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A Study on the Development of Logistics and Supply Chain Professionals in Australia

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The importance of logistics is increasing worldwide. With the development of the logistics industry, the number of students and workers has increased. Due to the increase in world trade volume and the increase in logistics demand, many people are engaged in logistics, and the logistics industry is growing steadily.

This paper deals with the current and future manpower securing the development of Australian logistics industry. From the macroeconomic backgrounds of the economy, labor and trade associated with the Australian logistics industry, we have identified the supply chain perception and future employment prospects for the logistics industry and have studied the capabilities and skills required in supply chain management in response.

According to the data on the favorability of logistics, it is seen that students do not think that they are sexy compared to other jobs, and career advisors also see trucks and warehouses. The reasons are low Wages and poor industrial image, increased aging population, time and cost of acquiring qualifications and competition in organizations.

However, as the industry develops, it is expected to increase the number of skilled manpower related to logistics. We have studied what kind of skills, knowledge and abilities are needed. This paper deals with the development of Australian logistics and supply chain Professionals.

Key words: Image of supply chain, Australia logistics workers skill, SCM education, Logistics Professionals

Ⅰ. Introduction

Korea's logistics industry has been recognized as a derivative industry or a supporting industry in the past as a retailer or a manufacturing company. However, in recent years, the global value chain (GVC: Global Value Chain) With increasing value-added logistics such as transshipment, assembly, and processing, the growth of competitive logistics companies and the ability to supply logistics services are becoming more important. In addition, the global logistics environment has also increased due to the increase in the efficiency of logistics information management due to the development of information and communication technology (ICT), the easing of trade barriers between countries and the expansion of trade liberalization, The global supply chain management (GSCM) capability is becoming more important in order to enhance competitiveness of companies and countries.

Under this background, logistics is an important industry and future prospects are good business, and many people think that it is attractive to work. All technologies newly introduced at the time of the introduction of the 4th Industrial Revolution are technologies that contribute to the development of logistics that can be applied and applied to logistics. As shown in the competition between

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Amazon and Wal-Mart, its core is the logistics centered on last mile

Logistics is, of course, the foundation of industry and growth industry, and many students were recognized as important industries to study and research. However, not all of them knew the difficulties of people engaged in delivery, warehouse, transportation, and so on.

The present research question emerged from the question: "In Australia, the supply chain image is not sexy, but what should focus on education and training in logistics professionals?" For this study, We looked at the image of logistics in Korea or other countries in Asia. This study placed the development of Australian logistics and supply chain Professionals at this article center.

In this paper, I would like to examine the perception of logistics and SCM in Australia, its cause and future countermeasures.

II. Literature Review

In order to cultivate professional manpower in any field, the necessity, the fields, methods to be cultivated should be reviewed. Since this paper is about the national logistics manpower development, it is difficult to review the previous studies because it includes the division for a wide range of logistics manpower. This paper started with recognition or preference for logistics, we reviewed previous studies on logistics images by country.

In Korea, prior research on logistics awareness, professional manpower, and training courses has proceeded as follows, but it seems that Australia has begun research on this field.

The evaluation of logistics professionals is studied by Koo(2005) in a general logistics company that provides logistics service in Korea. The evaluation of the logistics organization's personnel expertise, job performance ability, the differences between the foreign firms and domestic firms are compared and analyzed.

Kang(2017) presented CPS, AI have been developed in the fourth Industrial Revolution and such as Logistics techniques can give rise to revolution in Logistics Process and traditional Logistics Job will be substituted to AI system. We should prepare for the fourth Industrial Revolution for Development of Logistics Industry in Korea through Logistics Education in University. effective Logistics Education in University enables students to acquire Logistics job in the the fourth Industrial Revolution era The Purpose of this paper is to analyze the factors of the fourth Industrial Revolution and present the education directions in University for Logistics Industry.

Sun et al.(2011) along with previous researches on the training process of existing logistics manpower, will provide a more systematic logistics training program for small and medium-sized logistics companies through empirical studies on the current state of education and the needs of logistics manpower.

In a rapidly changing environment of logistics, it is safe to say that the competitiveness of logistics firms depends on the ability of human resources to establish optimal logistics strategy and to suggest improvement alternatives.

Woo et al(2017) surveyed logistics companies in China, Japan and South Korea, which have been closely linked to the progress of globalization and has a growing international exchange needs, including human, material and services, to survey the image of logistics and recruitment conditions of new recruits. As a result, China has shown that the logistics industry was popular in terms of high income earning as an emerging industry and is more likely to emphasize individual ability such as excellent grades and creativity. In Japan, logistics is recognized as a 3D industry, but the people who work in Japan have high self-esteem and low turnover rates. Also, in Japan, it is thought to be focused on communication, manners and etiquette rather than requiring logistical expertise for new recruits. Korea has the highest level of competitiveness among the three countries of Northeast Asian, with expertise in trade and logistics, and the ability to speak highly of foreign language proficiency skills. In the future, it is judged that the company will seek to better understand the advantages of students in terms of salary levels, welfare benefits, settlements and childcare environments, and detailed explanations of the advantages of 3D industries. Another, Woo's(2017) study conducted a survey for university students in South Korea, China, and Japan, the three Asian nations of close relationship in economics. Investigating differences in their perceptions on logistics based on different curricula on logistics and examined measures in fostering global logistics specialist in university.

The paper on the training of logistics manpower is as follows.

Oh Hyun - kyun(2013) suggested the present status of port logistics manpower development in Korea and the policy of port logistics manpower training abroad, and suggested the direction and plan of what kind of contents and method should be trained port logistics manpower through questionnaire.

Song(2003) surveyed the existing education and human resource development in the logistics area. Based on the analysed results, He suggested directions for improving education and human resource development in the logistics area. He studied the logistics curriculum of the university will be divided into the undergraduate and graduate

courses, and the graduate school will have a systematic structure to provide specialized logistics education. Finally, He proposed a curriculum framework and human resource development in the University.

Lee et al(2007) has presented the problem and improvement plan of logistics management in China by studying the logistics management education system in China.

Ⅲ. General status of Australia

1. Indicators of Korea and Australia

Korea's gross domestic product (GDP) is the world's 11th largest in the world by 2017 with $ 1.5 trillion $ 43 billion. Australia is ranked 13th in the world with $ 1.391 trillion. Australia's GDP per capita is $ 56,135, ranking ninth in the world, and Korea $ 29,730, the world's 29th. Australia ranked 14th out of 140 countries and Korea ranked 15th in the Global Competitiveness Index (GCI), which is published every year by the World Economic Forum (WEF).

2. Australia's Information

1) How big is Australia compared to other countries

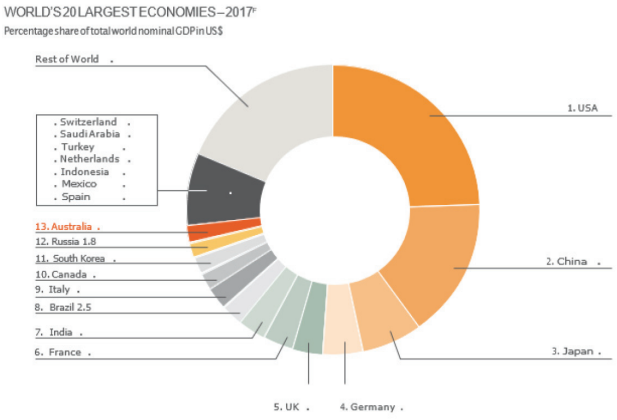
The territory of Australia is 7,686,850㎢, with the second largest territory next to Russia, Canada, China, the United States and Brazil, but the population density is very low. The current population of Australia is 25 million, using Australian dollars

<Fig 1.> Map of Australia

2) ECONOMY

Global forecasts predict Australia will maintain its position as the world's 13th largest economy (in US dollar terms) in 2017. Australia's nominal GDP is estimated at US1.3 trillion and accounts for 1.7 percent of the global economy. Australia has almost tripled the value of its total production from two decades ago.

<Fig 2.> World's 13th Largest Economy



<Fig 3.> Globally Successful in Five Key Industry

F=Forecast
CDP of the world's 188 economies:US$78,914billion
CDP of 20 largest economies : US$64,270billion(81.4% of world's GDP)
CDP of ASEAN-10 economies : US$2,754billion(3.5% of world's GDP)
Sources : International Monetary Fund, World Economic Outlook Database, October 2018.Australia

Global successful 5 key industries of Australian are resources & energy, agribusiness, financial services, education, tourism.

Australia has the capacity and capabilities to provide high-quality natural resources, food, education, tourism and financial services to the world. With large reserves of mineral and energy resources, Australia is a world leading producer of gold, iron ore and uranium

and the world's second largest LNG exporter. The country is also ranked In the world's top 20 for solar and wind generation.

Australia as a global top 10 producer of major agricultural commodities. "There is high demand for its premium food and agricultural goods, particularly in Asia where Australian products are highly regarded for their safety, security and quality.

In financial services, Australia has one of the Asia-Pacific region's largest pool of bank assets, as well as significant wealth management and infrastructure expertise. Australia is a highly attractive destination for education and tourism. It is the worlds third most popular location for students and the 11th largest international tourism market.

Australia is a globally successful provider of products and services that are in high demand. The country is a major producer of natural resources. including significant LNG reserves that are about to come into production and clean, green agricultural commodities and premium food.

Australia has large liquid finance markets including the biggest pool of managed fund assets in the Asia-Pacific region.

It is also a leading destination for education and tourism.

3) WORKFORCE

Australia's labour force is one of the most educated, multicultural and multilingual in the world. Over 40% of Australia's workforce holds a tertiary qualification. Australian, workers are highly skilled, thanks to an excellent education system, quality scientific research institutions, and availability of specialized training services. With a highly ranked educational system, Australia is rated number one globally for the number of overseas students in the country.

Almost 30 percent of Australia's workers were born overseas. Around 2.1 million Australians speak an Asian language and 1.3 million speak a European language in addition to English. With a ready supply of skilled workers, Australia offers easy access to a smart and culturally aware workforce.

Australia offers a highly educated workforce with the skills to service a diverse range of industries. The country is ranked particularly well for its overall education system, secondary and tertiary education enrolment rates, student mobility and ready availability of skilled labour and finance skills.

4) LOCATION

Australia is well positioned as a trade and investment base for

<Fig 4.> Workforce Skill Base Comparisons-2016

	Australia	USA	UK	China	Japan	South Korea	India	Hong Kong	Singapore
WEF Global Competitiveness Report 2016–17 Ranking[a] in:									
Secondary Education Enrolment Rate	3	59	8	65	36	58	102	42	26
Tertiary Education Enrolment Rate	8	5	48	69	42	2	93	28	7
Quality of Scientific Research Institutions	12	5	2	40	13	34	36	31	10
Quality of the Education System	14	17	21	43	37	75	29	20	2
Local Availability of Specialised Training Services	14	16	6	61	23	58	55	19	5
Availability of Scientists and Engineers	17	2	19	30	3	39	36	43	9
IMD World Competitiveness Yearbook 2016 Ranking[b] in:									
Student Mobility Inbound	1	21	6	48	38	35	50	15	3
Educational System	11	23	18	47	29	38	34	16	3
Finance Skills (are readily available)	12	7	11	48	39	45	28	2	13
Foreign High-skilled People	12	2	4	24	52	46	29	6	3
Skilled Labour (is readily available)	15	18	33	43	50	48	32	11	23
UNDP's Human Development Report 2015 Ranking[c] in:									
Human Development Index	2	8	=14	=90	20	17	130	12	11

Sources:(a)World Economic Forum, Switzland and Harvard University, Global Competitiveness Report, 2016-17(September 2016, 138 economies); (b) International Institute for Management Development, Switzerland, World Competitiveness Yearbook 2016(released May 2016, 61 economies); (c) The United Nations Development Programme, Human Development Report 2015(Published 14 December 2015, 188 economies);Austrade

international companies doing business with Asia.

Ten of the nation's top 12 export markets are within the Asian region. Australia's trade agreements facilitate the smooth flow of goods, services and investments with major economies across Asia, Europe and North America.

As a top destination for international investment, Australia's inward foreign direct investment stock continues to grow, thanks to rising contributions from Asia. Australia's location bridges the world's major time zones, offering 24-hour access for organizations with round-the-clock operations. Top 5 trading partners are China, USA, Japan, South Korea, UK.

Australians geographic location bridges major time zones, allowing companies to benefits from 'follow-the-sun' or 'pass-the-book' operations such as transaction processing in finance markets, help desks, customer service. IT support and other critical services.

Australia's counter-seasonality to the northern hemisphere also offers strategic advantages in food production and agribusiness.

5) TRADE

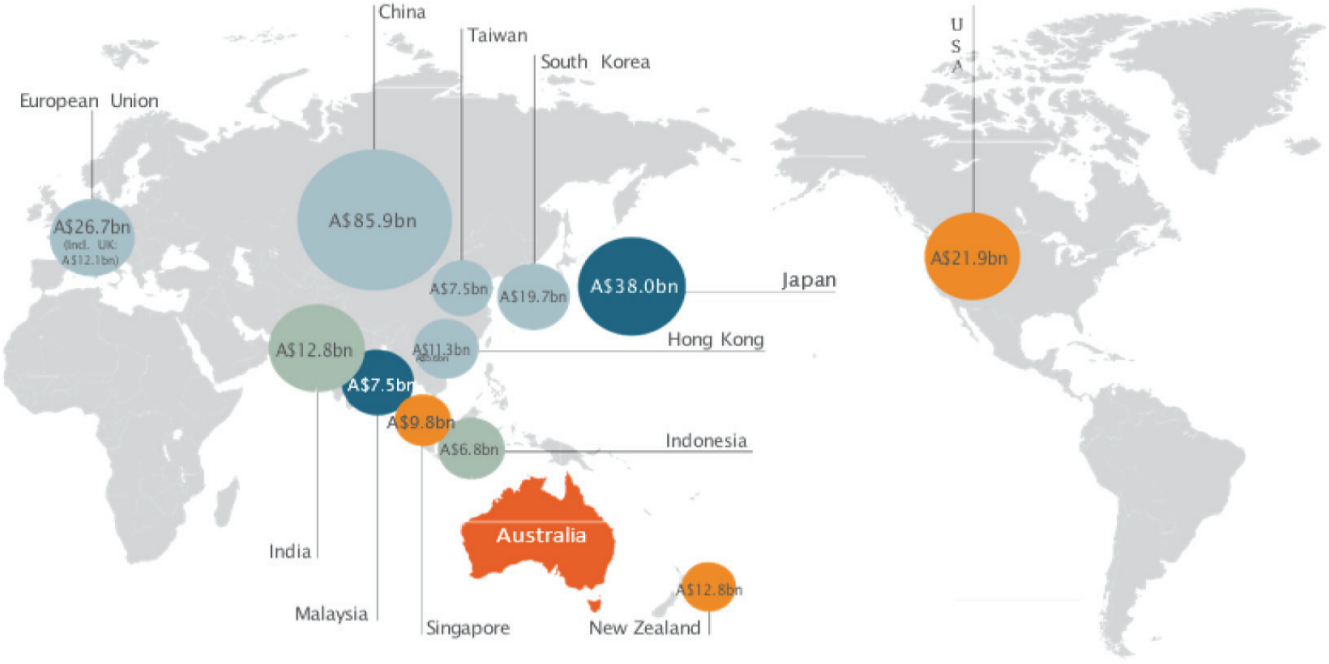
(1) Australia's Top 12 Export Markets

Australia's integration with dynamic Asian region is driving wealth creation and overall growth. Of the top 12 export markets in 2015-16. 10 were in the Asin region and all were rated above investment grade. Their combined value was around A$212 billion, making up more than two-thirds (68%) of Australia's total goods and services export earnings of A$312 billion in 2015-16.

(2) Australia's Exports and Imports of Goods and Services[1)2)3)]

current price - goods on a recorded trade basis: services on a

<Fig 5.> Australia's Top 12 Goods And Services Export Markets 2015-16



Note : Country Ceiling for Europe only reflects the UK
Sources : Department of Foreign Affairs and Trade, Australia's trade in goods and services by top 15 partners 2015-16 (released 16 November 2016); Austrade

1) All date is on a balance of payments basis, except for goods by country which are on a recorded trade Basis.
2) May exclude selected confidential export or import commodities from partner country totals as well as for the country groups. Refer to the DFAT website (dfat.gov.au/about-us/publications/trade-invest/Pages/dfat-adjustments-tc-sb5-official-trade-data.aspx〉 for more information and a list of the excluded commodities.
3) Includes DFAT estimate for the United States for 2015—16.

<Fig 5.> Australia's Exports and Imports of Goods and Services

Rank	Selected Economies	A$ billion 2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	%Share of Total	2015-16 Cumulative % Share	% Growth 2014-15 to 2015-16	5-year Trend
1	China	113.6	128.0	130.9	151.8	143.6	150.0	22.7	22.7	4.4	5.5
2	USA[3]	50.6	57.7	55.0	58.5	64.8	69.2	10.5	33.1	6.9	5.8
3	Japan	68.0	75.8	69.4	72.1	67.6	60.3	9.1	42.2	-10.8	-2.6
4	South Korea	31.8	33.3	30.7	35.1	35.5	33.9	5.1	47.4	-4.5	1.9
5	UK	22.0	24.6	22.0	20.7	21.7	27.0	4.1	51.4	24.0	1.7
6	New Zealand	21.1	21.6	20.9	22.6	23.6	24.5	3.7	55.1	3.4	3.2
7	Singapore	23.2	28.5	28.7	29.1	28.0	22.9	3.5	58.6	-18.3	-0.3
8	Thailand	19.0	17.7	19.4	18.8	20.0	21.1	3.2	61.8	5.5	2.5
9	Germany	15.6	16.4	16.3	17.8	17.6	19.7	3.0	64.8	12.3	4.3
10	India	21.5	18.7	17.0	14.7	17.9	19.3	2.9	67.7	7.7	-2.3
11	Malaysia	15.7	17.2	17.0	19.9	19.8	18.2	2.8	70.4	-8.0	3.9
12	Indonesia	13.8	14.9	14.3	16.0	14.9	15.3	2.3	72.8	2.9	1.8
13	Hong Kong	8.0	7.6	7.9	16.5	15.3	15.3	2.3	75.1	0.2	18.9
14	Taiwan	13.4	13.3	12.3	12.5	12.8	12.3	1.9	76.9	-4.2	-1.6
15	Vietnam	6.1	6.5	7.1	9.2	10.2	10.1	1.5	78.5	-0.9	12.6
	Other	138.1	154.2	151.6	150.9	146.7	142.4	21.5	100.0	-2.9	-
	Total all countries	581.4	636.2	620.6	666.2	660.0	661.5	100.0	-	0.2	2.4
	Regions										
	APEC[3]	407.0	447.8	438.5	486.8	480.0	476.0	72.0	-	-0.8	3.2
	ASEAN	82.3	89.7	91.8	98.5	98.6	93.0	14.1	-	-5.7	2.8
	European Union[4,5]	81.6	87.9	82.5	85.3	85.5	95.6	14.4	-	11.7	2.1
	OECD[3,5]	269.6	295.5	277.4	292.3	295.5	303.3	45.8	-	2.6	1.8

1. All data is on a balance of payments basis, except for goods by country which are on a record trade basis.
2. May exclude selected confidential export or import commodities from partner country totals as well as for the country groups. Refer to the DFAT website (dfat.gov.au/about-us/publications/trade-investment/Pages/dfat-adjustments-to-abs-official-trade-data.aspx) for more information and a list of the excluded commodities.
3. Includes DFAT estimate for the United States for 2015-16.
4. Services data is EU27 to August 2013. EU28 from September 2013.5. Include DFAT estimate for France from 2010-11 to 2015-16.
Sourdes: Department of Foreign Affairs and Trade(DFAT). Data was based on DFAT STARS database, ABS catalogues 5368.0(September 2016) and 5368.055.003 and unpublished ABS data; Austrade

balance of payments basis

Ⅳ. SUPPLY CHAIN'S IMAGE AND SKILLS

Professor Booi Kam, RMIT University speaks "As business models continue to evolve in an increasingly digitised economy, a range of employment opportunities will open up to supply chain professionals with a suitable mix of skills."

Key points from the survey are Strategic importance of supply chain management not fully recognised.

Performance measures used are more operational rather than strategic in nature. Transportation costs identified as having the highest impact on supply chains in the future. Soft skills (communication and teamwork) identified as most important. Significant differences between small and large enterprise perception of competencies and skills required future challenges.

On behalf of the Transport and Logistics IRC, AIS conducted an online survey for stakeholders, between 4 December and 16 January 2018. The IRC sought feedback on the current skill shortages and the reasons for the shortages, as perceived by industry stakeholders.(AIS,2018)

Supply Chain has an image problem as potential students do not see it as Sexy compared to other professions

Career advisors see it as trucks and warehouses. Universities see it as a revenue platform and only focus on technical skills.

Companies some see it as trucks and sheds and some see it as a value to the organization.

Lack of competence in transportation and logistics industry represents the image of logistics. If the likelihood of logistics was high, the employees would not have been lacking. Over 80% of Employers reported skill shortages in the last 12 months The occupations reported as being a shortage were 1. Truck Drivers 2. Educators, Trainers and Assessors 3. Supervisors / Managers 4. Schedulers

5. Forklift Drivers.

The reason for the lack is as follows.

The employer listed the most frequent responses first and identified the following reasons for the tribe:

1. Wages / salaries that are considered too low

2. Unattractive occupation / poor industrial image
3. Elderly population / current employee retirement
4. Cost / time for qualification
5. Competition with other organizations

Key points from the survey are

Strategic importance of supply chain management not fully recognised. Performance measures used are more operational rather than strategic in nature. Transportation costs identified as having the highest impact on supply chains in the future.

Soft skills (communication and teamwork) identified as most important.

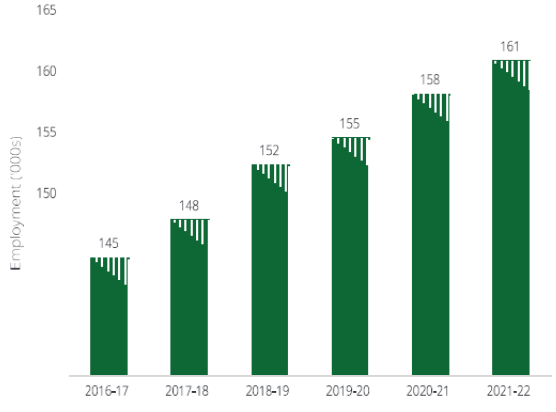
1. Growth Potential of the Supply Chain

The Australian supply chain and logistics workforce is forecast to see sound growth in the next five years. Aggregating the supply chain and logistics occupations identified above, Deloitte Access Economics projects the relevant workforce will grow from 145,000 persons in 2016-17 to 161,000 persons in 2021-22, an increase of around 16,000 workers at an annual average growth rate of 2.1%

<Table 1> provides a breakdown of Deloitte Access Economics' employment forecasts for the supply chain and logistics workforce by the component occupations. Demand for production managers is expected to grow by over 7,000 people over the next five years, at an annual growth rate of 2.2%. The forecast growth rate is strongest

For supply distribution managers, where average annual growth is forecast to be a robust 3.1%. The overall positive outlook for labour market demand in these supply chain and logistics occupations is expected to be supported by the expanding nature of supply chain functions and growing role of e-commerce.

<Fig 6.> Supply chain and logistics employment forecasts 2016-17 to 2021-22



Source : Deloitte Access Economics(2017)

<Table 1> Supply chain and logistics employment forecasts by occupation, 2016-17 to 2021-22

Occupation	2016-17 (000s)	2012-22 (000s)	Change in employment (000s)	Average annual growth rate(%)
Importers Exporters and Wholesalers	19.8	21.1	1.3	1.3%
Manufacturers	21.3	22.2	0.9	0.9%
Production Managers	60.1	67.1	7.1	2.2%
Supply Distribution Managers	41.1	48.2	6.8	3.1%
General Manager(Transport, Postal and Warehousing industry)	2.1	2.2	0.1	0.8%
Total Supply Chain and Logistics	**144.7**	**160.8**	**16.1**	**2.1%**

2. AUSTRALIA BENEFITING FROM EDUCATION

Australia's education sector is benefiting from China's growing middle class with Chinese student enrolments up 12% every year since 2002. Higher education has accounted for the lion's share of this growth, with enrolments up 10-fold over the last 16 years. Not surprisingly, earnings in Australia's private education sector have risen 7% p.a. over the last decade.

China accounts for 30% of foreign student enrolments in Australia, up from 16% in 2002. But there is significant variation by state. New South Wales and Victoria have the largest absolute Chinese student population. But the reliance on Chinese students is significantly higher in South Australia, Tasmania and ACT.

The Major Institutions in Australia that offer Supply Chain Management courses are Royal Melbourne Institute Technology,

University of Melbourne, Open Universities, Australian Institute of Business, Swinburne Institute of Technology, University of Sydney, Curtain University, Edith Cowan University Victorian University, University of New South Wales, University of South Australia, University of Wollongong.

3. COMPETENCIES AND SKILLS FOR SUPPLY CHAIN PROFESSIONALS

In priority to the industry the following skills were identified the most important within the next three to five years. Skill categories are

1. Compliance 2. Health / Safety 3. Driving 4. Operational 5. Digital

The Generic listed are provided by the Australian Industry Standards in order of importance to the Transport and Logistics Industry.

1. Managerial / Leadership 2. Language, Literacy and Numeracy

3. Learning agility / information literacy / Intellectual autonomy and self management 4. Technology 5. Thinking critically / System thinking / Solving problems 6. Customer Service / Marketing 7. Communication / Virtual collaboration / Social Intelligence 8. Data Analysis 9. Engineering / Mathematics / Technology / Science 10. Environment and Sustainability 11. Financial 12. Entrepreneurial

Study completed on Supply Chain by Prof Amrik S Sohal in conjunction with the GS1 Australia, Supply Chain Logistics Association of Australia (SCLAA) and the Australian Food and Grocery Council (AFGC) found the following

1) Communication and teamwork
· Ability to work effectively with individuals and groups/teams – cross culturally, intra and inter organisationally Ability to manage relationships in diverse contexts – cross culturally, intra and inter organizationally Communicate effectively through different media and styles Technology skills
· Ability to make use of numerical techniques for decision making (e.g. forecasting and scheduling)
· Project management skills and ability to lead major projects
· Ability to apply continuous improvement and customer focus concepts
· Ability to apply supply chain technologies and application software
· Ability to solve complex and novel SCM problems (e.g. issues of tracking and tracing, product authentication)
· Understanding of the interconnection of SCM with other disciplines (e.g. information systems, industrial engineering and human resources)

2) Initiative and enterprise skills
· Ability to manage risks in supply chain and their associated issues
· Ability to manage change within the local context
· Ability to develop and implement long term business strategies
· Understand the importance and value of sustainable business practice
· Understanding of basic accounting and budgeting
· Ability to manage change within the global context
· Advancing SCM knowledge through professional engagement
· Compliance and legal knowledge
· Awareness of ethical issues at the national and international level
· Respect for diversity, social justice principles, the environment and corporate governance
· Understanding of contractual and legal / regulatory aspects of the business

4. SUPPLY CHAIN MANAGEMENT SPECIFIC REQUIREMENTS:

The evolution of the supply chain is also being accelerated by consumer-driven change, where customers are increasingly moving away from traditional 'bricks and mortar' retailers. How do you develop skills sets of the future challenges in Supply Chain Management? Special requirements in supply chain management are as follows.

1) Knowledge of Supply Chain Management.
Demonstrates a comprehensive knowledge of supply chain and logistics management and its integration with other disciplines.
2) Strategic thinking in supply chains and logistics.
Is able to conceive and implement long term strategies for supply chain networks, when considering global, environmental, industrial, social and economic impacts to the business.
3) Related knowledge of Supply Chain Management.
Understands the interconnection of supply chain and logistics management with other fields of knowledge. Specifically in the understanding of management in information science, physical science, industrial engineering, management science, including human resource, human behaviour and elements of emotional intelligence.
4) Interfaces with other typical organisational functions of the business (e.g. HR, accounting, marketing and sales).
5) Contextualised knowledge of Supply Chain Management.
Understands from a national and global context the applicability of supply chain and logistics management as a disciplinary field.
6) Application of supply chain knowledge.
Integrates theoretical and practical knowledge to analyse and solve complex and novel supply chain and logistics management problems, e.g. issues of tracking and tracing, product authentication. Demonstrates a professional practice of supply chain related learning (through business internships, practical case studies etc.
7) Knowledge and application of supply chain risk and sustainability.
Understands the importance and value of deploying business practices which are sustainable when considering the interplay of competing human, natural, technology, financial and time resources.

8) Enterprise systems and supply chain technologies.

Demonstrates knowledge in e-business and supply chain related technologies. Recognises and values that global standards, like the GS1 System, play in the coherent underpinning of technologies used in supply chain networks.

5. KEY TAKEAWAYS

What are the key takeaways for current and future supply chain and logistics workers?

The expanding roles associated with supply chain functions, driven by increasingly complex and dynamic supply chain structures and the growing importance of technology, will be associated with greater demand for supply chain and logistics skills.

This is expected to drive future growth in the supply chain and logistics workforce, increasing from 145,000 persons in 2016-17 to 161,000 persons in 2021-22. The average annual growth rate of 2.1% is stronger than the 1.5% per annum growth forecast for the entire Australian labour force.

Across workers who have completed a postgraduate qualification in Management and Commerce, a lifetime wage premium of 48% (relative to workers with no post-school qualifications) is directly attributable to their qualification.

The average annual income of supply chain and logistics workers with a postgraduate qualification in Management and Commerce was $140,949 in 2016-17, and this is forecast to rise to $164,360 in 2021-22.

Further study in the supply chain and logistics area can also enable workers to develop advanced skills that accelerate career progression, and allow professionals in other areas to move into supply chain management roles within their

Ⅴ. Conclusions

This study began with an online survey conducted by AIS for stakeholders between 4 December 2017 and 16 January 2018

The survey showed that Australia's logistics and supply chain images were not sexy. Supply Chain has an image problem as potential students do not see it as Sexy compared to other professions. Career advisors see it as trucks and warehouses. Universities see it as a revenue platform and only focus on technical skills. Companies some see it as trucks and sheds and some see it as a value to the organization.

Logistics is the foundation of industry and growth industry, and many students were recognized as important industries to study and research. However, not all of them knew the difficulties of people engaged in delivery, warehouse, transportation, and so on. In this paper, I would like to examine the perception of logistics and SCM in Australia, its cause and future countermeasures.

Woo et al.(2017) surveyed logistics companies in China, Japan and South Korea, which have been closely linked to the progress of globalization and has a growing international exchange needs, including human, material and services, to survey the image of logistics and recruitment conditions of new recruits.

As a result, China has shown that the logistics industry was popular in terms of high income earning as an emerging industry and is more likely to emphasize individual ability such as excellent grades and creativity. In Japan, logistics is recognized as a 3D industry, but the people who work in Japan have high self-esteem and low turnover rates. Also, in Japan, it is thought to be focused on communication, manners and etiquette rather than requiring logistical expertise for new recruits. Korea has the highest level of competitiveness among the three Northeast Asian countries, with expertise in trade and logistics, and the ability to speak highly of foreign language proficiency skills. In the future, it is judged that the company will seek to better understand the advantages of students in terms of salary levels, welfare benefits, settlements and childcare environments, and detailed explanations of the advantages of 3D industries.

Lack of competence in transportation and logistics industry represents the image of logistics. If the likelihood of logistics was high, the employees would not have been lacking. Over 80% of Employers reported skill shortages in the last 12 months The occupations reported as being a shortage were 1. Truck Drivers 2. Educators, Trainers and Assessors 3. Supervisors / Managers 4. Schedulers 5. Forklift Drivers.

The reasons are Wages / salaries that are considered too low, Unattractive occupation / poor industrial image, Elderly population / current employee retirement, Cost / time for qualification, Competition with other organizations.

The Australian supply chain and logistics workforce is forecast to see sound growth in the next five years. Australia has a large number of logistics-related educational institutions and offers many benefits to education. The expanding roles associated with supply chain functions, driven by increasingly complex and dynamic supply chain structures and the growing importance of technology, will be

associated with greater demand for supply chain and logistics skills.

Research shows that logistics professionals need skills in communication and teamwork initiatives, enterprise skills and specific requirements. Further study in the supply chain and logistics area can also enable workers to develop advanced skills that accelerate career progression, and allow professionals in other areas to move into supply chain management roles within their industry.

The logistics education should be composed of customized education programs according to the demand of the logistics industry, and it should be able to nurture logistics professionals who have practical skills.

The purpose of this study is to prepare for Australia 's logistics needs and deficiencies in response to future demand in developing and securing logistics specialists. This study suggests that the development of logistics professionals should be analyzed, guided and planned at national and industrial level. This study suggests direction of development and securing manpower in Australia based on the surveyed and researched data, but there is a lack of empirical research.

This paper is a study on the development of human resources in Australia, so it is necessary to review the previous research on the development of human resources in the field of logistics in Australia. In the future, we need to study in depth the countries we need to analyze, including Australia. In this study, the difference of recognition of competence and technology among large enterprises and SMEs needs to be studied as a future task.

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호주의 물류 및 공급망 전문가의 육성에 관한 연구

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Abstract

세계적으로 물류의 중요성이 증대되고 있으며, 물류산업의 발전과 더불어 학생과 근로자의 수가 증가하였다. 세계적인 물동량의 증가와 물류수요의 증대로 인해 많은 사람들이 물류에 종사하게 되었고, 물류산업은 지속적으로 성장하고 있다. 본 논문은 호주의 물류에 대한 현재와 미래의 인력확보와 산업발전에 따른 대응 전략을 연구하였다. 호주의 물류산업과 연관된 경제, 노동력 및 무역에 관한 거시적인 배경에서부터 공급망에 대한 인식과 물류산업의 장래 고용전망을 알아보고 이에 대응하여 공급망관리에서 요구하는 능력과 기술에 대해 연구하였다.

호주는 2017년 세계에서 13번째로 큰 경제 대국이며 호주의 노동력은 세계에서 가장 교육받고 다문화적이고 다국어를 구사하는 나라 중 하나이다. 호주의 근로자는 우수한 교육 시스템, 우수한 과학 연구 기관 및 전문 교육 서비스의 가용성으로 인해 고도로 숙련되어 있다.

이들을 대상으로 물류에 대한 호감도를 조사한 자료에 의하면 학생들이 다른 직업에 비해 섹시하지 않다고 생각하고 있고, 직업상담사들도 트럭과 창고 분야를 그렇게 보기 때문에 공급망 이미지는 문제가 있다고 본다. 그 이유는 낮은 급여와 저평가된 산업 이미지, 노령인구의 증가와 자격증 획득에 필요한 시간과 비용의 문제와 조직에서의 경쟁을 들었다.

그러나 산업의 발전에 따라 물류관련 전문인력의 증가가 예상되는데 앞으로 어떠한 기술과 지식과 능력을 갖춘 인재를 육성해야 하는지에 대해서 연구하였다. 본 논문은 호주의 물류 및 공급망 전문가의 개발에 관한 연구이다.

|주제어| 공급망 이미지, 호주 물류 근로자의 기술, SCM 교육, 물류 전문가

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