

## **INDUSTRY 4.0 MATURITY INDEX**

With this questionnaire, the Maturity index score and level of an enterprise in Industry for Industry 4.0 are determined.

The questionnaire will be completed on a voluntary basis, the data will definitely not be shared with third parties.

There are questions for 6 dimensions, as well as general questions. General questions do not affect the assessment, they are used for classification.

The weight of each criterion in scoring is different. The weight of the questions in each criterion may also be different. For this, AHP (Analytical Hierarchy Process) will be used.

Questions asked in the survey:

- 1) Open ended
- 2) There is or There is Not
- 3) Yes or No
- 4) Multiple Choice
- 5) Multiple Selection
- 6) Likert Scale (between 1 and 5, one of the five boxes will be marked)

Thank you very much for your time and I wish you good work. I would appreciate it if you could send me the Word file by e-mail (cihanunal42@gmail.com ).

## General Questions

1. Your e-mail address. ....

2. Write down the year of foundation of your business.

.....

3. What is the field of activity of your company?

- ☐ Mechanical Engineering    ☐ Manufacturing..  
☐ Service    ☐ Logistics  
☐ Electronics and Energy    ☐ Other (Please Specify) .....

4. What is the level of interest of your business in Industry 4.0?

- ☐ 1: No interest    ☐ 4. Applying  
☐ 2: At the initial stage    ☐ 5. It has been applied for a long time  
☐ 3: Prepares and implements pilot projects.

Your answer is 1: If you are not interested, please do not go to other questions. Thank you for your interest.

5. What is your role in the business?

- ☐ Information Processing Manager  
☐ Digital Transformation Specialist  
☐ Production Manager  
☐ Other (Please Specify) .....

6. Does your business have a corporate website?

- ☐ Yes .....  
☐ No

7. Is your Company's Equity Capital domestic or foreign?

- ☐ Domestic    ☐ Foreign    ☐ Both domestic and foreign

8. How many people work in your business?

- ☐ 1. Very few (between 1-9)  
☐ 2. Few (between 10-50)  
☐ 3. Medium (between 1-250)  
☐ 4. Large (between 51-1000)  
☐ 5. Too Big (1001+)

9.How much was the annual turnover of your business last year?

- ☐ < 1 million TL  
☐ 1-10 million TL  
☐ 10-50 million TL  
☐ 50-100 million TL  
☐ 100-250 million TL  
☐ 250-500 million TL  
☐ > 500 million

10.When did the idea of Industry 4.0 Transformation appear in your business?

.....

### Strategy and Management

11.Do you have an Industry 4.0 strategy?

- ☐ Yes ☐ No ☐ Being prepared

If your answer is “NO”, then Please proceed to the Question 14.

12.How do you define the implementation status of your Industry 4.0 strategy?

- ☐ Pilot initiatives have started ☐ The strategy was implemented  
☐ Developing a strategy ☐ The strategy is being implemented.  
☐ The strategy was formulated

13.Are you using indicators to monitor Industry 4.0 application status in your business?

- ☐ Yes, we have an indicator. ☐ No, we don't.

14.Does the senior management provide the necessary support?

(Please give a score between 1 and 5 from ‘Not giving at all’ to ‘Giving a lot of support’)

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

15.Do you have enough information about the benefits and effects of Industry 4.0?

(Please give a score between 1 and 5 from ‘We don't have any information’ to ‘We have enough information’)

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

16.Are you ready to take risks (invest) to work with Industry 4.0?

(Please give a score between 1 and 5 from ‘We are not ready’ to ‘We are ready’)

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

17. Your investments made over the past two years in the following parts of the business?

	None	Small	Medium	Large	Very large
Research and Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production / Manufacturing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality Control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Purchasing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logistics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accounting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Renewable Energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. What are your plans for the next 5 years in the following sections of the enterprise?

	None	Small-scaled	Medium-scaled	Large-scaled	Very large-scaled
Research and Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production / Manufacturing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality Control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Purchasing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Logistics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accounting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Renewable Energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Are you considering allocating resources to implement Industry 4.0?

(Please give a score between 1 and 5 from 'We don't think at all' to 'We think')

☐ 1      ☐ 2      ☐ 3      ☐ 4      ☐ 5

20. Are there financial supports and stable management support?

(From "There is none" to "There is enough", please give a score between 1 and 5)

☐ 1      ☐ 2      ☐ 3      ☐ 4      ☐ 5

21. What are your reasons for switching to Industry 4.0?

(Select the option(s) that suits you. You can tick more than one option. Leave the inappropriate option(s) blank)

- ☐ Customer and supplier requirements
- ☐ Due to the fact that competitors are implementing Industry 4.0
- ☐ Reducing costs
- ☐ Improving the period of market delivery time
- ☐ Changing legislation and legal obligation
- ☐ Lack of skilled labour
- ☐ Advice of consultants
- ☐ We have a conscious strategy and a roadmap for Industry 4.0
- ☐ Reducing labour costs
- ☐ Incentives
- ☐ I am impressed with the businesses and success stories that have switched to Industry 4.0

### Customers and Suppliers

22. Are your suppliers domestic or stranger?

- ☐ Domestic      ☐ Foreign      ☐ Both domestic and foreign

23. Is e-commerce (online sales) being done in your business?

- ☐ Yes      ☐ No

24. Do you use a Customer Relationship Management System?

- ☐ If yes, which one? .....  
☐ No

### Employees and Corporate Culture (Sense of Belonging)

25. Do employees have the necessary knowledge about Industry 4.0?

(Please give a score between 1 and 5 from “We don't have any information” to “We have all the necessary information”)

- ☐ 1      ☐ 2      ☐ 3      ☐ 4      ☐ 5

26. Are employees given trainings on technologies related to Industry 4.0 in the workplace?

(Please give a score between 1 and 5 from ‘No training is given at all’ to ‘Training is given very often’)

- ☐ 1      ☐ 2      ☐ 3      ☐ 4      ☐ 5

27. When it comes to future requirements for Industry 4.0, how do you assess the current skills of employees?

(Please give a score between 1 and 5 from 'Very insufficient' to 'Very sufficient')

	1	2	3	4	5
IT infrastructure	0	0	0	0	0
Automation technology	0	0	0	0	0
Data analysis	0	0	0	0	0
Data security/communication security	0	0	0	0	0
Development or implementation of assistance systems	0	0	0	0	0
Collaboration software	0	0	0	0	0
Non-technical skills such as system thinking and process understanding	0	0	0	0	0

28. Are employees encouraged and financially supported to acquire Professional Skills?

(Please rate between 1 and 5 from 'Not supported at all' to 'Very supported')

☐ 1      ☐ 2      ☐ 3      ☐ 4      ☐ 5

29. How are the recruitment processes done?

- ☐ It is advertised on the corporate web page of the enterprise
- ☐ From job search websites like kariyer.net
- ☐ Other .....

### Technology (Products)

30. What is your status using the following technologies that you use?

(1 is 'Underused' 5 is 'highly used', please give a score between 1 and 5)

	1	2	3	4	5
Big Data and analytics	0	0	0	0	0
Autonomous Robots	0	0	0	0	0
Simulation	0	0	0	0	0
Horizontal and Vertical System Integration	0	0	0	0	0
Internet of Things (including sensors)	0	0	0	0	0
Cyber Security	0	0	0	0	0
Additive Manufacturing (3D)	0	0	0	0	0
Augmented Reality	0	0	0	0	0
Cloud Computing	0	0	0	0	0
Mobile Technologies	0	0	0	0	0
Artificial Intelligence	0	0	0	0	0
RFID and RTLS	0	0	0	0	0

31. Select the option that suits you from the following technologies that you do not use.

	<b>We don't plan on using it at all.</b>	<b>It will be used in 2 years</b>	<b>It will be used later</b>
Big Data and analytics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Autonomous Robots	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Simulation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Horizontal and Vertical System Integration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet of Things (including sensors)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cyber Security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Additive Manufacturing (3D)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Augmented Reality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cloud Computing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile Technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artificial Intelligence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
RFID and RTLS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

32. Which of the following systems are you using?

Manufacturing execution system (MES)	<input type="checkbox"/>
Enterprise resource planning (ERP)	<input type="checkbox"/>
Product lifecycle management	<input type="checkbox"/>
Product data management	<input type="checkbox"/>
Product planning system(MPS)	<input type="checkbox"/>
Obtaining production data	<input type="checkbox"/>
Machine data collection	<input type="checkbox"/>
The computer-aided design(CAD)	<input type="checkbox"/>
Supply chain management	<input type="checkbox"/>

33. Do the following systems have an interface with the main system?

	<b>YES</b>	<b>NO</b>
Manufacturing execution system (MES)	<input type="checkbox"/>	<input type="checkbox"/>
Enterprise resource planning (ERP)	<input type="checkbox"/>	<input type="checkbox"/>
Product lifecycle management	<input type="checkbox"/>	<input type="checkbox"/>
Product data management	<input type="checkbox"/>	<input type="checkbox"/>
Product planning system(MPS)	<input type="checkbox"/>	<input type="checkbox"/>
Obtaining production data	<input type="checkbox"/>	<input type="checkbox"/>
Machine data collection	<input type="checkbox"/>	<input type="checkbox"/>
The computer-aided design(CAD)	<input type="checkbox"/>	<input type="checkbox"/>
Supply chain management	<input type="checkbox"/>	<input type="checkbox"/>

34.Are there any production processes in your enterprise that respond automatically or semi-automatically in real time to changes in production conditions? Mark the one that best suits your situation.

- ☐ Between companies  
☐ Only in certain departments  
☐ During the test and pilot phase  
☐ Yok

35.How is your Information Technologies (IT) organization organized?

- ☐ There is no on-premises IT department  
☐ There is a central IT department  
☐ Every department has local IT  
☐ There are IT specialists attached to each department  
☐ Getting external support

36.At what stage are your IT security solutions?

	YES	NO
Security of internal data storage	<input type="radio"/>	<input type="radio"/>
Security of data through Cloud Computing	<input type="radio"/>	<input type="radio"/>
Communication security for on-premises data exchange	<input type="radio"/>	<input type="radio"/>
Communication security for data exchange with business partners	<input type="radio"/>	<input type="radio"/>

37.For what purpose are Cloud Computing Services used in your business?

	YES	NO
For Data Storage	<input type="radio"/>	<input type="radio"/>
For Data Analysis	<input type="radio"/>	<input type="radio"/>
For cloud-based software	<input type="radio"/>	<input type="radio"/>

38.Which of the products based on information and communication technology are equipped with the following functions in your enterprise?

	YES	NO
Product memory	<input type="radio"/>	<input type="radio"/>
Self-reporting	<input type="radio"/>	<input type="radio"/>
Assistance systems	<input type="radio"/>	<input type="radio"/>
Tracking	<input type="radio"/>	<input type="radio"/>
Object information	<input type="radio"/>	<input type="radio"/>
Automatic identification	<input type="radio"/>	<input type="radio"/>



39. Do you use Enterprise Resource Planning software within the company?

☐ Logo

☐ Microsoft Dynamics

☐ Other (Please specify).....

☐ We don't use it.

40. Do you use a Product Tracking System?

☐ If yes, which one? : .....

☐ No

41. Do you keep track of the product warranty processes?

☐ Yes

☐ No

### Data and Security

42. Do you collect machine and process data during production?

(Please give a score between 1 and 5 from 'We don't collect at all' to 'We collect at a very good level')

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

43. What data is collected during production about your machines, processes, products and malfunctions and their causes, and how are they collected?

	No	Manually	Automatic
Inventory data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production processing times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Equipment capacity utilization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production residues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Error quota	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employee usage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Positioning data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data on the remaining processing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transition times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall equipment efficiency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

44. How is the data you collect used?

- ☐ Predictive maintenance
- ☐ Optimization of logistics and production processes
- ☐ Quality management
- ☐ Automatic production control using real-time data
- ☐ Optimization of resource consumption (material, energy)
- ☐ Other .....

45. Do you analyse the data you have collected during the usage phase?

- ☐ Yes    ☐ No

46. How much of the data you collect do you use approximately?

- ☐ One quarter
- ☐ Half
- ☐ Three quarters
- ☐ All

47. Is there enterprise-wide (internal) data sharing in the following departments?

	Yes	No
Research and Development	<input type="checkbox"/>	<input type="checkbox"/>
Production / Manufacturing	<input type="checkbox"/>	<input type="checkbox"/>
Quality Control	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing	<input type="checkbox"/>	<input type="checkbox"/>
Logistics	<input type="checkbox"/>	<input type="checkbox"/>
Sale	<input type="checkbox"/>	<input type="checkbox"/>
Finance / Accounting	<input type="checkbox"/>	<input type="checkbox"/>
Service	<input type="checkbox"/>	<input type="checkbox"/>
IT	<input type="checkbox"/>	<input type="checkbox"/>
Human Resources	<input type="checkbox"/>	<input type="checkbox"/>
Foreign Trade	<input type="checkbox"/>	<input type="checkbox"/>

48. Is there data sharing with Customers and Suppliers in the following departments?

	Yes	No
Research and Development	<input type="checkbox"/>	<input type="checkbox"/>
Production / Manufacturing	<input type="checkbox"/>	<input type="checkbox"/>
Quality Control	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing	<input type="checkbox"/>	<input type="checkbox"/>
Logistics	<input type="checkbox"/>	<input type="checkbox"/>
Sale	<input type="checkbox"/>	<input type="checkbox"/>
Finance / Accounting	<input type="checkbox"/>	<input type="checkbox"/>
Service	<input type="checkbox"/>	<input type="checkbox"/>

IT	<input type="radio"/>	<input type="radio"/>
Human Resources	<input type="radio"/>	<input type="radio"/>
Foreign Trade	<input type="radio"/>	<input type="radio"/>

#### Benefiting from Legal Regulations and Incentives

49.Does your company have an R&D/DESIGN center?

☐ Yes ☐ No

50.Have you ever done an R&D/DESIGN project?

☐ Yes ☐ No

51.Is there a cooperation between the University and the industry?

☐ Yes ☐ No

52. Are you using a Consultant Company for Industry 4.0?

☐ Yes ☐ No

53. Are you a participating in a TUBITAK projects?

☐ Yes ☐ No

54. Are you participating in a European Union project?

☐ Yes ☐ No

55. Are you participating in a KOSGEB project?

☐ Yes ☐ No

56. Apart from these, do you do projects with different local and national Agencies?

☐ Yes ☐ No

57.Do you benefit from incentives?

☐ Yes ☐ No

58.Do you have an ISO27001 Information Security Management System certificate for your business?

☐ Yes ☐ No