



INDUSTRY 4.0 AND ITS IMPLICATION ON THE JOB MARKET: A CONCEPTUAL REVIEW

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ABSTRACT

We are now entering the fourth wave of technological advancement known as Industry 4.0, which heralds the rise of new digital industrial technology, as modern technology evolves faster than ever before. Adopting technological advancements will undoubtedly result in significant productivity gains as processes become faster and more efficient, resulting in higher-quality products at lower costs. This study aims to explore the challenges of Industry 4.0 as a disruptive innovation towards the job market. This exploration will include perspectives from industrial experts as well as academicians. Therefore, this study will utilize qualitative methods from secondary data to conduct a conceptual review from both conventional and Islamic perspectives. Based on the findings, it is clear that since the fourth industrial revolution involves digitization of industrial processes, there are some jobs which will be made obsolete, whilst on the other hand, new jobs are also created as a result of Industry 4.0 fundamentally requiring new skills. The study also identifies initiatives that have been done towards Industry 4.0 with focus on the job market and outlines potential areas for future research.

Keywords: *Conceptual Review; Job Market; Industry 4.0*

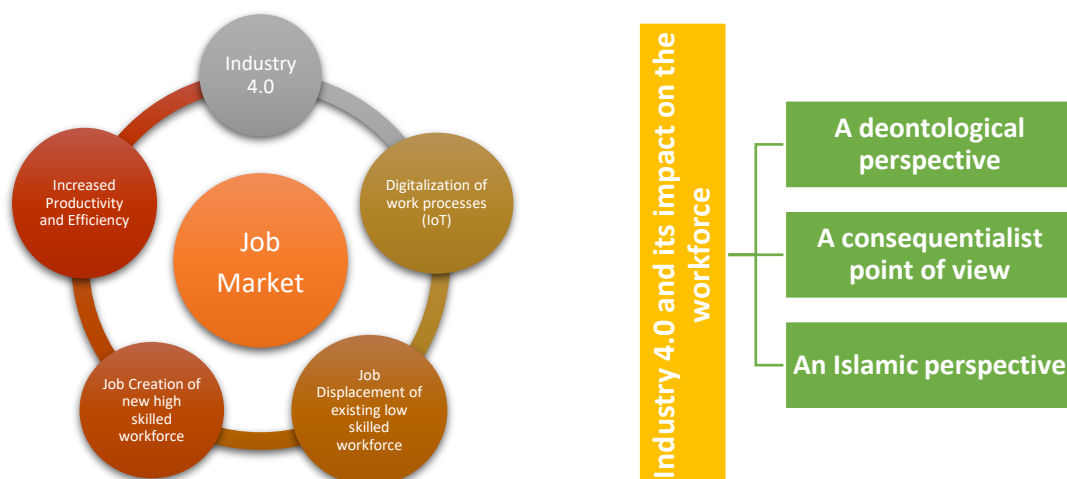
RESEARCH HIGHLIGHTS

The study explores the challenges of Industry 4.0 pre-COVID 19 which sees Industry 4.0 becoming a disruptive innovation caused by several drivers of Industry 4.0 which has imposed several opportunities and challenges towards the job market. These challenges are the displacements of several jobs being replaced by Artificial Intelligence and the creation of new jobs.

The challenges that were faced during the COVID-19 pandemic were that mobility was significantly reduced and unemployment increased due to the acceleration of Industry 4.0. As such, several views towards these opportunities and threats surfaced.

Post COVID-19, the damage control sees a need to continuously upgrade the skills of existing employees as well as educate them for Industry 4.0 readiness, to establish a new competency based model for Industry 4.0, to align higher education learning outcomes with the needs of Industry 4.0 by inculcating employability skills within the curriculum.

GRAPHICAL ABSTRACT



Research Objectives

The main objectives of the research are:

1. To explore the challenges of Industry 4.0 as a disruptive innovation towards the job market.
2. Compare different perspectives towards these challenges.
3. Identify research gap and area for further research in the area.

Methodology

The methodology employed within this study uses qualitative content analysis derived from secondary data consisting of literature reviews, past researches, articles review as well as views from various webinars and public forums on the topic of Industry 4.0 and Future of work. Data collection was taken from seminars and webinars that were conducted during the duration of: pre COVID-19, during COVID-19 and post-COVID-19 pandemic. The reason was to capture the perspectives of experts on the impact of Industry 4.0 on the job market throughout the occurrence of the pandemic which had a profound impact upon Industry 4.0 and the job market. The selection criteria of data collected is therefore limited to the years 2019 to 2021, data is only taken from webinars, forum and conferences being conducted preCOVID19 and during COVID-19.

Results

There are three perspectives that can be identified in response to the challenges of Industry 4.0. The first two being from a conventionalist perspective which are consequentialist point of view, deontology and the third is from Islamic perspectives. This view believes that Utilitarianism is a consequentialist moral theory that focuses on maximizing the overall good. Automation and computerization bring about benefits, but it is difficult to measure the ethical standards of autonomous machines and artificial intelligence. Automation does not benefit the majority of people who will lose their jobs, so the only "winner" is the top management.

On the other hand, Allen et. al. (2014), argued that deontology refers to the notion of a duty, where actions are to be assessed according to their conformity with certain rules or principles. This theory suggests that workforce have the duties and obligation to perform their jobs according to their job specification and standard, but may be concerned if the company is going against unethical acts that may affect an individual virtue and moral value. Deontology refers to the notion of a duty, where actions are assessed according to their conformity with certain rules or principles. In Industry 4.0, robotic collaboration with human workforce, workers must follow and comply with reasonable practices and procedures laid down by the organization, but may feel threatened if they are required to adapt to their own behavior in return.

Lastly. According to Islamic perspectives Maqasid Shariah is a common management by objectives' approach to addressing contemporary issues in Islam. It aims to facilitate benefits and secure against harm towards the main Islamic elements. Jailani (2019), has

identified potential threats of Industry 4.0 and its dehumanizing effects upon humans. Razak (2021), believes Maqasid Shariah is a suitable approach to build a holistically balanced individual, both spiritually and physically. Stakeholders such as practitioners and academicians need to collaborate more to adapt to the new changes post pandemic and upgrade the skills assessment of higher education programs. Other unexplored areas include principles of Islamic-based development and how these can be implemented to address the challenge of Industry 4.0.

Findings

The findings have identified several areas for further research which are as follows:

- To inculcate continuous learning and training of skills needed for industry 4.0. Lifelong learning of skills for existing employees to upgrade their digital and technological skills to meet the needs of Industry 4.0. Meanwhile, employability skills for graduates to accommodate the skills gap of soft skills that are lacking among the digital generation aka digital natives.
- To establish a competency model for Industry 4.0. Different models have been built. However, there is no competency model which is underpinned by Islamic principles.
- Educating and preparing workforce for Industry 4.0 readiness. Various human resource development practices may develop different approaches. In terms of conventional theory, it lies within the discipline of business ethics (consequentialist and deontology) whereas Islamic discipline incorporates Maqasid Shariah. However, there is limited exploration of incorporating principles of Islamic-based development in education and preparing the workforce for Industry 4.0.
- Aligning higher education learning outcomes with the needs of Industry 4.0. Higher education plays a vital role for Industry 4.0 in which several areas are focused on: Study abroad programmes, student exchange programmes, community outreach programmes and internship programmes.

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Liza Azahari, is a PhD Candidate studying at Centre for Islamic Development Management Studies, University Sains Malaysia. While she is also holding the position of assistant lecturer at Sultan Sharif Ali Islamic University.