Volume 23 Issue 24
Originally issued as A8



Global Journal of Management and Business Research: A Administration and Management
Volume 23 Issue 8 Version 1.0 Year 2023
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

The Future Work Skills of Saudi Aramco's Supply Chain Management Professionals

By Hussain A. Al-Sadeg, Ali N. Al-Abbas & Mohammed A. Al-Saad

Abstract- *Purpose:* The emergence of Industry 4.0 has changed the way work is performed. Supply Chain Management Professionals must adapt to these changes and develop skills needed for future work. This study explores the impact of Industry 4.0 on the future skills of the supply chain management professionals with a focus on Saudi Aramco.

Methodology: An integrative review approach was taken to synthesise the literature covering Industry 4.0 and the future of work skills. Saudi Aramco's Supply Chain Professional Development Program was conducted and subsequently findings from the literature were discussed.

Findings: A need exists for ups killing and reskilling supply chain management professionals. Organisations need to develop upskilling and reskilling programs for supply chain management professionals

Keywords: *industry 4.0, future of work skills, supply chain management skills, saudi aramco, article.*

GJMBR-A Classification: *LCC: HD38.5-70.7, JEL: M11*



Strictly as per the compliance and regulations of:



© 2023. Hussain A. Al-Sadeg, Ali N. Al-Abbas & Mohammed A. Al-Saad. This research/review article is distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BYNCND 4.0). You must give appropriate credit to authors and reference this article if parts of the article are reproduced in any manner. Applicable licensing terms are at https://creative-commons.org/licenses/by-nc-nd/4.0/.

The Future Work Skills of Saudi Aramco's Supply Chain Management Professionals

Hussain A. Al-Sadeg [α], Ali N. Al-Abbas [σ] & Mohammed A. Al-Saad [ρ]

Abstract- *Purpose:* The emergence of Industry 4.0 has changed the way work is performed. Supply Chain Management Professionals must adapt to these changes and develop skills needed for future work. This study explores the impact of Industry 4.0 on the future skills of the supply chain management professionals with a focus on Saudi Aramco.

Methodology: An integrative review approach was taken to synthesise the literature covering Industry 4.0 and the future of work skills. Saudi Aramco's Supply Chain Professional Development Program was conducted and subsequently findings from the literature were discussed.

Findings: A need exists for ups killing and reskilling supply chain management professionals. Organisations need to develop upskilling and reskilling programs for supply chain management professionals.

Originality: This research brings forth a discussion on the skills needed for supply chain management professionals in the energy industry in Saudi Arabia, which is a first of its kind, enabling new perspectives to emerge.

Keywords: industry 4.0, future of work skills, supply chain management skills, saudi aramco, article.

I. Introduction

This section provides a brief overview of the application of digital advancements in business practices. Advancements in technology have revolutionised the world. Innovative developments have reshaped the perceptions of work and the operation of industries. This latest revolution in business practices is commonly referred to as Industry 4.0 (Khan & Turowski, 2016). Industry 4.0 combines traditional manufacturing with cyber-physical systems, the Internet, the Internet of Things, and artificial intelligence (AI) to create intelligent production systems (Li, 2022). The impact of Industry 4.0 extends beyond production systems, which is reshaping the skills required by the workforce. Transformation is required in all job fields as more businesses embrace the latest digital revolution. This need is significant for supply chain management (SCM) professionals who are required to reimagine traditional practices and align them with the demands of Industry 4.0 (Karacay, 2018).

Saudi Aramco has taken steps to keep up to the advancements of Industry 4.0. Among the steps taken is the development of a business department named 'corporate digital factory'. The corporate digital factory is managing the production of digital solutions to Saudi Aramco organisations to have corporate intelligent production systems. These developments are impacting the general skills needed by Saudi Aramco's SCM professionals. Through the corporate digital factory, the SCM organisation is currently in the process of introducing Industry 4.0 solutions that can enhance the SCM operations. A study on the future work skills needed by Saudi Aramco SCM professional in response to Industry 4.0 changes is highly needed.

This study provides an analysis of the existing review of the skills required by SCM professionals. It further highlights the skills honed and employed by the professionals in Saudi Aramco and the future work skills required to meet the demands of Industry 4.0.

II. Literature Review

Several journals and websites were reviewed for information Industry 4.0, with emphasis on publications post COVID-19. The keywords utilised in the google scholar search engine were 'Industry 4.0', 'future of work skills', and 'SCM skills'. Other search engines did not produce relevant results.

a) *Impact of Industry 4.0*

This section investigates the skill transformation owing to various industrial revolutions, which significantly impacted people's jobs and how their work was performed. In the first industrial revolution in the 1700s, production was revolutionised with the use of steam power; thus, manual labour was replaced with machinery. During this time, production capacity improved from a single worker producing 20 pins a day to a factory producing as many as 4,800 pins per day. The second industrial revolution marked the advent of assembly lines. During this period, Henry Ford reduced the manufacturing time for magneto flywheels from 20 min to 5 min (Hannan and Kranzberg, 2023). The Third Industrial Revolution witnessed a shift from analogue and mechanical systems to digital systems driven by computers. This era saw the rise of automation and the dominance of machinery in job performance (Kumar and Kumar, 2020).

The innovations during each industrial revolution changed the skills needed for the workforce at that time. The Fourth Industrial Revolution was driven by four technological innovations: high-speed mobile

Author α: Saudi Aramco - Professional Employee.
e-mail: Hussain.Sadeg@aramco.com
Author σ ρ: Saudi Aramco – Intern. e-mails: 96alabbas@gmail.com, Mohammedalsaad2010@gmail.com

© 2023 Global Journals

Internet, AI and automation, big data analytics, and cloud technology. These advancements will affect all industries and make half of jobs vulnerable to automation. For example, multiple manufacturing and agricultural roles are already being phased out owing to increased automation (World Economic Forum Boston Consulting Group, 2018).

Industry 4.0 presents many challenges and opportunities simultaneously. One challenge is intensifying competition among businesses, as technological innovations help companies improve their productivity and efficiency. As these technologies are increasingly adopted by the businesses, it is significant for them to retrain their employees to acquire the necessary skills to leverage new technologies. Reskilling and upskilling are being implemented across businesses to adapt to the demands of technological innovation (Müller*et al*., 2018).

b) Future of Work Skills

The evolution of digital technologies is expected to disrupt the current skillsets required by the workforce. Businesses are developing and designing training programmes to improve their skills and reskill their workforce to adapt to current and future job demands. Upskilling is the acquisition of advanced skills through education and training (Merriam Webster, n. d.). Reskilling is defined as learning new skills to perform a different job (Cambridge Business English Dictionary, n. d.). It is estimated that six out of 10 workers will require additional training to meet future job demands by 2027. The businesses will have an opportunity to overcome the challenges of Industry 4.0 as they begin to invest in developing the skills of the workforce (Di Battista*et al.,* 2023).

The World Economic Forum (WEF, 2023) reports that 26 skills (Table I) are required to succeed in the future job market. These skills are divided into eight categories: technological skills, cognitive skills, engagement skills, management skills, physical abilities, self-efficacy, working with others, and ethics. Additionally, the WEF report highlights that technological literacy, leadership and social influence, analytical thinking, AI, and big data are prioritised by companies in the supply chain and transportation industry and in their reskilling and upskilling strategies (Table II). It is expected that 60% of the skills required by the SCM workforce will remain consistent by 2027 (Di Battista *et al.,* 2023).

Table I: The World Economic Forum Report on2023 future skills

Reskilling focus (2023-2027)	
1. Analytical thinking	14. Resource management and operations
2. Creative thinking	15. Marketing and media
3. AI and big data	16. Quality control
4. Leadership and social influence	17. Networks and cybersecurity
5. Resilience, flexibility and agility	18. Dependability and attention to detail
6. Curiosity and lifelong learning	19. Systems thinking
7. Technological literacy	20. Programming
8. Design and user experience	21. Teaching and mentoring
9. Motivation and self-awareness	22. Multi-lingualism
10. Empathy and active listening	23. Manual dexterity, endurance and precision
11. Talent management	24. Global citizenship
12. Service orientation and customer service	25. Reading, writing and mathematics
13. Environmental stewardship	26. Sensory-processing abilities

(Source: Di Battista et al. 2023, P. 42)

© 2023 Global Journals

Table II: Prioritised SCM Reskilling Focus Report

Prioritised SCM Reskilling Focus for 2023 – 2027
• Technological literacy
• Leadership and social influence
• Analytical thinking
• AI and big data
• Service orientation and customer service
• Creative thinking
• Resilience, flexibility and agility
• Motivation and self-awareness
• Curiosity and lifelong learning
• Empathy and active listening

(Source: Di Battista et al., 2023, p. 236)

The research by McKinsey Global Institute investigates the impact of automation, AI, and robotics on the skills needed for the future. The results show that the demand for certain high-level skills is predicted to increase, whereas it will gradually diminish for others. McKinsey identified 56 foundational skills that professionals need to succeed in the evolving job market as their future employability depends on them (Table III). An evaluation on proficiency across skills showed lowest scores for digital skills of 'software use & development' and 'understanding digital systems' (Dondi*et al*., 2021).

Table III: Mckinsey Report on Citizens'future Work Skills

Interpersonal	
Mobilizing system	**Developing Relationships**
– Role modeling	– Empathy
– Win-win negotiations	– Inspiring trust
– Crafting an inspiring vision	– Humility
– Organisational awareness	– Sociability
Teamwork Effectiveness	
– Fostering inclusiveness	
– Motivating different personalities	
– Resolving conflicts	
– Collaboration	
– Coaching	
– Empowering	
Cognitive	
Critical Thinking	**Mental Flexibility**
– Structured problem solving	– Creativity and imagination
– Logical reasoning	– Ability to learn
– Understanding biases	– Translating knowledge to different contexts
– Seeking relevant information	– Adopting a different perspective
	– Adaptability
Communication	**Planning and Ways of Working**
– Storytelling and public speaking	– Work-plan development
– Asking the right questions	– Time management and prioritization

© 2023 Global Journals

– Synthesizing messages	– Agile thinking
– Active listening	–
Self-Leadership	
Self-Awareness and Self-Management	
– Understanding own emotions and triggers	
– Integrity	
– Self-motivation and wellness	
– Self-control and regulation	
– Understanding own strengths	
– Self-confidence	
Entrepreneurship	
– Courage and risk-taking	
– Driving change and innovation	
– Energy, passion, and optimism	
– Breaking orthodoxies	
Goals Achievement	
– Ownership and decisiveness	
– Achievement orientation	
– Grit and persistence	
– Coping with uncertainty	
– Self-development	
Digital	
Digital Fluency and Citizenship	
– Digital literacy	
– Digital learning	
– Digital collaboration	
– Digital ethics	
Software use and Development	
– Programming literacy	
– Data analytics and statistics	
– Computational and algorithmic thinking	
Understanding Digital Systems	
– Data literacy	
– Smart systems	
– Cybersecurity literacy	
– Tech translation and enablement	

(Source: Dondi et al. 2021, P. 3)

c) Saudi Aramco's SCM Professional Development

SCM professionals' skills at Saudi Aramco were cultivated through a structured development program. The program was built around an internally developed set of SCM competencies. Competencies are routinely revised and updated to align workforce competencies with emerging business needs. More than 280 competencies exist for SCM and SCM-support functions in Saudi Aramco. The program is developed by a partnership between the SCM organisation and Saudi Aramco's professional development organisation. Through this program an advisor from professional development would facilitate the development of SCM competencies by working with SCM subject matter experts.

Table IV presents a simplified list of competencies utilised by Saudi Aramco's SCM professionals in their job roles. These roles vary across the SCM functions of procurement, logistics, and strategic sourcing. These skills are built into competency maps to develop targeted plans for different roles because SCM roles vary in complexity, with different proficiency levels (ordered from least to highest) as awareness, fundamental applications, skilled applications, and mastery.

© 2023 Global Journals

Table IV: Saudi Aramco SCM Development Competencies

Hard Skills	Soft Skills
– Budgeting	– Business Writing
– Compliance & Ethics	– Change Management
– Customer Relationship Management	– Communication
– Data Analysis	– Critical Thinking
– Enterprise Resources Planning (ERP)	– Negotiation
– Forecasting	– Problem Solving
– Health, Safety, Environment (HSE)	– Time Management
– Logistics Management	–
– Market Analysis	–
– Materials & Services Management	–
– Planning	–
– Policies & Procedures	–
– Reporting	–
– Strategy	–
– Supplier Relationship Management	–
– Supply Chain Optimization	–
– Value Stream Mapping	–
– Warehouse Management	–

Source: Saudi Aramco SCM Competencies Report

The SCM development program successfully developed the competencies required by the Saudi Aramco workforce. SCM professionals have individualised development plans to gain competencies needed for their growth in current and future roles. They are empowered by a comprehensive list of development methods for acquiring these skills. Development methods vary from formal to informal training, task and job assignments, professional certification, and so on. The outcome is a capable workforce that performs the tasks required of SCM professionals.

III. Discussion

An analysis of the literature on the future work skills of SCM professionals demonstrates the necessity for upskilling and reskilling programmes to focus on certain skills. Technological literacy and digital skills are the key skills required for SCM professionals and must be included in upskilling programs. Incorporating the development of these skills can vary between organisations. It is significant for organisations to determine the competency level required of their professionals in these skills and develop their programs accordingly.

According to WEF report the major reskilling focus will be on cognitive skills for future jobs. This indicates the importance of certain skills for the future workforce. These cognitive skills include leadership and interpersonal skills, which are important for supervisory and managerial roles in organisations.

As organisations move forward in developing programs for upskilling and reskilling, it is imperative for them to analyse the future skills required by their workforce. Organisations that fail to accurately assess their workforce skills to meet the market demands will likely fall behind the competition.

IV. Conclusion

In conclusion, for organisations to stay competitive in the future Industry 4.0 landscape, a review of their workforce skills is necessary. By focusing on the skills needed by SCM professionals, this study provides a foundation for the assessment of organisational upskilling and reskilling programs.

This study did not cover the available training and development opportunities for SCM professionals. A future research work can focus on the availability and efficacy of training and development programs for upskilling and reskilling SCM professionals. This study

© 2023 Global Journals

also informs the established SCM development program in Saudi Aramco.

References Références Referencias

1. Cambridge Business English Dictionary. (n. d.). reskilling. In cambridge.org dictionary. Available at: https://dictionary.cambridge.org/dictionary/english/reskilling (accessed 3 June 2023)
2. Di Battista, A., Grayling, S. and Hasselaar, E. (2023), "Future of jobs report 2023. World Economic Forum, Geneva, Switzerland", Available at: https://www.voced.edu.au/content/ngv:96765 (accessed 3 June 2023)
3. Dondi, M., Klier, J., Panier, F. and Schubert, J. (2021), "Defining the skills citizens will need in the future world of work. McKinsey & Company, 25", Available at: https://icenimastermind.org/wp-content/uploads/2022/02/Defining-skills.pdf (accessed 3 June 2023)
4. Hannan, M. T. and Kranzberg, Melvin (2023), "history of the organization of work. Encyclopedia Britannica", Available at: https://www.britannica.Com/money/topic/history-of-work-organization-648000 (accessed 3 June 2023)
5. Karacay, G. (2018), Talent Development for Industry 4.0. In: Industry 4.0: Managing the Digital Transformation. Springer Series in Advanced Manufacturing. Springer, Cham. https://doi.org/10.1007/978-3-319-57870-5_7
6. Khan, A., & Turowski, K. (2016, April). A Perspective on Industry 4.0: From Challenges to Opportunities in Production Systems. In IoTBD (pp. 441-448). Available at: https://pdfs.semanticscholar.org/a90 4/2b3181bc000e00448d939949c7a86433f70b.pdf
7. Kumar, A. and Kumar, S. (2020), "Industry 4.0: Evolution, opportunities and challenges", *International Journal of Research in Business Studies*, Vol. 5 No. 1, pp. 139-148.
8. Li, L. (2022), "Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond", *Information Systems Frontiers*, https://doi.org/10.1007/s10796-022-10308-y
9. Merriam-Webster. (n. d.). Upskill. In Merriam-Webster.com dictionary. available at: https://www.merriam-webster.com/dictionary/upskill (accessed 3 June 2023)
10. Müller, J. M., Kiel, D. and Voigt, K. I. (2018), 'What drives the implementation of Industry 4.0? The role of opportunities and challenges in the context of sustainability", *Sustainability*, Vol. 10 No. 1, 247.
11. World Economic Forum Boston Consulting Group (BCG). (2018), "Towards a reskilling revolution: A future of jobs for all", Available at: http://www3.weforum.org/docs/WEF_FOW_Reskilling_Revolution.pdf (accessed 3 June 2023)

© 2023 Global Journals