

Developing Competencies for Industry 4.0 and the New Normal

By: Associate Professor Ferry Jie, PhD

Email: f.jie@ecu.edu.au

Whatsapp: +61 414 968 978

School of Business and Law,

Edith Cowan University

Joondalup, Western Australia

Who am I?

- Associate Professor Ferry Jie has maintained a high quality of research throughout his academic career including international scholarly leadership in the areas of supply chain management and logistics, including being invited to be keynote speaker and to give public lectures at symposiums and international conferences in Indonesia, Malaysia, Vietnam, China, UK and Australia. From 2015 to now, published more than 52 refereed journal articles—including 21 articles in Q1 and 12 articles in Q2, and 18 refereed conference papers. Furthermore, Dr Jie has received research grants/awards adding up to over \$1.6 million between 2010 and 2020.

Recent Research Grants (1)

- Business continuity and resilience: capacity building and upskilling post-COVID-19, Department of Jobs, Tourism, Science and Innovation (JTSI), 2020 – 2021, \$208,423.
- Managing transport system investment risk: enhancing patronage predictions and adapting strategic asset management and appraisal processes to account for emerging trends and uncertainty, iMOVE Australia Limited, iMOVE CRC, 2019 - 2020, \$94,008.
- Optimising regional SME resilience and employment workflow by customer-led (DIY) re-engineering of financial planning and advisory services supply chains. , Edith Cowan University, ECU Industry Engagement Grant, 2019 - 2020, \$141,452.
- Examining residents waste source behaviour: an indication of the effectiveness of the three-bin rollout campaign by Joondalup City council, City of Joondalup, Grant, 2020, \$90,023.
- Planning intermodal and general logistics infrastructure for the future needs of Perth, iMOVE Australia Limited, iMOVE CRC, 2018 - 2019, \$321,200.
- RailSmart Wanneroo Planning Support System, Department of Industry, Science, Energy and Resources, Smart Cities and Suburbs Program, 2018 - 2019, \$777,000

COVID-19

- What will the future of jobs be like?
<https://www.weforum.org/videos>
- This What The Co-founder Of Linkedin Says About Saving Jobs And Creating Opportunities During The Pandemic
<https://www.weforum.org/videos>
- <https://www.youtube.com/watch?v=z-6XoIOtbEg> FAO

World Economic Forum COVID

- *50% of all employees will need reskilling by 2025, as adoption of technology increases, according to the World Economic Forum's Future of Jobs Report.*
- *Critical thinking and problem-solving top the list of skills employers believe will grow in prominence in the next five years.*
- *Newly emerging this year are skills in self-management such as active learning, resilience, stress tolerance and flexibility.*
- *Respondents to the Future of Jobs Survey estimate that around 40% of workers will require reskilling of six months or less.*

<https://www.weforum.org/agenda/2020/10/top-10-work-skills-of-tomorrow-how-long-it-takes-to-learn-them/>

Top 10 skills of 2025



Top 10 skills of 2025

Type of skill

- Problem-solving
- Self-management
- Working with people
- Technology use and development

-  Analytical thinking and innovation
-  Active learning and learning strategies
-  Complex problem-solving
-  Critical thinking and analysis
-  Creativity, originality and initiative
-  Leadership and social influence
-  Technology use, monitoring and control
-  Technology design and programming
-  Resilience, stress tolerance and flexibility
-  Reasoning, problem-solving and ideation

Source: Future of Jobs Report 2020, World Economic Forum.

<https://www.weforum.org/reports/the-future-of-jobs-report-2020/in-full/infographics-e4e69e4de7>

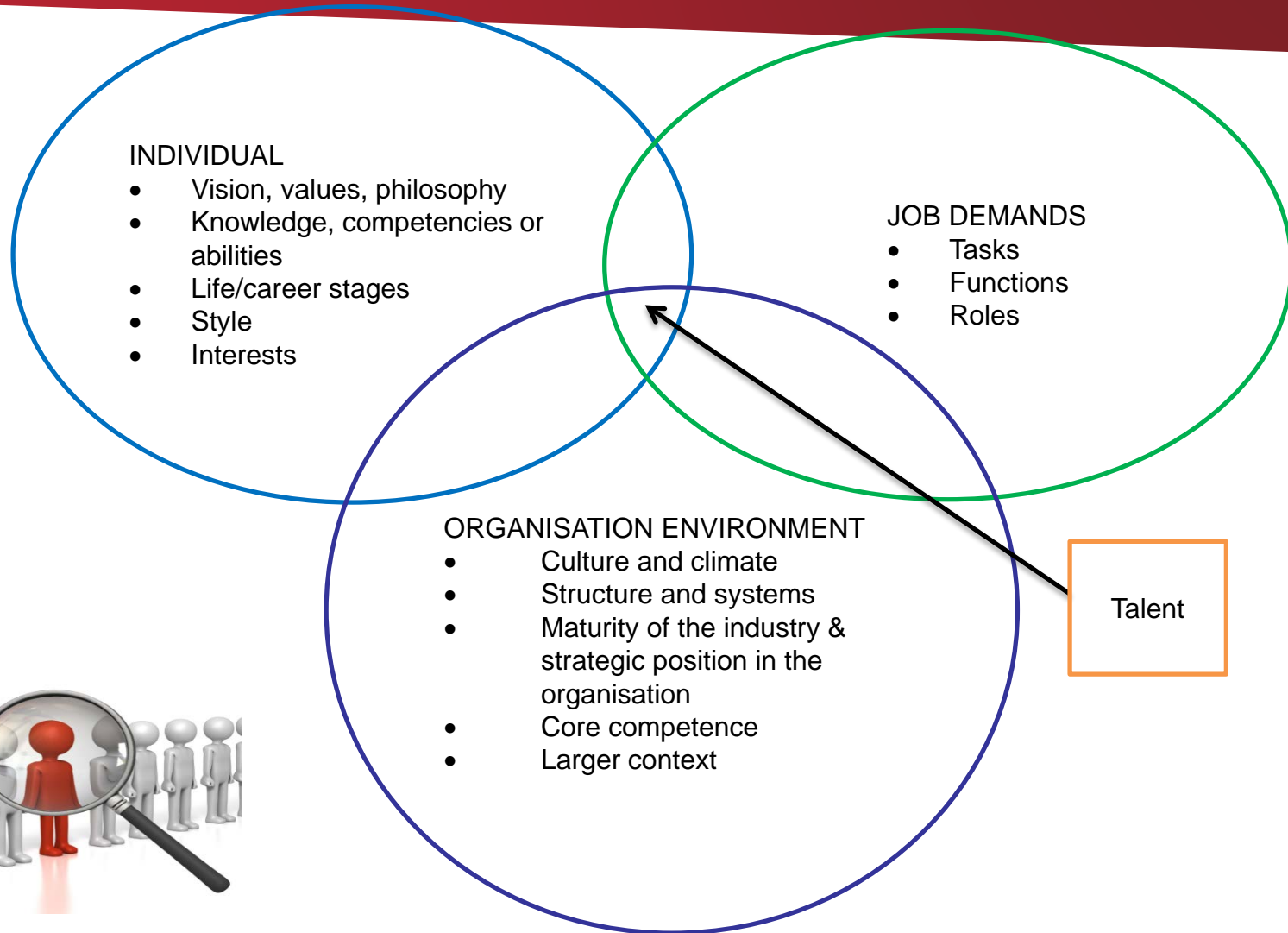
Competency Definition

- Competency defined in many different terms (Armstrong, 1998; Hitt et.al, 2005; Richey et.al, 2007).
- Demonstrated ability including knowledge, skills, and attitudes to perform a task successfully according to the standards (Porasmaa and Kotonen, 2010).
- Competency Determinants for Operations Managers in logistics providers:
 - Operations managers conducting a broad spectrum of managerial; and technical activities (Defee and Stank, 2005; Bourlakis and Bourlakis, 2001; Mollenkopf et.al., 2011; Hitt, 2011).
 - Selecting the right people for pivotal supply chain responsibilities is essential to realize supply chain objectives (van Hoek et al., 2002).
 - One of the key talent management area that require future research, identified recently, is to identify critical skills for supply chain talent development (Stank et al., 2011).

Theories of Competency Development

- Basic Contingency Theory
- Fred Fiedler's contingency model
 - Leader-member relationship
 - Degree of task structure
 - Leader's position power
- Goleman (1998) stated emotional competence as a learned capability based on emotional intelligence which results in outstanding performance at work.
- In other words, if a competency is an underlying characteristic of the person that lead to or causes effective superior performance (Boyatziz, 1982).
- Competencies can be a driver of talent since its role as "behavioral manifestations of talent" (Boyatzis, 2007)

- Maximum performance is believed to occur when the person's capability or talent is consistent with the needs of the job demands and the organisational environment (Boyatzis, 1982).



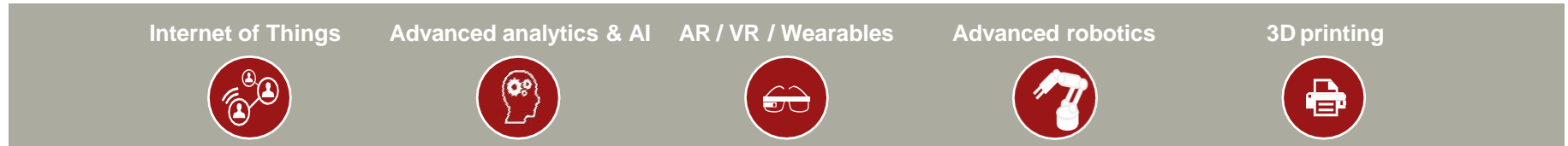
Competency Development

- Competencies is a behavioural approach to emotional, social, and cognitive intelligence. One of the benefits of the competency, or behavioural approach to talent is that we enter a domain of human talent that can be developed in adulthood (Boyatzis, 2007).
- Decades of research on the effects of psychotherapy (Hubble et. al., 1999), self-help programs (Kanfer and Goldstein, 1991), cognitive behaviour therapy (Barlow, 1988), training programs (Morrow et al., 1997), and education (Pascarella and Terenzini, 1991; Winter et al., 1981) have shown that people can change their behaviour, moods, and self-image.
- Learning competencies increasingly gain importance in the work environment since the rise of the knowledge economy and the growing need for flexibility make it important for employees to continuously invest in their development (Lindley, 2002).
- Forrier, Sels and Stynen (2009), define competency development as: “an important feature of competency management which encompasses all activities carried out by the organisation and the employee to maintain or enhance the employee’s functional, learning and career competencies”.

In the long term combined and connected technologies will unlock new mechanisms for creating and distributing value

Creating value from converging technologies

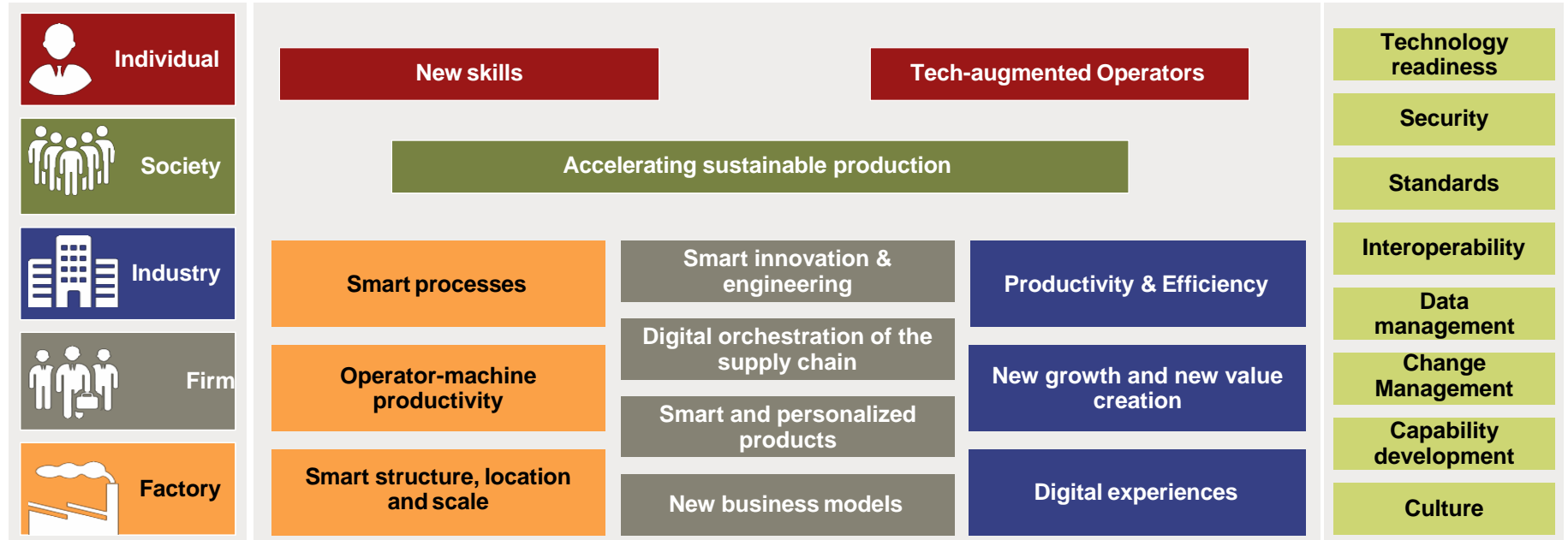
Technologies



Value dimensions

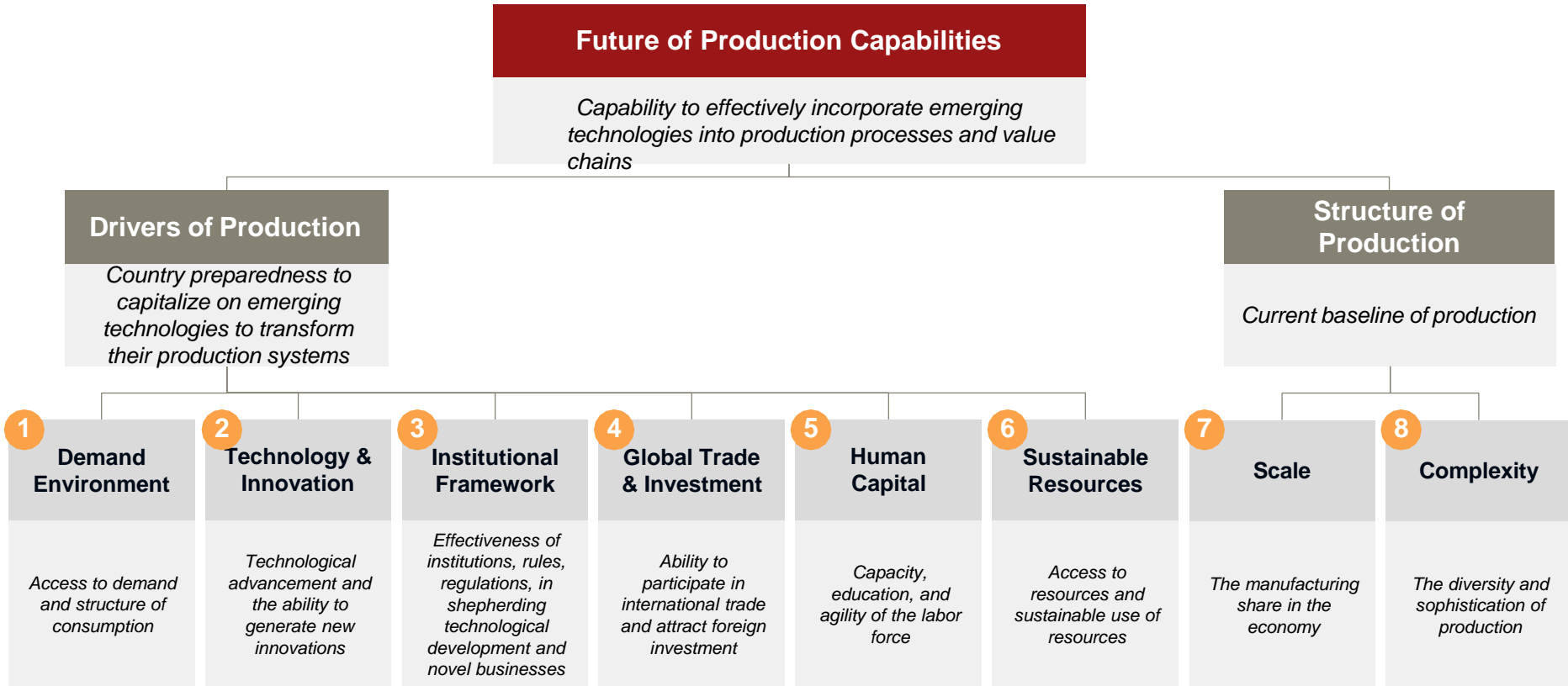
Value mechanisms

Challenges

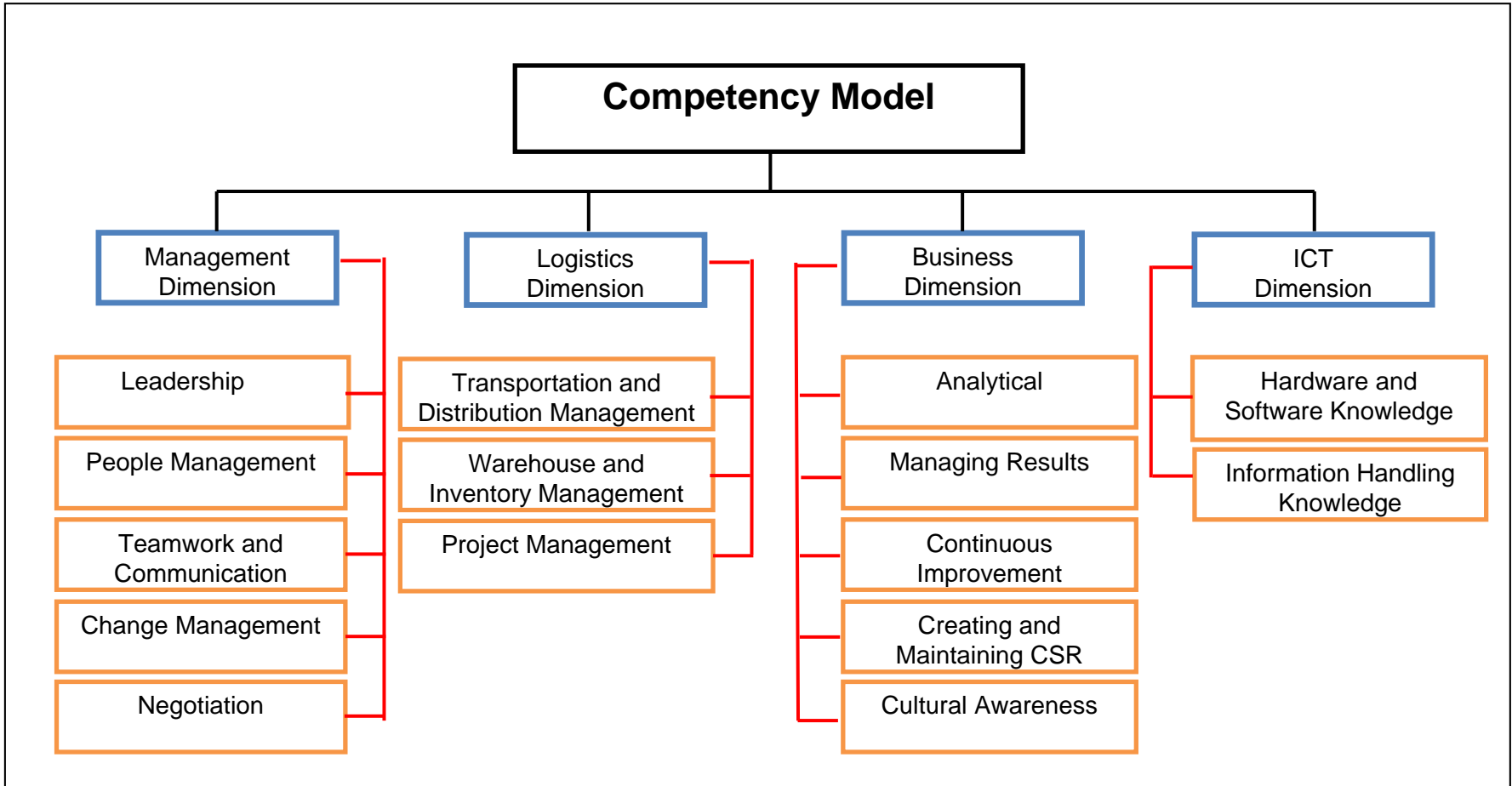


4IR Country Readiness Index (CRI) measures ~100 countries' readiness to face Industry 4.0

Country Readiness Index Framework and Drivers



Competency Model



Video Presentation

- The Robots Are Coming – But They'll Create More Jobs Than They Take
- <https://www.weforum.org/videos>

Future research in SCM

- Supply chain practices, Supply chain performance
- **Supply Chain Risk and Uncertainty**
- **Supply Chain Resilience and Recovery**
- Sustainability SCM;
- Supply chain quality management (SCQM);
- Supply chain project management
- Supply Chain Human Resource Management
- Supply chain cyber security;
- Supply chain information systems;
- Internet of Things;
- Blockchain;
- Supply Chain Management 4.0
- Automated Warehouse;
- Warehouse Management Systems;
- Transportation Management Systems;
- Logistics Information Systems

- Thank you very much indeed for listening
- Any questions