World Manufacturing Forum
WMF

THE 2019 WORLD MANUFACTURING FORUM REPORT

SKILLS FOR THE FUTURE OF MANUFACTURING

Prof. Marco Taisch
WMF Scientific Chairman

Evolution of Manufacturing

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Societal Megatrends

-

Manufacturing Challenges

-

Future-oriented Manufacturing

Skills Gap Trends

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Top 10 Skills

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Emerging Roles in Manufacturing

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Skills Assessment and Development

Whitepaper to Give Urgency to the Manufacturing Skills Challenge

- In-depth Discussion of the Skills Gap Phenomenon
- Outline the Top Skills Required for Manufacturing Workers
- Key Recommendations to Promote a Skilled Workforce

The Skills Gaps Problem is a GLOBAL CHALLENGE
The 2019 WMF Report is a Culmination of a GLOBAL EFFORT

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COUNTRIES
High-level Report
Advisory Board

5
CONTINENTS
40+
Expert Interviews

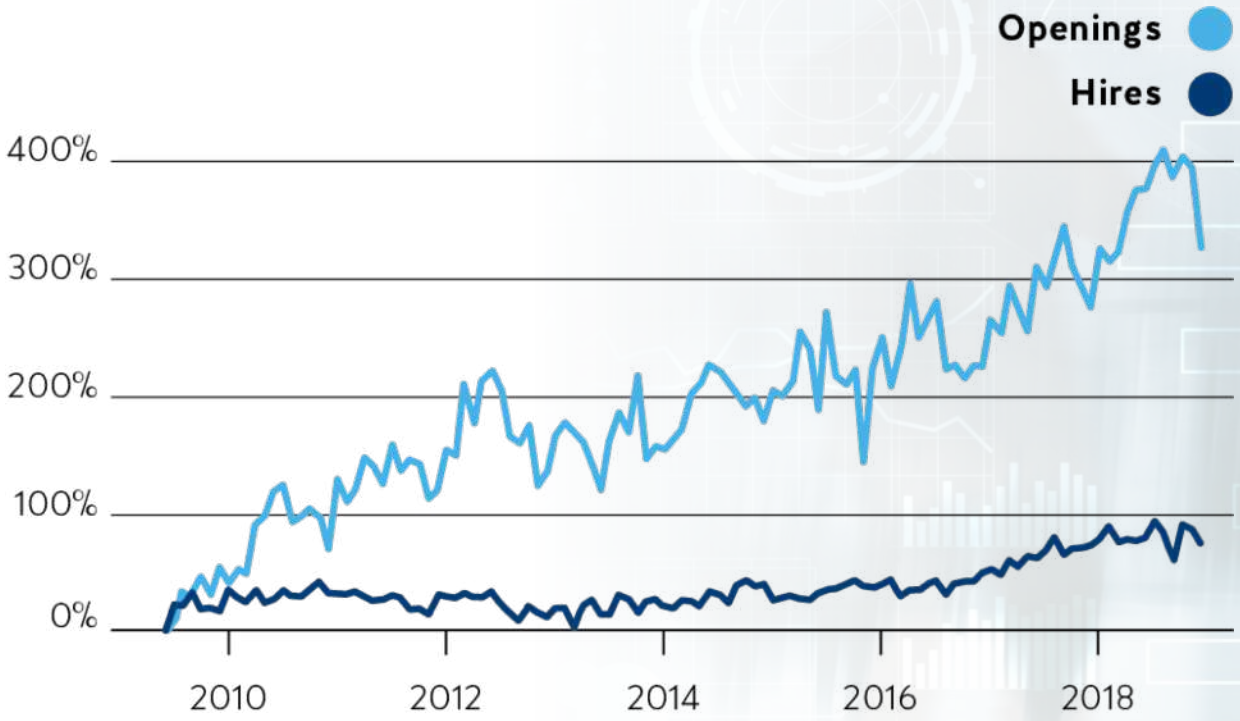
20+
CASE STUDIES
Collection of
Best Practices

OPEN CALL

For Initiatives on Skills for the Future of Manufacturing

Skills Gaps in Numbers

Manufacturing Openings and Hires (cumulative % change since June 2009)



Lack of Focus on Training

Lagging Education Systems

Bad Image of Manufacturing Jobs

Ageing Talent Pool

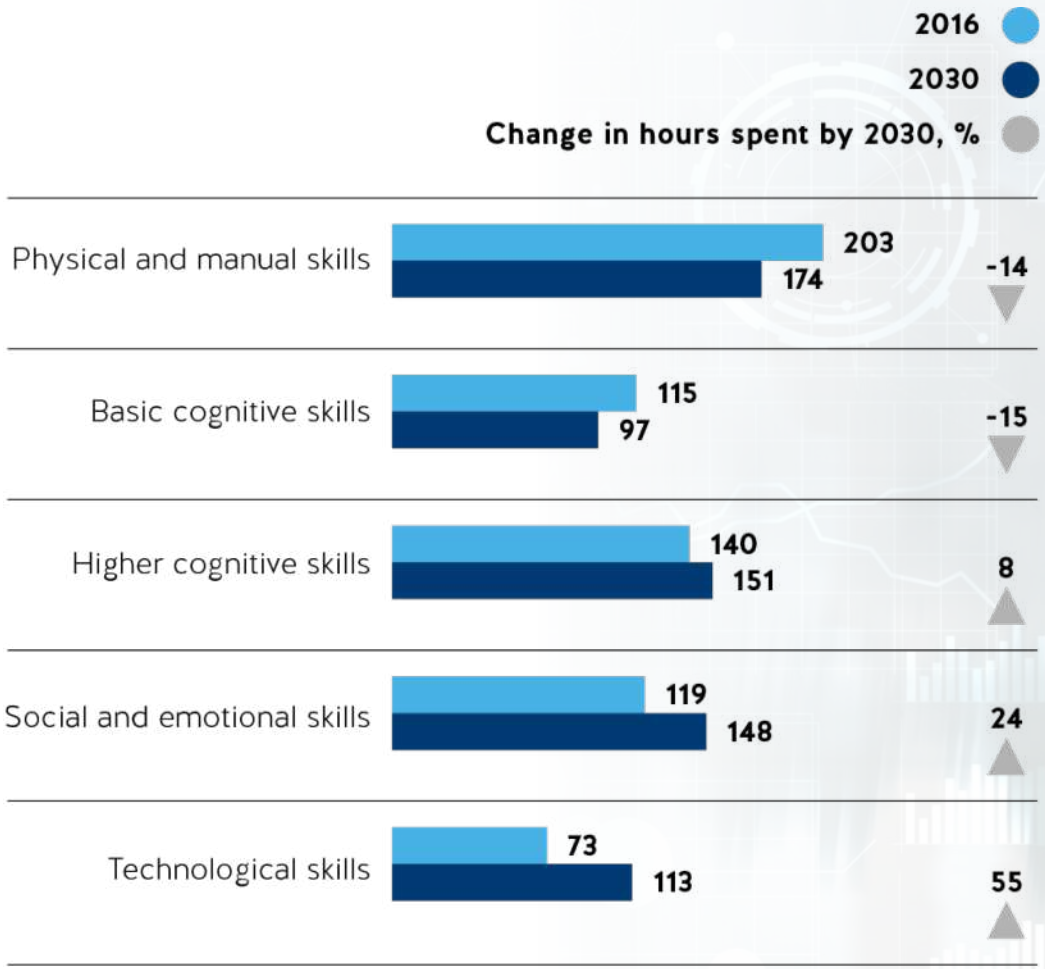
Underrepresented Populations

Source: Bureau of Labour Statistics

The Skills Gap in Manufacturing is Growing rapidly

Skills Gaps in Numbers

Total hours worked in Europe and United States, 2016 vs 2030 estimate, billion



Proliferation of New Technologies

Automation of Workplaces

Obsolete and Emerging Job profiles

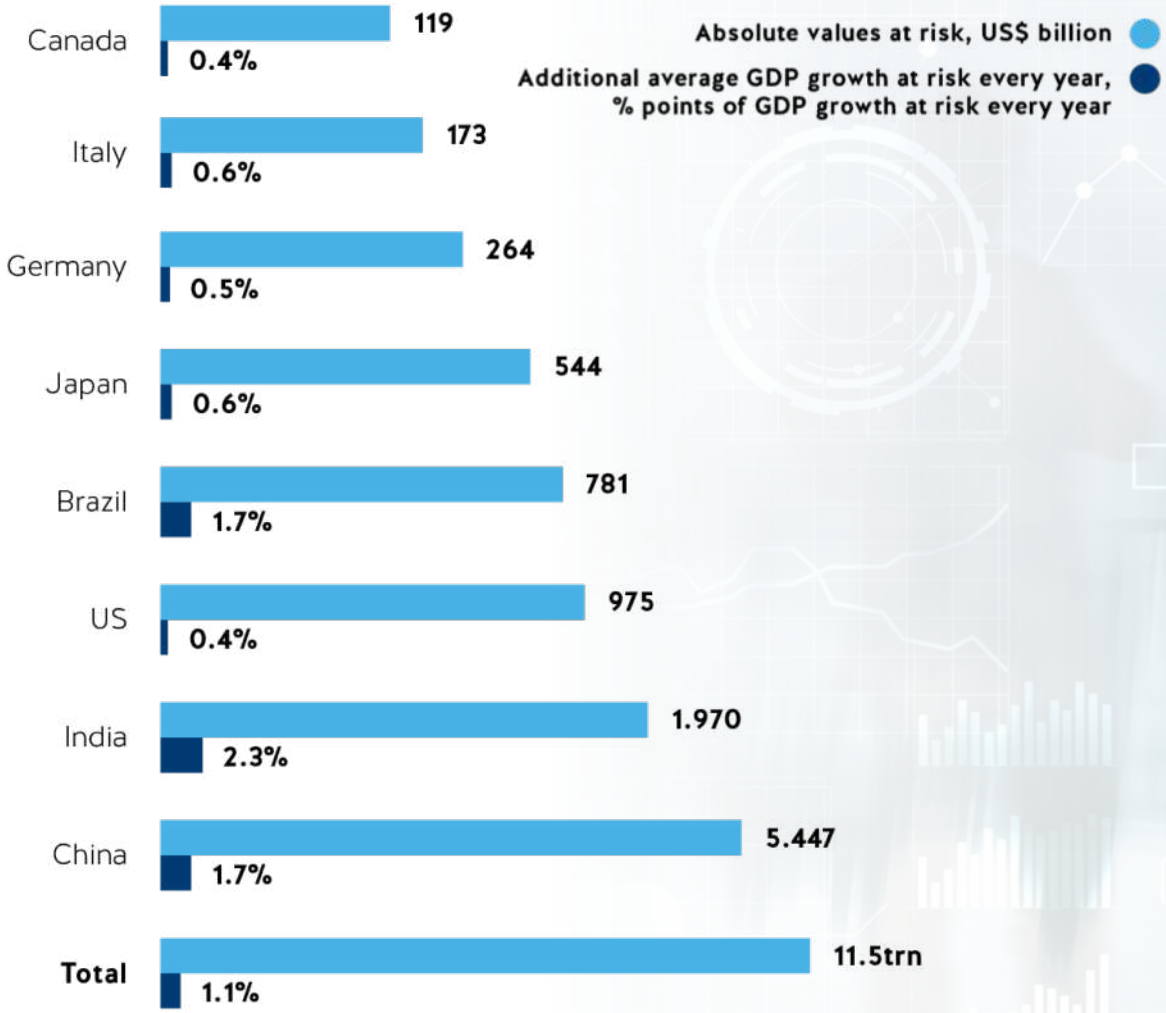
Human-centric Skills

Source: McKinsey

The Type of Skills Needed are Changing

Skills Gaps in Numbers

Potential Cost of the Skills Crisis



- Reduced Economic Output
- Inability to Satisfy Customers
- Lower Productivity
- Lower Business Performance
- Less Competitive Firms
- Lack of Innovation

Source: Accenture

The Skills Gap is Impacting the Society

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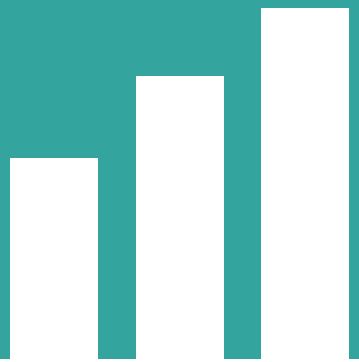
Digital literacy *as a holistic skill to interact with, understand, enable, and even develop new digital manufacturing systems, technologies, applications, and tools*

Ability to use and design new ***AI and data analytics*** *solutions while critically interpreting results*

3

Creative problem solving *in times of abundant data and technological opportunities in smart manufacturing systems*

4



A strong ***entrepreneurial mindset*** *including proactiveness and the ability to think outside the box*

5

*Ability to work **physically and psychologically safely and effectively** with new technologies*

6

***Inter-cultural and -disciplinary, inclusive, and diversity-oriented mindset** to address new challenges arising from a more diverse manufacturing workforce*

7

*Cybersecurity, **privacy, and data/information mindfulness** to reflect the rapidly increasing digital footprint of the manufacturing value chain*

8

***Ability to handle increasing complexity** of multiple requirements and simultaneous tasks*

9

IO

*Effective **communication skills** with humans, IT, and AI systems through different platforms and technologies*

***Open-mindedness** towards constant change, and transformation skills that constantly question the status quo and initiate knowledge transfer from other domains*

2019 KEY RECOMMENDATIONS
BY THE WORLD MANUFACTURING FORUM

I Create a Manufacturing Market with a Life-Long Learning Mindset

Workers should proactively seek out life-long learning opportunities

Create personal and professional incentives for workers to engage in training

Empower workers by letting them participate in training design

2 Increase Investment in Workforce Education to Reach the Full Potential of New Technologies

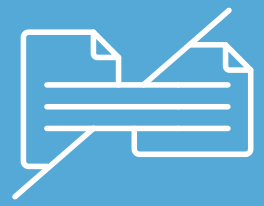
Companies should treat workforce training and education as priority

Leverage human-centric skills that compliment technology

Provide a type of skills insurance for employees

3 Enact Policies to Promote Manufacturing Workforce Education and Training

Policymakers should incentivise training through tax incentives, subsidies, and individual credits



Decouple policy from politics to ensure continuity of programmes

Ensure policy addresses the needs of all relevant stakeholders

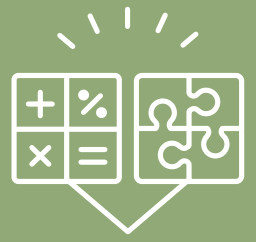
4 Excite People to Pursue Careers in Manufacturing

Promote manufacturing as a fast-moving and dynamic sector

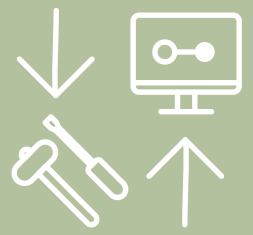
Reach out to young people early on through engaging activities

Educate teachers and parents on the value of manufacturing related careers

5 Develop New Profiles with Technical Expertise Complemented by Generalist Know-How



Promote the importance of having both technical and generalist skills



Recognise that technical expertise can become obsolete and needs to be updated

Engage with technology to expand generalist know-how

6 Use Digital Technologies to Innovate Delivery of Education and Training

Utilise collaborative platforms to share knowledge and best practices

Use technology to help overcome physical, cognitive, and other barriers to learning

Leverage digital tools to make learning possible anytime and anywhere

7 Support Social Mobility Through Manufacturing

Enlarge the manufacturing talent pool by engaging underrepresented populations

Provide equitable access to education for all

Champion equal and non-discriminatory job practices

8 Ensure that Relevant Skills are Being Taught

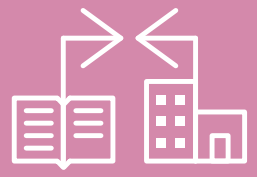
Systematically involve industry in updating curricula in schools

Support real world experiences for students

Ensure teachers and instructors are up to date with industry developments

9 Elevate the Value of Vocational Technical Education and Training Pathways

Promote vocational technical education to complement formal education



Encourage cooperation between vocational technical training and formal education providers

Increase the quality of vocational technical training related jobs

IO Foster Collaboration to Address Skills Development Needs

Set aside competition to cooperate on industry-wide skills initiatives

Share knowledge and best practices on workforce education

Harness the potential of industry and trade associations to promote skills development

EDITORIAL BOARD MEMBERS

Marco Taisch
Politecnico di Milano
WMF

Mark L. Casidsid
WMF

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Chalmers University of Technology (Sweden)

Gökan May
EPFL (Switzerland)

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Politecnico di Milano (Italy)

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West Virginia University (U.S.A.)

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