Research Methods

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Theme: Third World Developing Countries (Industry 4.0)

Possible RQ:

- **RQ1:** How is Industry 4.0 changing the manufacturing landscape in third world developing countries?
- **RQ2:** What is the effect of Industry 4.0 on the environment in developing countries?
- **RQ3:** How will Industry 4.0 affect the use of natural resources in developing countries?
- **RQ4:** What policies can help third world developing countries take advantage of Industry 4.0?
- **RQ5:** What are the challenges faced by third world developing countries in implementing Industry 4.0?

Keywords:

developing countries, Industry 4.0, natural resources, policy, challanges

Inclusion/Exclusion:

inclusion	exclusion
Scientific papers published in journals/conferences	Scientific papers not available in English
Scientific papers accessible electronically	Scientific papers less than 2 pages
Books	Wikipedia, YouTube, Facebook

List of papers

NO.	Research Name	Keywords	Link
1.	Communication middleware technologies for industrial distributed control systems: A literature review	Industry 4.0, Industrial technology (Validation research)	Link
2.	Advanced manufacturing solution to industry 4.0 trend through sensing network and Cloud Computing technologies	Industry 4.0, Manufacturing (Solution proposal)	Link
3.	Integration of agent technology into manufacturing enterprise: A review and platform for industry 4.0	Industry 4.0, Manufacturing (Evaluation research)	Link
4.	Intelligent manufacturing — Chinese industry 4.0	Industry 4.0, Manufacturing (Evaluation research)	Link
5.	Industry 4.0 with cyber-physical integration: A design and manufacture perspective	Industry 4.0, Manufacturing (Evaluation research)	Link
6.	Geographic Information Science and technology as key approach to unveil the potential of Industry 4.0: How location and time can support smart manufacturing Sign In or Purchase	Industry 4.0, Manufacturing (Solution proposal)	Link
7.	Bespoke muesli sets industry 4.0 on its way [Manufacturing Digitisation]	Industry 4.0, Manufacturing (Solution proposal)	Link

8.	Manufacturing Ontology Development Based on Industry 4.0 Demonstration Production Line	Industry 4.0, Manufacturing (Solution proposal)	Link
9.	Industry 4.0 Development and Application of Intelligent Manufacturing	Industry 4.0, Manufacturing (Evaluation research)	Link
10.	A literature review on variability in semiconductor manufacturing: The next forward leap to Industry 4.0	Industry 4.0, Manufacturing (Validation research)	Link
11.	Mobile Services for Customization Manufacturing Systems: An Example of Industry 4.0	Industry 4.0, Manufacturing (Evaluation research)	Link
12.	CASOA: An architecture for agent-based manufacturing system in the context of Industry 4.0	Industry 4.0, Manufacturing (Solution proposal)	Link
13.	Cyber-physical system integration for industry 4.0: Modelling and simulation of an induction heating process for aluminium-steel molds in footwear soles manufacturing	Industry 4.0, Manufacturing (Solution proposal)	Link
14.	From Intelligent Manufacturing to Smart Manufacturing for Industry 4.0 Driven by Next Generation Artificial Intelligence and Further On	Industry 4.0, Manufacturing (Evaluation research)	Link
15.	Self-Organizing Manufacturing: Current Status and Prospect for Industry 4.0	Industry 4.0, Manufacturing (Evaluation research)	Link
16.	Big Data in Wisdom Manufacturing for Industry 4.0	Industry 4.0, Manufacturing (Solution proposal)	Link
17.	Robot control and decision making through real-time sensors monitoring and analysis for industry 4.0 implementation on aerospace component manufacturing	Industry 4.0, Manufacturing (Solution proposal)	Link
18.	Security trends and advances in manufacturing systems in the era of industry 4.0	Industry 4.0, Manufacturing (Evaluation research)	Link
19.	Simulation-based dynamic shop floor scheduling for a flexible manufacturing system in the industry 4.0 environment	Industry 4.0, Manufacturing (Solution proposal)	Link
20.	Intelligent sensing for robotic re-manufacturing in aerospace. An industry 4.0 design based prototype	Industry 4.0, Manufacturing (Solution proposal)	Link
21.	Digital Twin and Big Data Towards Smart Manufacturing and Industry 4.0: 360 Degree Comparison	Industry 4.0, Manufacturing (Evaluation research)	Link
22.	Industry 4.0: Advances of Germany's manufacturing innovation	Industry 4.0, Manufacturing (Evaluation research)	Link
23.	Agile Factory - An Example of an Industry 4.0 Manufacturing Process	Industry 4.0, Manufacturing (Validation research)	Link
24.	Selection of a data exchange format for industry 4.0 manufacturing systems	Industry 4.0, Manufacturing (Evaluation research)	Link
25.	State of product detection method applicable to Industry 4.0 manufacturing models with small quantities and great variety	Industry 4.0, Manufacturing (Evaluation research)	Link
26.	Modeling business motivation and underlying processes for RAMI 4.0-aligned cyber-physical production systems	Industry 4.0, Cyber Physical Systems (Solution proposal)	Link
27.	Big data as a promoter of industry 4.0: Lessons of the semiconductor industry	Industry 4.0, Cyber Physical Systems (Validation research)	Link

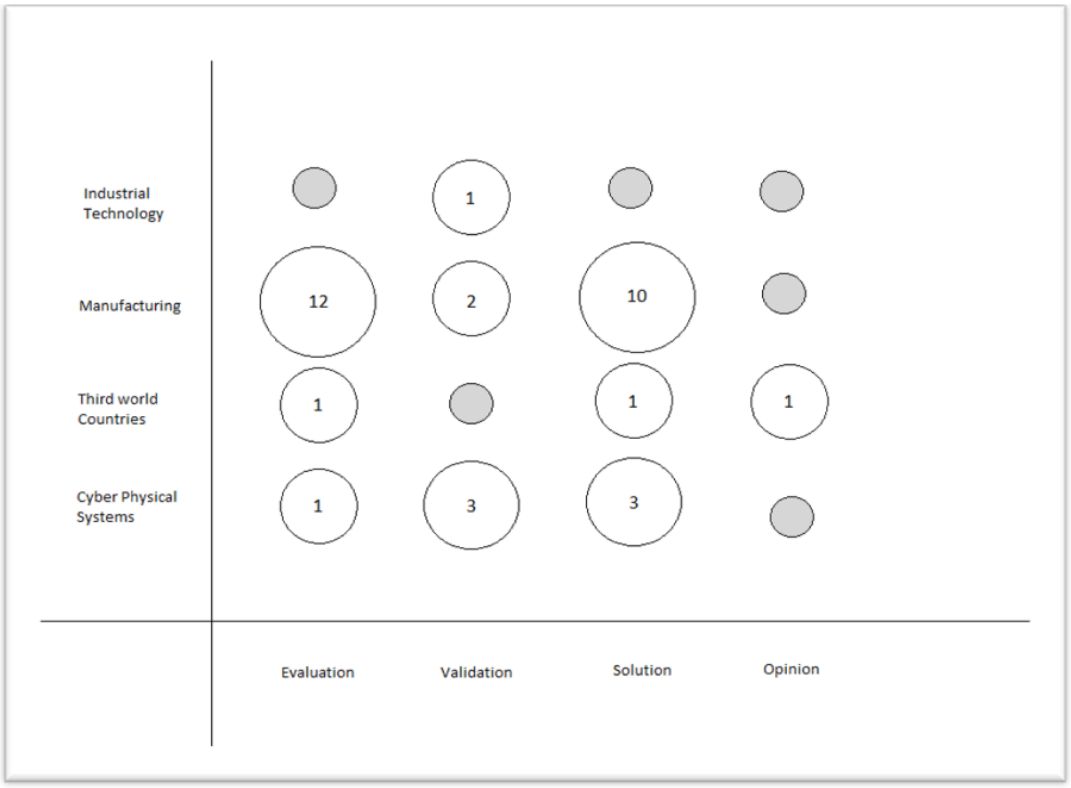
28.	Cyber physical systems in the context of Industry 4.0	Industry 4.0, Cyber Physical Systems (Evaluation research)	Link
29.	A cyber-physical architecture for industry 4.0-based power equipments detection system	Industry 4.0, Cyber Physical Systems (Solution proposal)	Link
30.	An improved Cyber-Physical Systems architecture for Industry 4.0 smart factories	Industry 4.0, Cyber Physical Systems (Solution proposal)	Link
31.	A BPMN extension for modeling Cyber-Physical-Production-Systems in the context of Industry 4.0	Industry 4.0, Cyber Physical Systems (Validation research)	Link
32.	Cyber-physical system integration for industry 4.0: Modelling and simulation of an induction heating process for aluminium-steel molds in footwear soles manufacturing	Industry 4.0, Cyber Physical Systems (Validation research)	Link
33.	The impact of dynamic spectrum access network on third world countries: spectrum allocation issues, network and economic growth (the African tale)	Industry 4.0, Third World Countries Evaluation research	Link
34.	Third World electrification (with Industry 4.0)	Industry 4.0, Third World Countries (Solution proposal)	Link
35.	Is Remote Sensing an Economic Tool In Third World Countries?	Industry 4.0, Third World Countries (Opinion paper)	Link

Classification scheme

1. Research type:

A. Evaluation research
B. Validation research
C. Solution proposal
D. Opinion paper

2. Bubble plot



Question and Answers

- Question 1: Is it possible to use the industry 4.0 in developing countries?
- Answer 1: Yes. Systems used industry 4.0 technologies to establish a lot of projects to help developing countries in the middle east, for example the airport control system in Lebanon.

- Question 2: Smart city. Is there a way to implement the smart city approach to protect Iraqi borders from the external attacks and threats?
- Answer 2: Yes, it is possible, for protecting and controlling the borders with Lebanon Syria and Israel, smart approaches can be used to minimize human involvement at threat-prone spots.

- Question 3: Is it possible to use industry 4.0 technology to build secure communication in the army?

  Answer 3: Yes, using a lot of sensors and encrypted communication channels it is possible to use industry 4.0 technology to build secure communication in the army.