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The Industry of the Future: From Industry 4.0 to Industry 5.0 – Integration of Humans and Technology: New Technologies

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Women and Industry 5.0: Expanse for Inclusion and Diversity in the Context of Developing Country

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Abstract: *The era of the fifth industrial revolution (5IR) undoubtedly brings new perspectives and thus new challenges for women. Bearing in mind that generally, in context of developing country, women face different and more difficult professional challenges, this paper will seek to direct future academic interests to research questions that are of particular importance for greater inclusion of women, given the business streams of 5IR. By posing these focused questions now on the example of Bosnia and Herzegovina, guidelines and recommendations for future support mechanisms for greater inclusion of women in the context of 5IR, from the perspective of developing economy, would be offered. This paper will attempt to make an additional contribution to the full inclusion of women in business ventures of developing country in the era of 5IR, pointing out the possibilities for national economies not to be "deprived" of women's business potentials.*

Keywords: *Industry 5.0,women, Bosnia and Herzegovina, developing country*

1. Introduction

The "new era" of the fifth industrial revolution (Industry 5.0)[1, 2] will change business horizons in the coming decades, improving robotics and automation through a people-centered approach. Thus, the Industry 5.0 context multiplies the challenges for women – if women, who make up half of the national workforce and talent pool, do not realize their full economic opportunities, the country's economy will grow less than its potentials.

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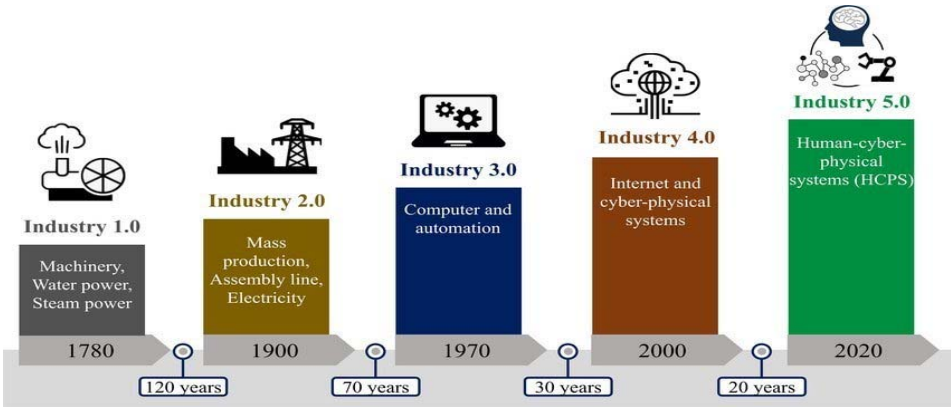


Figure 1. Industry and Society [3]

Women bring benefits crucial for the challenges of Industry 5.0 [4]trailblazing recognition that [5, 6]:

- Gender diversity enhances innovation and profitability through fostering creative and inclusive businesses for Industry 5.0;
- Women have unique strengths (collaboration, communication, empathy, and organizational skills) as leaders roles crucial for Industry 5.0;
- Women face significant barriers, including lack of flexibility, childcare support, and female role models, which can hinder their career advancement within Industry 5.0;
- Encouraging women in Industry 5.0 requires inclusive corporate cultures, flexible work arrangements, suitable facilities, and targeted recruitment initiatives to improve gender diversity.
- Empowering women is essential for economic growth in the Industry 5.0 era, demanding a shift towards gender equality and valuing diversity for a more sustainable industry.

The goals of future academic researches, especially from the perspective of developing countries, should be detailed analysis of the factors that influence the overall future social position of women, with special emphasis on inclusion in the labor market - in relation to the opportunities brought by the contemporary economic and technological context of the Fifth industrial revolution.

2. Women in Era of Industry 5.0

As Industry 5.0 is firmly linked to STEM (science, technology, engineering, mathematics), there is a space to explore direct and dependent gender relationships in order to achieve the development goals of the economy in the context of Industry 5.0 [7, 8].

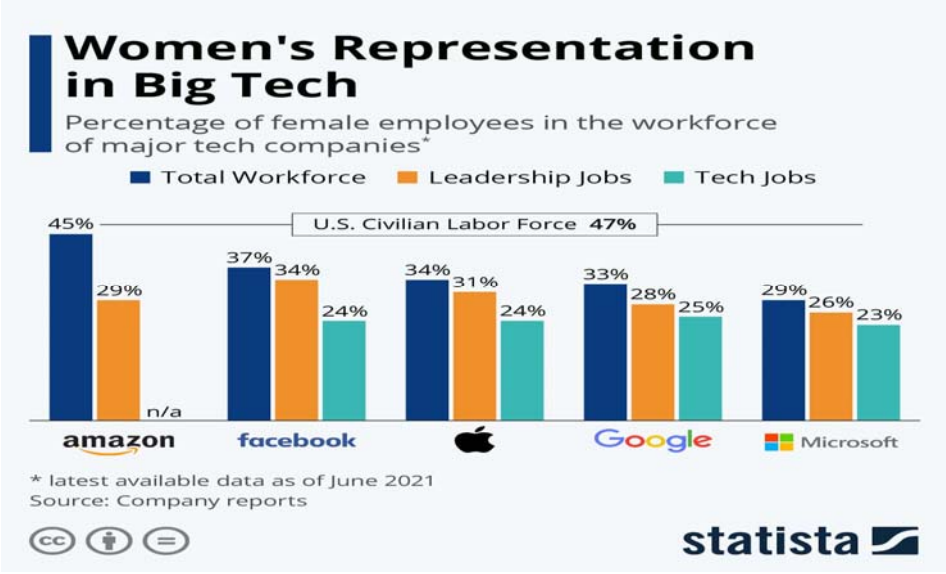


Figure 2. Women in Tech [9]

Researches on gender differences in STEM fields in Bosnia and Herzegovina[10]show that the choice of women and girls to enter these fields is influenced by stereotypes about social roles and perceptions of self-efficacy in STEM fields. It is estimated that in Bosnia and Herzegovina, around 25 percent of employees in the IT sector are women, while 33% of young women believe that their families would not support and encourage them to study in STEM fields[10]. Unfortunately, data shows that less than 10% of start-ups in the ICT sector have women as founders (Idem), so supporting the development of women's business competencies is an important issue in Bosnia and Herzegovina[11] and should be focused on specific areas[12].

Chuang and Eversole [13]state that women often possess key characteristics for success as leaders in modern business, such as adaptability, creativity, and teamwork skills. These traits enable them to effectively adapt to market challenges and collaborate with their teams to achieve a common goal.
According to Offerman and Foley [14], women as leaders are characterized by high adaptability and creativity, which helps them overcome business obstacles. Research also highlights that women leaders often demonstrate a high degree of emotional intelligence and the ability to build close relationships with their teams, which contributes to better business results.

Gorska and Burlakova[15]point out that, women in managerial positions use their creative abilities and adaptability to successfully respond to the challenges of the business market. Also, the research emphasizes the importance of teamwork and the ability to build long-term, productive relationships with employees and business partners, which contributes to their business success.
Additionally, balancing work and private life is always a significant challenge for women. Traditional societal expectations often place women in a position where they are expected to take care of the household and family, which can negatively affect their ability to fully commit to professional challenges[16]. This challenge is particularly pronounced in developing countries, where the traditional roles of women are still dominant[17]. Traditional gender roles often impose on women the responsibility of taking care of the household and family, which creates additional obstacles in the organization of time and resources.

3. WOMEN AND INDUSTRY 5.0: RESEARCH DIRECTIONS FOR DIVERSITY AND INCLUSION WITHININ DEVELOPING ECONOMIES

Given the above, a specific academic focus within the “Industry of the Future” – an industry that benefits businesses, workers and society[18], should be – research interests on inclusion and diversity in Industry 5.0. This is particularly relevant for contexts that currently face reduced development opportunities, such as developing countries.
In this sense, future researches could focus on the following objectives:
1. To explore the level of women's empowerment in the context of the Fifth Industrial Revolution, taking into account technological and social changes in focus in Bosnia and Herzegovina,
2. To explore the impact of education in STEM fields on the capabilities of women in Bosnia and Herzegovina, with an emphasis on technological sectors,
3. To examine the impact of gender stereotypes within Bosnia and Herzegovina on women's access to educational and professional opportunities, with a special focus on STEM fields.
4. To examine the key motivational factors that encourage women to enter the labor market, focusing on economic, social and personal reasons.

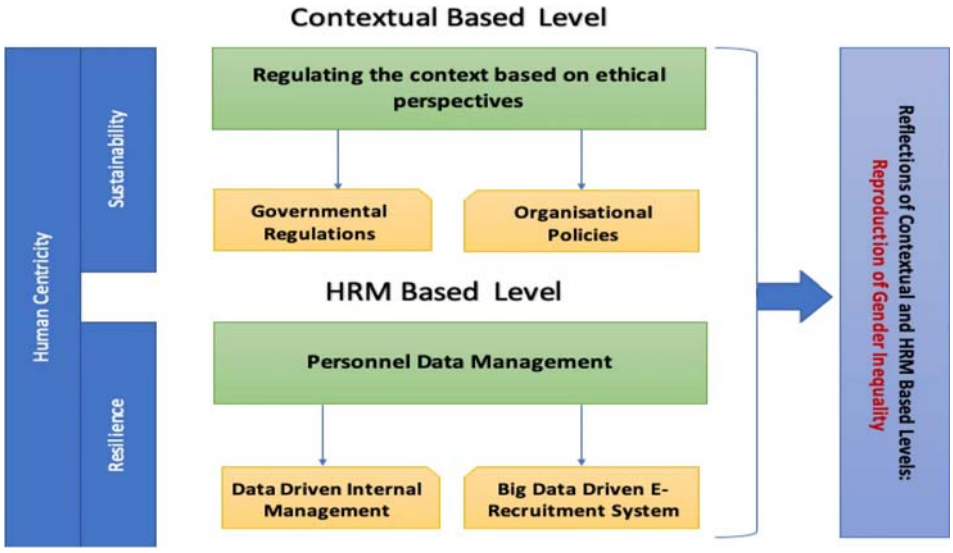


Figure3. Elements of Supply Chain for Providing Human Capitals in Industry 5.0[7]

5. To analyze the challenges of balancing work and private life faced by women in Bosnia and Herzegovina, including the impact of social expectations and support from the environment.
6. To detect and analyze the main obstacles that "hinder" women's economic empowerment in Bosnia and Herzegovina, such as limited access to finance, lack of support and regulatory barriers.

RRI Keys	Dimension of RRI-processes
• Ethics; • Gender Equality and Diversity; • Open Access and Open Science; • Science Education, and • Societal/Public Engagement.	• Anticipation and Reflexivity; • Diversity and Inclusiveness; • Openness and Transparency, and; • Responsiveness and Adaptation.

Figure 4. Five Keys and four process dimensions of RRI [19]

Therefore research questions, to be asked, for social and economic (re)positioning of women in Bosnia and Herzegovina within era of Industry 5.0 could be:
1. Within new era context, what are the most common motivational factors that encourage women in Bosnia and Herzegovina to enter the labor market?

2. What are the key obstacles that hinder women in Bosnia and Herzegovina from entering the labor market within new era context?
3. Within new era context, what challenges do women in Bosnia and Herzegovina face in balancing work and private life?
4. To what extent do gender stereotypes affect women's access to educational and professional opportunities in STEM fields in Bosnia and Herzegovina, within new era context?
5. Within new era context, how does education in STEM fields affect the abilities and success of women in Bosnia and Herzegovina?
The answers on above questions would clarify the developing country dimensions in terms of whether women in Bosnia and Herzegovina are sufficiently empowered for social and economic inclusion in the context of the Fifth Industrial Revolution, and what recommendations are in terms of improving the ecosystem that would enable greater diversity and inclusion.

3. Conclusion

Industry 5.0 is portrayed as a holistic approach for implementation of mission-oriented policies to achieve developmental goals[19]. In increasingly tough macro-economic and business environment, gender parity is recognized as competitive advantage[20]and development directions enveloping diversity, equity, and inclusion leads to increased productivity, adaptability to change and stronger innovation outcomes[20].
Therefore gender equality and diversity, is an important issue for responsible research and innovation (RRI) as they have the potential to strongly influence society towards inclusion [21].The gender equality and diversity framework is contextually oriented, engaging research and innovation to influence societal visions through norms, priorities and goals that shape future programs for progress and development[21].
The answers to the above questions have their own research significance, considering the fact that the human resources readiness of developing countries faces special challenges in promoting and implementing development goals[22].Therefore, especially important for less developed contexts is to redact academic contributions by setting a framework for realizing diversity, equality, and inclusion, as pillars of Industry 5.0.

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