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QUALITY OF EDUCATIONAL SERVICES - INDUSTRY 4.0 REQUIREMENTS

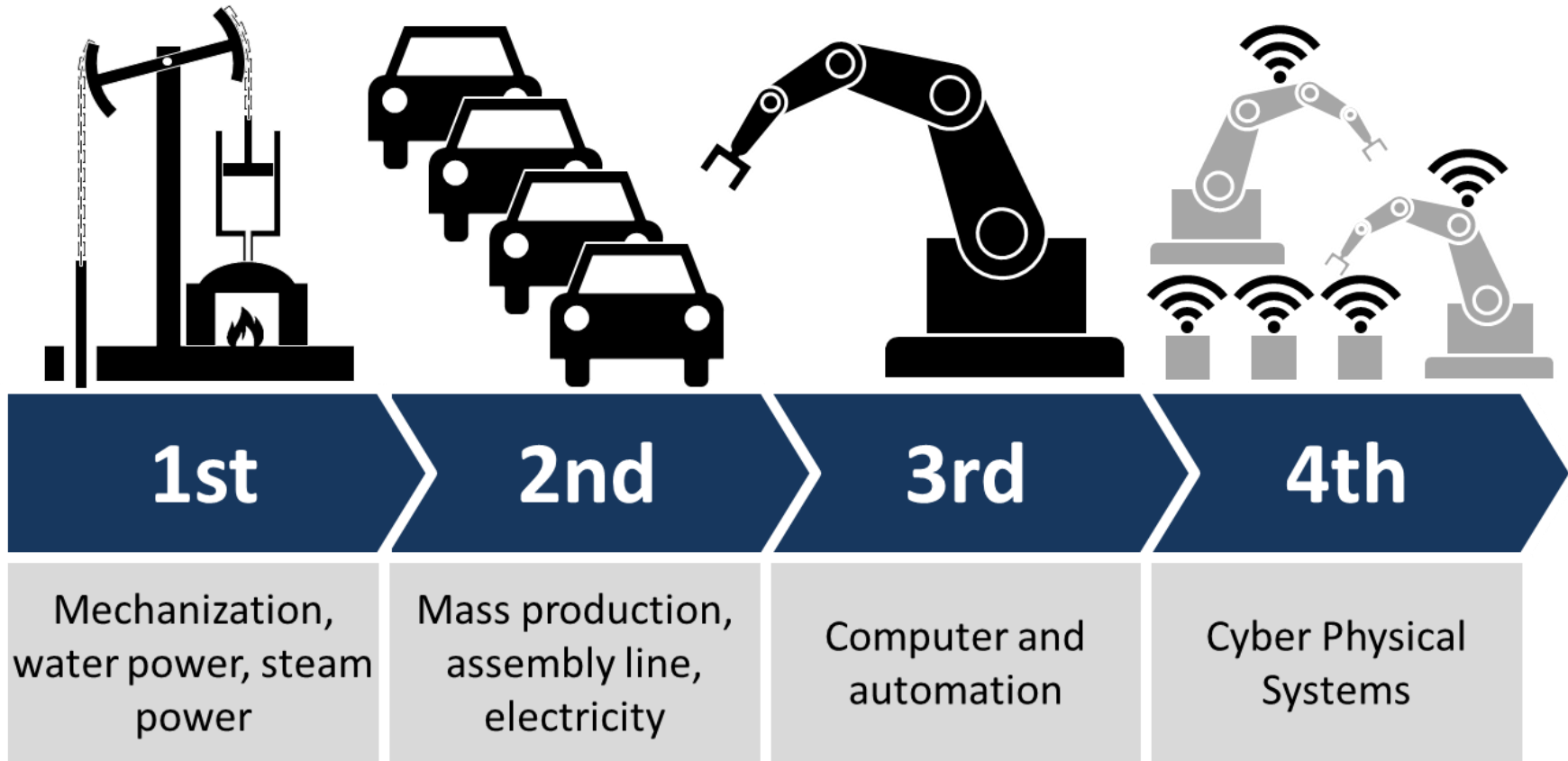
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INDUSTRY 4.0





- Turbulent economic environment, ongoing industrial revolution 4.0 sets new requirements for universities in the scope of not only program content but also the transfer of knowledge in a situation where **65% of students want to do a job/profession that does not yet exist**



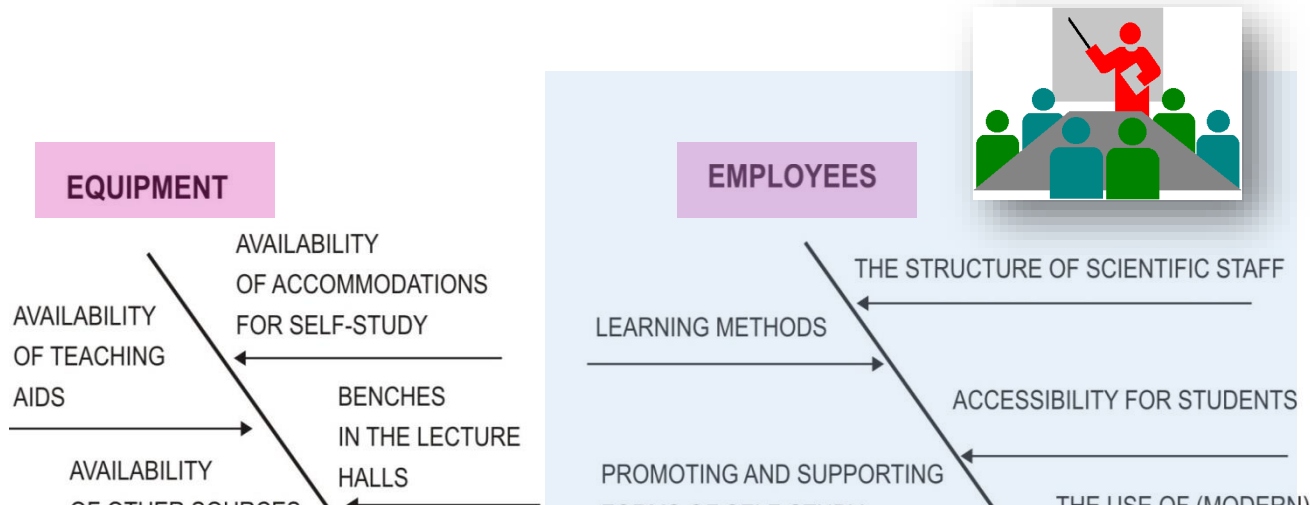


NEW REQUIREMENTS

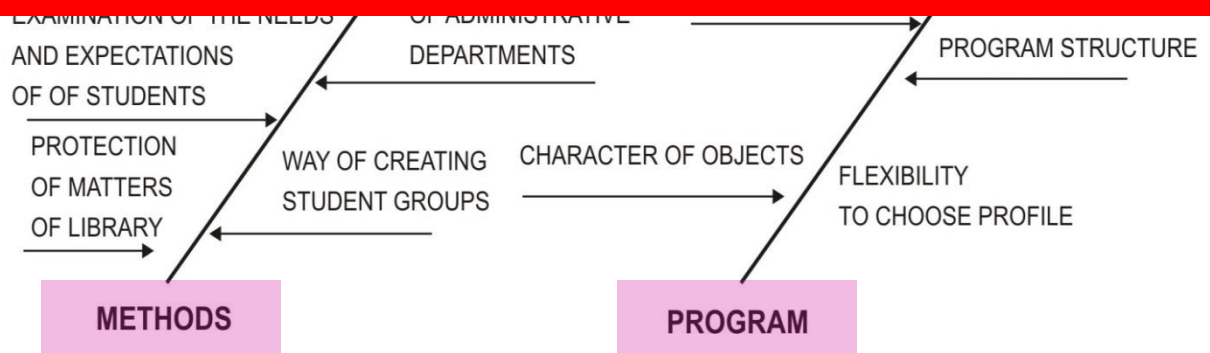
Human resources Future employees

CV - digital skills

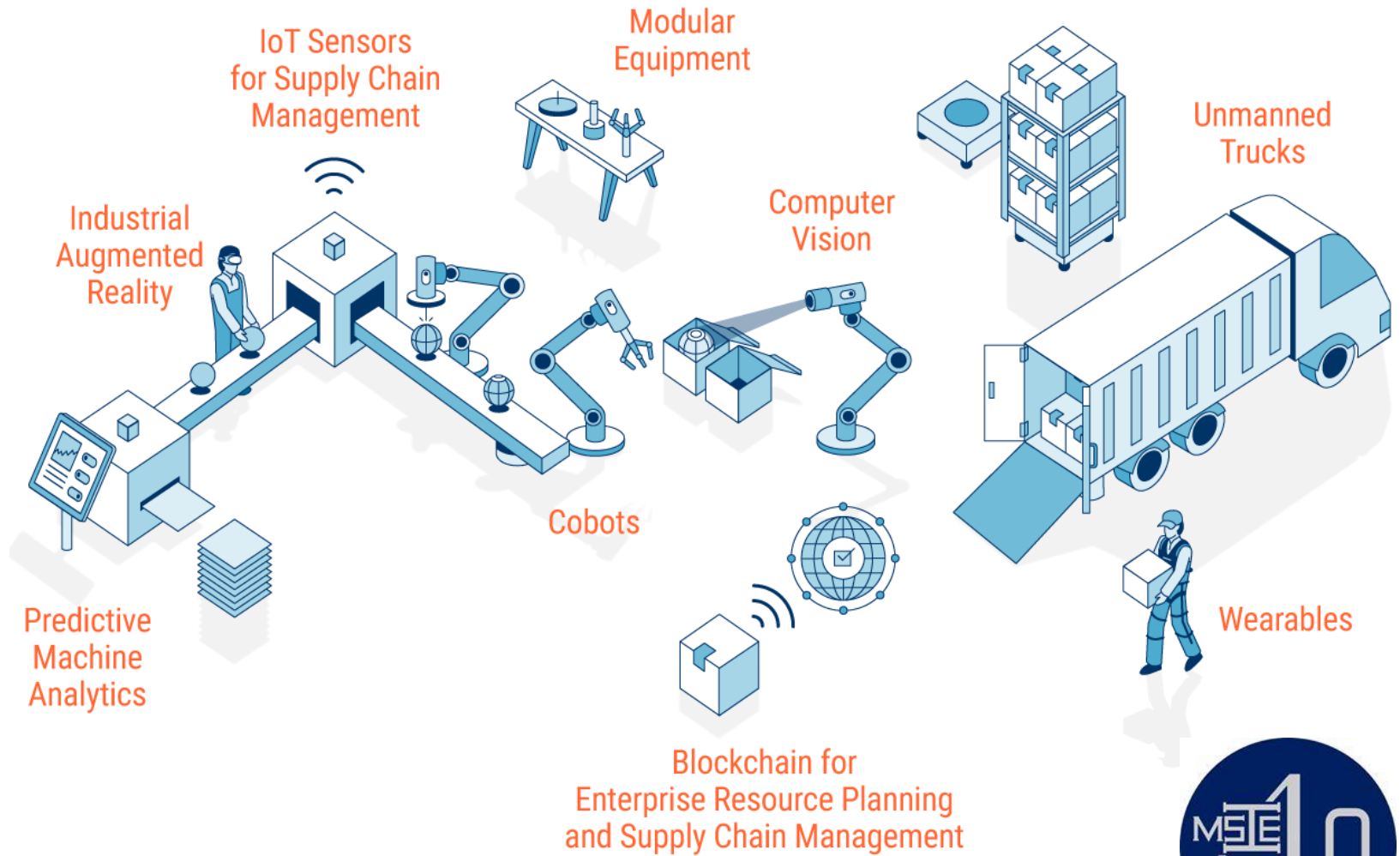




The role of the employee and the university will be changed and changed. Market requirements are not one step ahead of the educational system



FACTORY OF THE FUTURE

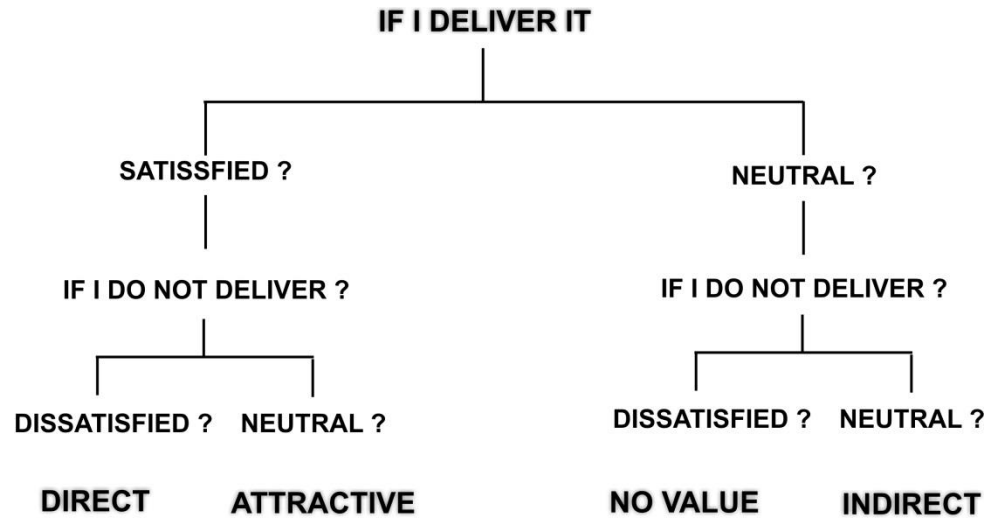
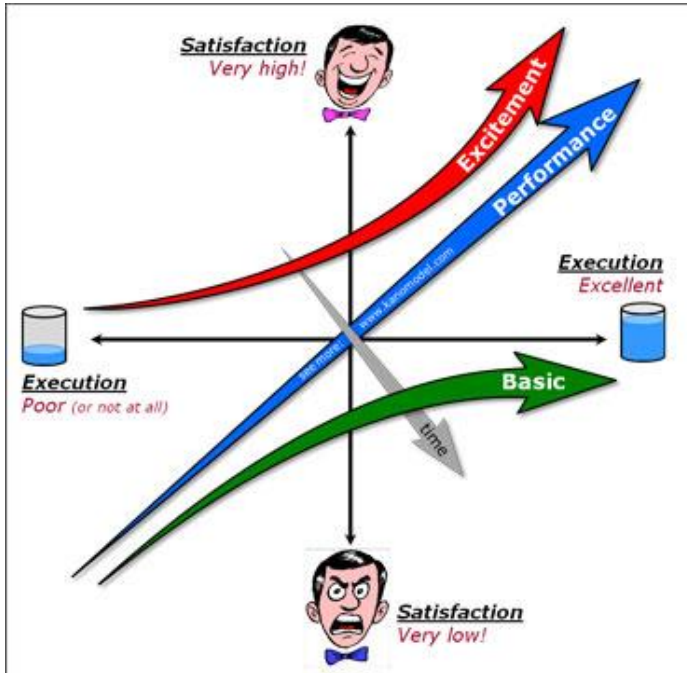




The quality of the didactic service will also be affected by the correct definition of not current but future market requirements. In order to determine whether the program frameworks meet the expectations of stakeholders, the **Kano model can be used**



KANO MODEL



Determination of the type of feature in the Kano method

		Negative				
Positive		Suits me	It has to be	I do not care	I can live with that	It does not suit me
	Suits me	Q	A	A	A	O
	It has to be	R	I	I	I	M
	I do not care	R	I	I	I	M
	I can live with that	R	I	I	I	M
	It does not suit me	R	R	R	R	Q

- Attractive quality attributes (A)
- One-dimensional quality attributes (O)
- Must-be quality attributes (M)
- Indifferent quality attributes (I)
- Reverse quality attributes (R)



TEST RESULTS

The research was carried out based on surveys using the google form among students and graduates of the first degree in the field of management and production engineering. In the case of employers, direct surveys supported by the interview were used. This approach was associated with the need to explain the descriptive concepts contained in the survey. For over half of the employers interviewed, the terms used were misunderstood or imprecisely interpreted.

It also indicates a large gap in the preparation of the SME sector for transformation 4.0.

The selection of the sample was purposeful, non-probabilistic.

To the tests were qualified **96 student questionnaires**, 60 questionnaires of graduates of first-degree studies in management and production engineering who continued their studies at the second-degree studies (36 questionnaires) and **21 employers** from the small and medium-sized enterprises sector.



The importance of quality attributes according to students, graduates and employers

Requirements	The number of votes in a given category [students/graduates /employers]					
	A	M	O	R	Q	I
1.Active teaching methods	-/-	35/24/7	25/12/14	-/-	-/-	-/-
2. Problem-based teaching	5/-	16/27/18	39/9/3	-/-	-/-	-/-
3.Lectures	-/-	48/11/17	-/-	-/1-	4/8/2	8/16/2
4.Case study	7/-	15/20/19	33/10/2	-/-	-/-	5/4/-
5.Multidisciplinary competences	11/12/5	15/16/5	25/5/10	-/-	5/-	4/3/1
6.Development of soft skills	3/5/7	20/12/6	8/14/8	-/-	2/-	5/5/-
7.Development of technical competence	-/-	58/30/20	2/6/1	-/-	-/-	-/-
8.Supporting advanced production systems	8/8/3	24/12/8	28/15/9	-/-	-/-	-/1/2
9.Supporting intelligent production concept	20/5/4	16/7/7	24/24/10	-/-	-/-	-/-
10.Competence in big data	7/2/4	21/18/4	32/16/10	-/-	-/-1	-/-2
11.Competences in real time data / sensor	10/5/-	17/26/9	25/5/10	-/-	-/-	8/-/2
12.Competence in mobile applications	28/7/9	12/8/8	20/21/4	-/-	-/-	-/-
13.Supporting co-created product design & development	32/4/2	20/13/8	8/18/10	-/-	-/-	-/1/1
14.Support for cyber-physical systems	28/16/2	15/13/2	15/7/7	-/-	-/-	2/-/10
15.Support for modern maintenance systems	20/2/-	18/22/9	22/10/12	-/-	-/-	-/-



DISCUSSION

Based on the presented research results, it should be stated that the features that should absolutely be met in the students' opinion are: **active teaching methods**.

Students indicate **high expectations** (M) in relation to **active methods, problem-based teaching and case study**, but do not attach so much importance to lectures (I).

Active teaching methods in the characteristics of the quality of the educational service increase the **student's satisfaction**, and its lack causes dissatisfaction.



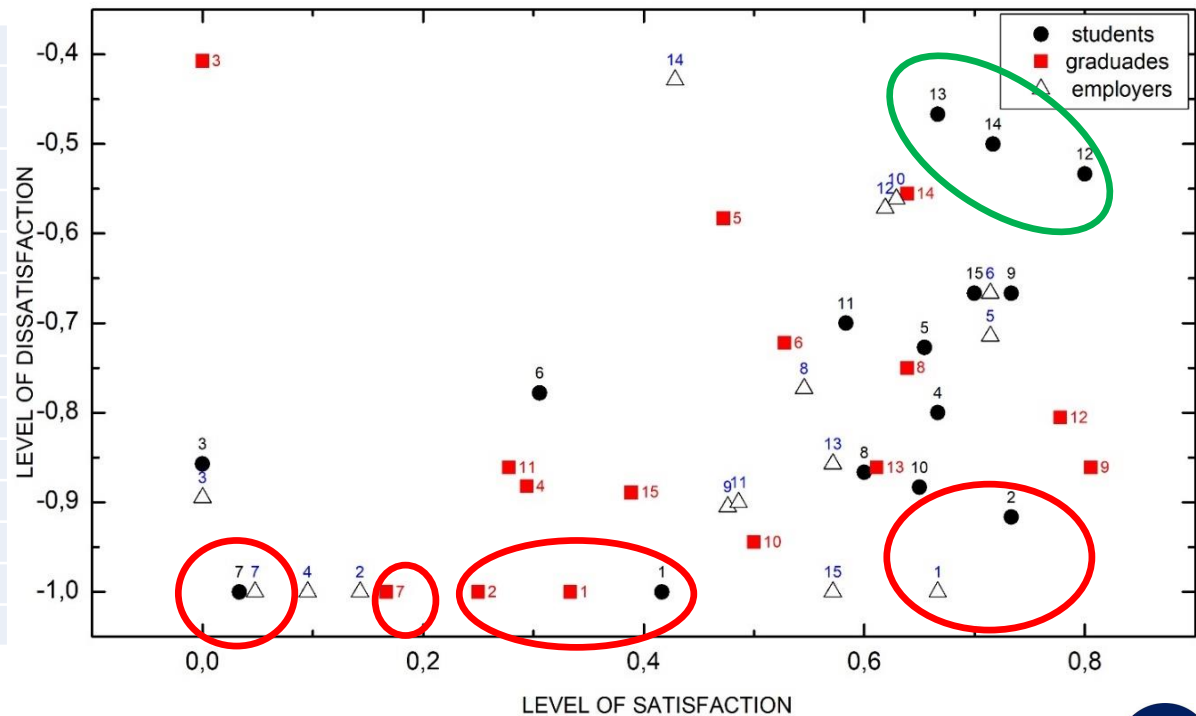
DISCUSION

In order to determine the impact of particular features on the level of student/graduate/employer satisfaction

$$\text{level of satisfaction} = \frac{A+O}{A+O+M+I}$$

$$\text{level of dissatisfaction} = \frac{O+M}{(A+O+M+I) \cdot (-1)}$$

- 1.Active teaching methods
- 2. Problem-based teaching
- 3.Lectures
- 4.Case study
- 5.Multidisciplinary competences
- 6.Development of soft skills
- 7.Development of technical competence
- 8.Supporting advanced production systems
- 9.Supporting intelligent production concept
- 10.Competence in big data
- 11.Competences in real time data / sensor
- 12.Competence in mobile applications
- 13.Supporting co-created product design & development
- 14.Support for cyber-physical systems
- 15.Support for modern maintenance systems



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