2015, 2016, p. 411.

Fulfilling the social mission of enterprise 4.0 is associated with greater involvement of organization leaders in non-business activities. This factor is part of the great commitment of companies to stakeholders such as the local community and the improvement of its welfare, as well as providing forms of development, rest and care for employees. In response to these challenges, companies holistically approach their employees by adopting, for example, a wellbeing strategy or implementing diversity management activities.

Integrated reporting<sup>33</sup>, which is information reporting about the value of an organization, is also becoming an important element of the company's social mission. In the extensive SR reports (adapted) to the requirements of Industry 4.0, the importance of indicators describing the technical sector will increase<sup>34</sup>.

In industry 4.0, it is assumed that new technological solutions with IoT (Internet of Things-IoT) instrumentation can reduce the negative impact on the environment by up to several dozen percent annually<sup>35</sup>. Access to information can increase government control over business operations. Circular economy and rapid capture of materials for re-use (up-cycling) are becoming particularly important in the new technology<sup>36</sup>.

Intelligent products (product memory) provide information about what happens to them throughout their life cycle through information assigned to them by producers<sup>37</sup>. SR in the 4.0 edition will refer to new business models, including four-leaf clover<sup>38</sup>, in which online services, i.e. the use of products, e.g. books, cars, etc., become important without having to own them. Industry 4.0 introduces new areas of competitiveness to business called „smart”<sup>39</sup>.

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<sup>33</sup> According to IIRC, integrated reporting is a process that results in cyclical communication of an organization through an integrated report, in which it shows the creation of value over time. An integrated report is an organization's way and communication tool showing how its strategy, corporate governance and results, in the context of the external environment, allow it to create value in the short, medium and long term (Consultation draft of the international <IR> framework, International Integrated Reporting Council, 2013).

<sup>34</sup> V. Sawhny, *Analyzing Corporate Social Responsibility Measurement Parameters*, Retrieved from Comparing the Global Reporting Initiative to Environmental Reporting Guidelines, [http://www.instituteforpr.org/wp-content/uploads/SawhnyKEPRRA\\_Award.pdf](http://www.instituteforpr.org/wp-content/uploads/SawhnyKEPRRA_Award.pdf), 2008, pp. 6-30.

<sup>35</sup> *The Role of ICT in Driving a Sustainable Future*, Global e-Sustainability Initiative, The Boston Consulting Group, Inc, GeSi Smarter2020, December 2012, <http://gesi.org/SMARTer2020>.

<sup>36</sup> K. Schwab, *The Fourth Industrial...*, p. 87-91.

<sup>37</sup> M. Olszewski, *Mechatronizacja produktu i produkcji - przemysł 4.0*, „Pomiary – Automatyka – Robotyka” 2016, 3, 13-28.

<sup>38</sup> R. Kozielski, *Biznes nowych możliwości. Czterolistna koniczyna – nowy paradygmat biznesu*, Wolters Kluwer Polska, Warszawa 2012.

<sup>39</sup> A. Chrzanowski, I. Głazewska, *Wpływ rewolucji technologicznej na ewolucję strategicznych paradygmatów zarządzania przedsiębiorstwem*, „Kwartalnik Naukowy Uczelni Vistula” 2016, No. 2(48).

## Conclusion

Industry 4.0 is a big challenge for enterprises, but at the same time huge prospects for future development. Companies must completely change their activities in individual areas of SR. The first assumptions about SR 4.0 have already been made. New challenges posed by Industry 4.0 will put new requirements on social responsibility. New or existing areas of SR are emerging; it is assumed that there will be problems associated with the development of Industry 4.0 for the functioning of e.g. the labor market, e.g. reduction of employment, as well as improvements, e.g. tracking the life cycle of products. This paper does not cover all possible ranges of Industry 4.0 impact on SR due to their extensive scope. Industry 4.0 is the result of the fourth industrial revolution that will radically change the functioning of economies, societies, industries and companies, it is impossible to take them all into account at present, because the changes have just been initiated and their intensification will be visible in a decade or two. The main directions of responsibility development in Industry 4.0 include:

- initiating changes in building a new employee 4.0 qualification profile,
- highlighting the importance of IT technologies and cyber-physical systems in the development of industry 4.0 and their impact on the business and non-business environment,
- emphasizing the importance of new business models using „smart” technologies for the development of industry, economy and society, e.g. by creating new jobs and contributing to positive social change and improving people’s quality of life,
- examining the impact of new IT and OT solutions on the functioning of organization’s stakeholders and the possibilities of their impact on „smart factories”,
- promoting a new model of the development of societies and business based on the balance between the used smart technology and human values (integration of people, artificial intelligence and robots) in a responsible „wise” way,
- creation of new jobs, such as, for example, artificial intelligence ethicist, robot mentor.

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