

Australian Logistics Council

Data Project

Internship Report

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Executive Summary

This report introduces my internship work as part of Australian Logistics Council (ALC) Data Project. The work was supervised by Hal Morris and Jessica Brocklebank from ALC and guided by Anthony Carlson from Sd + D Consultancy. The internship lasted 12 weeks from the beginning of March to the end of May 2006.

The ALC Data Project is to achieve greater government recognition of the significance of Logistics Industry and better performance and management decision on different level of the industry. My work is to identify, collect and categorise the existing data, analyse the sample database and make suggestions.

From the database of existing data from most of logistics sectors, we conclude that the current industry data are not adequate to meet the ALC's data needs in terms of quality and quantity. The main reason is the lack of uniform information system in the industry.

The suggestion in the end of this report includes a series of work consisting steps to the ultimate achievement of the industry data needs. The clue is to establish an information system step-by-step according to the availability of resources.

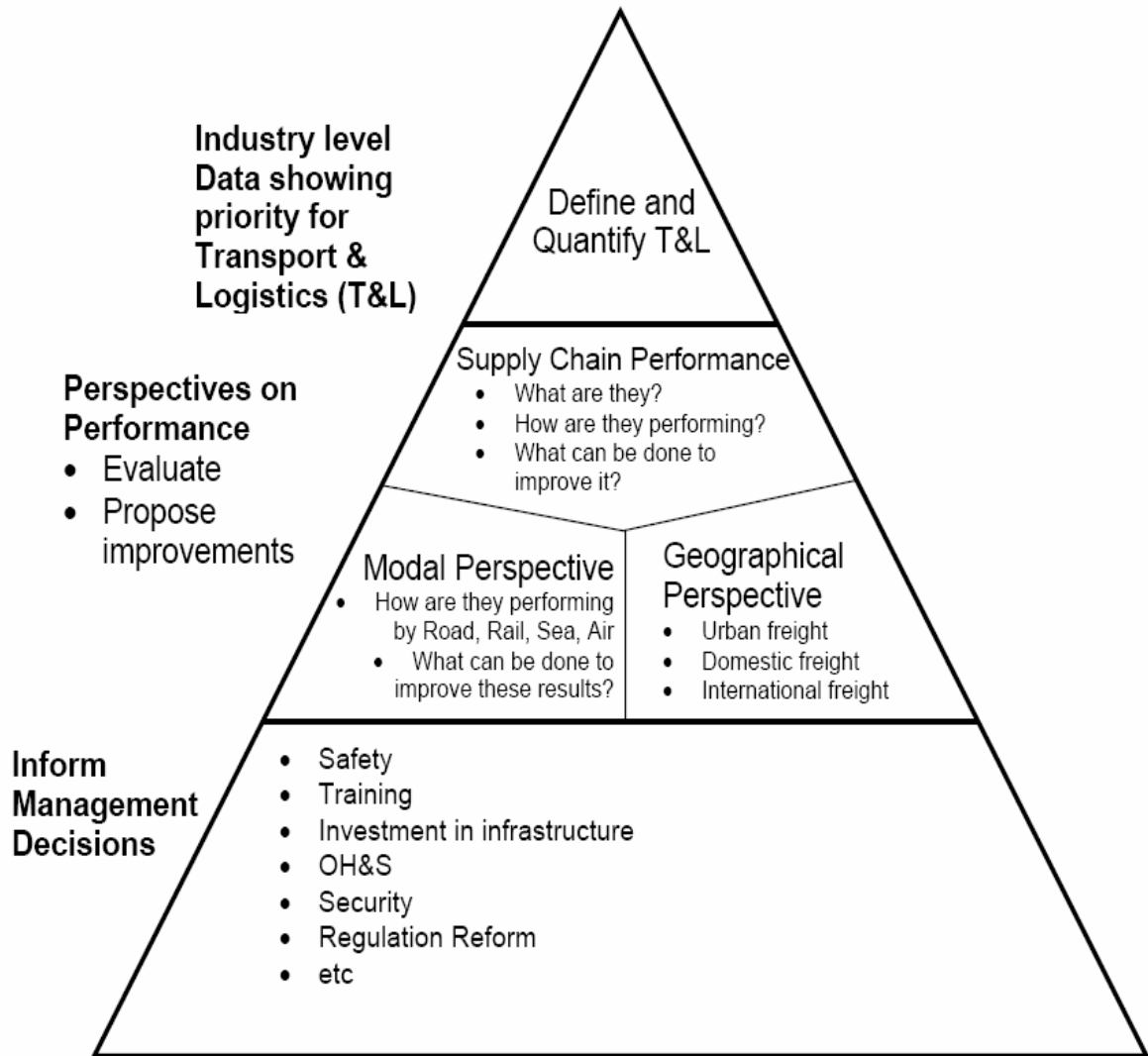
1 Introduction

The Australian Logistics Council (ALC) is a partnership between Australian Governments and senior leaders in the logistics field including logistics users, suppliers, peak bodies and academics. ALC exists to lead the development of logistics in Australia and to create competitive advantage for Australian companies and the Australian economy.

One of the objectives of the Australian Logistics Industry Strategy is to achieve greater government recognition of the significance of Australian Logistics Industry and its importance to the Australian community. The achievement of this objective would provide a solid basis for developing better public policies and government responses to issues affecting the industry. Other objectives include improving the performance of logistics industry and helping industry stakeholders make better management decisions.

In developing these strategies, ALC defines the industry data needs in the form of a pyramid (Figure 1, Page 2):

Figure 1. The needs of data – Data Pyramid (ALC, 2005)



However, there is no solid information available on the logistics industry as a whole in Australia. The best and most recent information is the BTRE Paper 49 (2001) that made it clear that their figures are estimates only. It is clear that logistics is one of the largest industries, but ALC needs solid data as the basis to 'put the case for logistics'. The data

limitations presented a substantial hurdle to clearly demonstrating the importance of the Australian logistics industry relative to other industrial sectors. There was also limited data on the performance of the industry.

Consequently, Australian Logistics Council established the ALC Data Working Group and commissioned the Data Project to serve its strategies. Strategic design + Development Pty Limited (Sd+D) was appointed as consultant to work on the project. In Sd+D's Stage 1 progress report (2006), it is recommended that the Data Project be conducted in two approaches according to the availability of resource and time:

- Short term approach – using existing data to addressing some of the ALC's data within the proposed Stage 1 time;
- Long term approach – meeting the ALC's data needs through the modification of the National Accounts and/or the development of a Logistics Satellite Account in a long time.

To both approaches, the understanding of the existing logistics industry data status is important. The internship work is to identify, collect and categorise existing data from publishes and statistics on related governments and industry associations' websites. The data collected form a sample database of the industry and represent the current status of existing industry data. After the work, some suggestions for further stages in data project are made.

To understand the existing data status of logistics industry, some specific questions are to be answered:

- What useful data we have now
- What benefit they have to the industry
- Who specially benefits
- What is the limitation of them
- Where are they
- How to access them
- What is the image of Logistics industry we get from existing data?

We answered these questions after the analysis of our results in the database.

2 Methodologies

2.1 Sourcing

The data were collected from the governments and industry associations that are at both national and sectoral level. The data sources include:

Government:

Bureau of Transport and Regional Economics, Department of Transport and Regional Services

Industry associations:

Australasian Railways Association

Association of Australian Port and Marine Authorities

Australian Shipowners Association

Shipping Australia

Australian Trucking Association

The Air Freight Export Council of NSW Inc

Sydney Airport

Airfreight council of Queensland

The Victorian Airfreight Council

The work has been concentrated on the secondary data from these government and organizations.

2.2 Sampling

The Probabilistic Sampling (Best 2004) and Stratified Random Sampling (Lind, et al, 2003) were used in deciding which data sources are used in this work. The industry is divided into different sectors. The associations of these sectors were selected as the data sources. While aviation does not have national representing association, several available states associations were selected. The government and associations' data form a good sample of the data of whole industry.

2.3 Collecting

The collecting of data was concentrated to provide a better understanding of industry's existing data status. Some websites have data in much detail, while others have more general information. We collected as much data as possible with little consideration of level of details. This method provides us more materials for analysis and comparison.

2.4 Sorting

While much data are collected for the purpose of comparison and analysis, they are sorted into as few categories as possible. The category criteria are followed with the pyramid of ALC's data needs (2005). The categories are determined in terms of prototypical instances that contain the attributes most representative of the category (Coxon, 1999).

2.5 Analysing

Both qualitative and quantitative methods are used in analysing the data collected. However, more qualitative analysis has been used to draw the conclusions because the focus of this stage is to find out the general image of industry data rather than to get detailed numbers.

3 Results

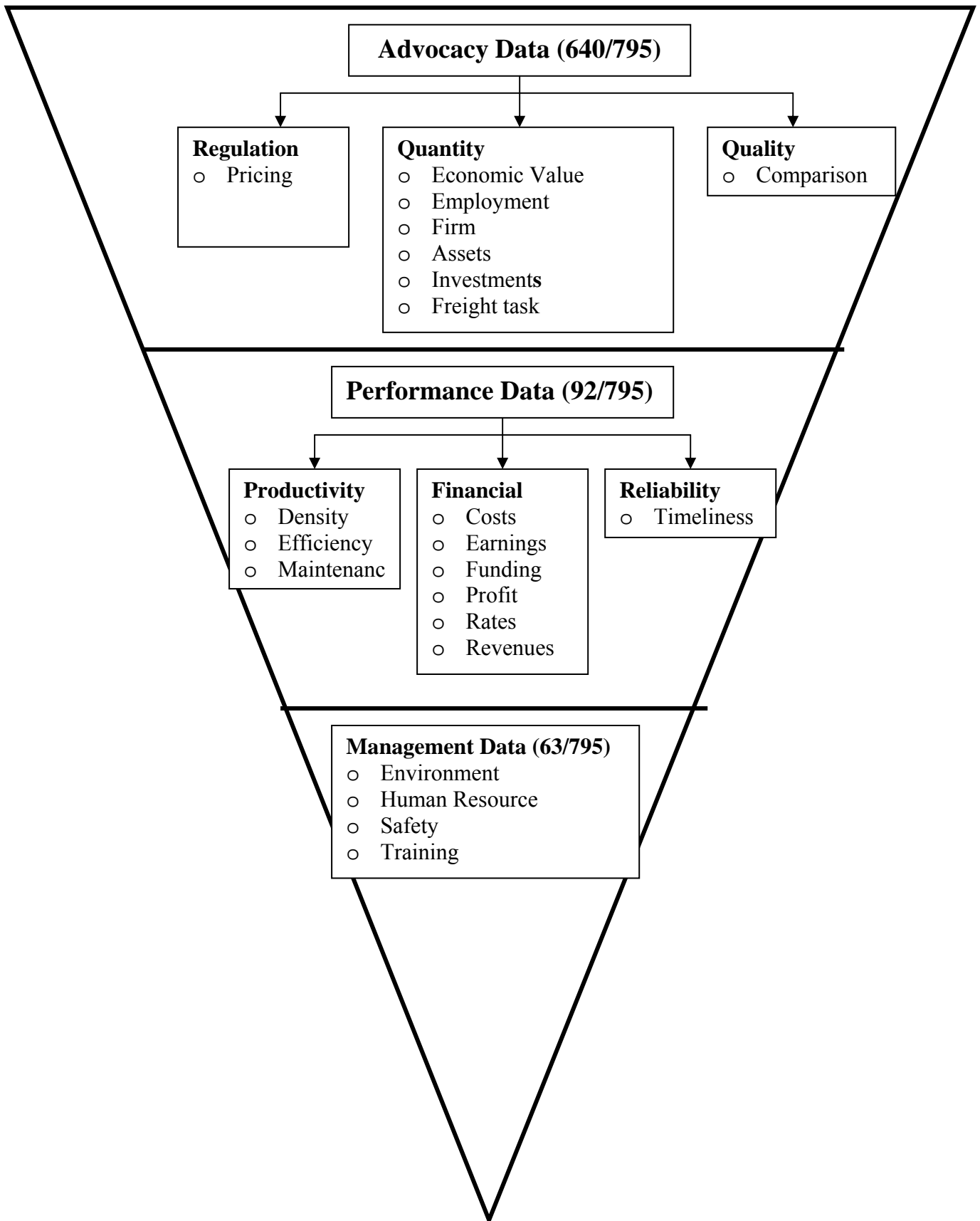
After collecting the data, we put them into a sample database and show the results.

3.1 Quantity

795 records of industry data were collected in the work. Every record includes one data or a group of data. There are 21 fields, which represent the characteristics of each record. Therefore, the number of the data/data group and their characteristics determined are 16,695.

3.2 Structure

Figure 2. Reversed Pyramid of Available Data



The structure of this sample database is a reversed pyramid (Figure 2) in terms of available data quantity. The shape represents the composition of data/data group in our sample database, which is 640 out of 795 records for Advocacy category, 92 for Performance and 63 for Management. This composition reflects the allocation of available data among different levels in the industry and a wide gap in performance and management data exists.

3.3 Categories

The data contribute to 3 categories according to the ALC data pyramid:

- Advocacy – definition and quantity of logistics industry
- Performance – evaluation and proposal
- Management – information of management decisions

3.4 Sectors

As shown in Figure 2, the work covers Australian Logistics Industry sectors:

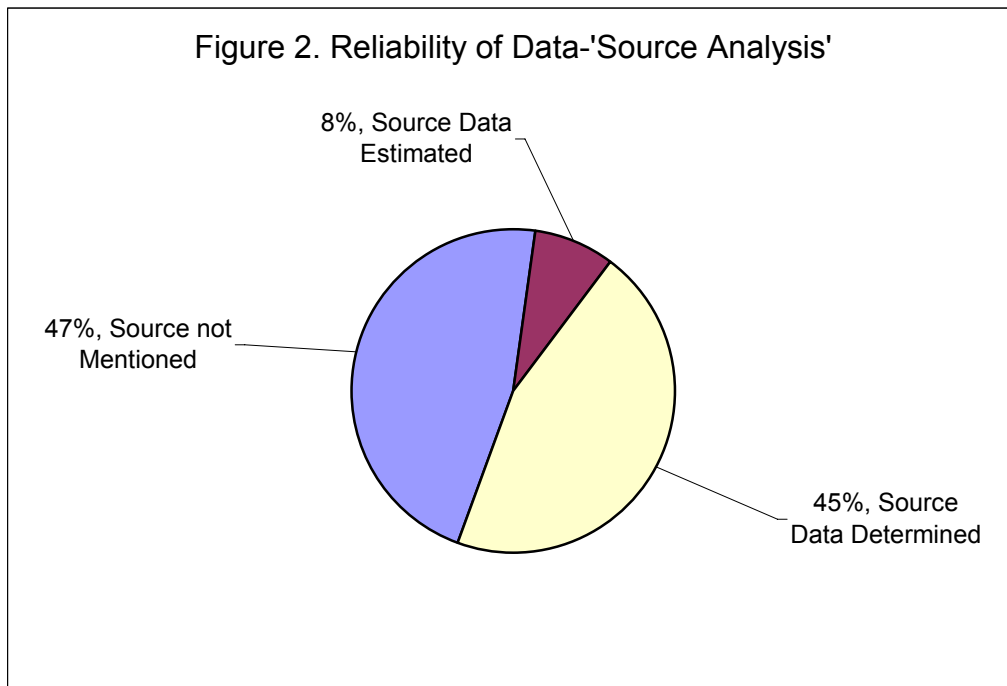
- | | |
|-------------------------|--|
| - Transportation modes: | - Services: |
| ○ Rail | ○ Customs broking and Freight forwarding |
| ○ Sea/Maritime services | ○ Warehousing |
| ○ Road | ○ (Government) Regulators |
| ○ Air | ○ Other intermediaries |

Apart from these sectors, according to the Logistics concept determined by BTRE (2001), the industry also includes Storage and Pipeline. However, we cannot find any existing information portals of both sectors.

3.5 Reliability

Among the 795 data/data groups, 371 do not indicate the source. Therefore, the data do not have reference to be verified.

Also, 65 among those indicate the sources are “estimated”. Those estimation are made by government and private companies. We can see more than half of the data are not strictly reliable.



Among those indicate the data source, 297 are from government organizations. This 37.3% of total database is more reliable than others, even though they include estimates made by governments.

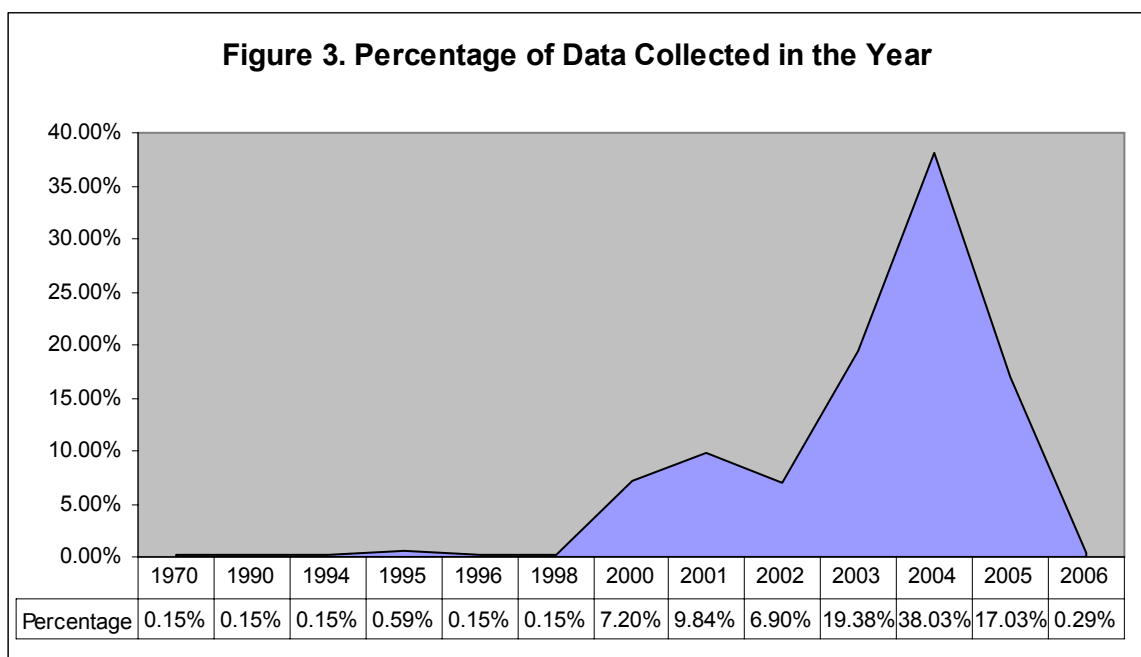
3.6 Completeness

As mentioned before, there is no systematic data available in Storage and Pipeline sectors found in our work.

Comparing two pyramids – data needs and available data, we find Advocacy data need is met to a large extent (except the Storage and Pipeline sector). However, at Performance and Management level, existing data are not adequate.

3.7 Timeliness

Among 795 data/data groups, 71 do not indicate the updated date. Except those dated in the future, which are predictions, the remaining data/data groups (681) are dated in year (both financial year and calendar year) and month. To analyse the timeliness of these data, an approximate method (only considering the year) is used to make the time comparable. Then the period of data is shown in Figure 3:



From this diagram, data with 2-year age (from 2004 to 2006) have the largest percentage. Majority of the data collected in the work were updated during 2000 to 2005. When the data is used in research of industry history, the timeliness is satisfactory. However, most of them are not appropriate to ALC's needs in advocacy, performance and management decision tasks.

4 Conclusions

From the raw data/data group collected and categorised, we use the Table 1 (next page) to show the different data availability in different sectors in our database, which we take as a representative sample of Australian Logistics Industry.

Table 1. Availability of Data in Different Logistics Sectors

Category	Sub-category	Metric	Industry						
			Industry	Air	Rail	Road	Sea	Pipeline	Storag
Advocacy	Regulation	Pricing			😊	😊			
	Quantity	Economic Value	😊	😊	😊	😊	😊		
		Employment	😊	😊	😊	😊	😊		😊
		Firm				😊			
		Assets		😊	😊	😊	😊		
		Investments		😊	😊	😊	😊	😊	
		Task		😊	😊	😊	😊		
	Quality	Comparison					😊		
Performance	Productivity	Density			😊		😊		
		Efficiency			😊	😊			
		Maintenance			😊				
	Financial	Cost		😊		😊	😊		
		Earnings					😊		
		Funding				😊			
		Profit				😊			
		Rates				😊			
		Revenues				😊			
	Reliability	Timeliness		😊	😊				
Management	Environment	Emission				😊			
		Noise				😊			
		Waste				😊			
	Human	Employee					😊		
	Safety	Traffic safety				😊			
		OH&S				😊	😊		
	Training	Capacity				😊			

😊 - Data Available

The table helps us draw conclusion by answering questions we asked in the beginning.

Q: What useful data we have now?

A: More than half of data needs in Advocacy category is met in different sectors except pipeline and storage. The most important advocacy data such as economic value, employment, assets, investments and freight task are available for most sectors. However, there is no such a database describing these data for the whole industry. Because of the missing of one or two sectors' data, the exact sum of the whole industry number is not available.

There are some data available in Performance and Management categories, though they are not completed to get a clear image of all the sectors, let alone to do any exact calculation. Only road sector has some data related to financial performance, environment and safety. Other sectors have very little data about these areas.

Q: What benefit do they have to the industry? Who specially benefits?

A: The categorising procedure in our work is the recognition of the data benefit to the industry. As shown in Figure 2 and Table 1, the most available data are benefit to the advocacy needs. There are few data available to improve performance and management, which will benefit logistics firms and organizations.

Q: What is the limitation of existing data?

A: The limitation of data has been identified in our work as quantity and quality problems. We have neither enough nor high-quality data for the industry. The limitation is caused by the lack of popular recognition of Logistics concept. Additionally, there is no uniform data

processing system and standards in the industry.

Q: Where are the data?

A: We collected the sample data from industry associations and government. Those are most important sources of the data while other sources including firms and other industries may have some useful data. However, the most recent data are not available through the websites.

Q: How to access them?

A: All the data we collected are free and open to public and accessible through Internet. The more recent and detailed data, if exist, are not available in this method. The accessibility of data is still up to data collector's willingness.

Q: What is the image of Logistics industry we get from existing data?

A: Among hundreds of Advocacy data, we abstract the most recent numbers as follows to show the image of the industry,

□ GDP

GDP per capita, Transport and storage	1892.00	\$Million, 02/03 constant prices	2003/04
Transport and storage GDP	38731.00	\$Million, 02/03 constant prices	2003/04
Transport and storage GDP	4.90	% of national GDP	2003/04

□ Employment

Transport and storage	427	'000 employees	31 Aug 2004
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□ Investment

New Fixed Assets In Road	5529.00	\$ Million	2002/2003
New Fixed Assets In Rail	4232.00	\$ Million	2002/2003
New Fixed Assets In Air	4187.00	\$ Million	2002/2003
New Fixed Assets In Water	344.00	\$ Million	2002/2003
New Fixed Assets In Pipes	3.00	\$ Million	2002/2003

Form this form, we calculate that the New Fixed Assets in road, rail, air, water and pipes were \$14,259 million in 2002/03.

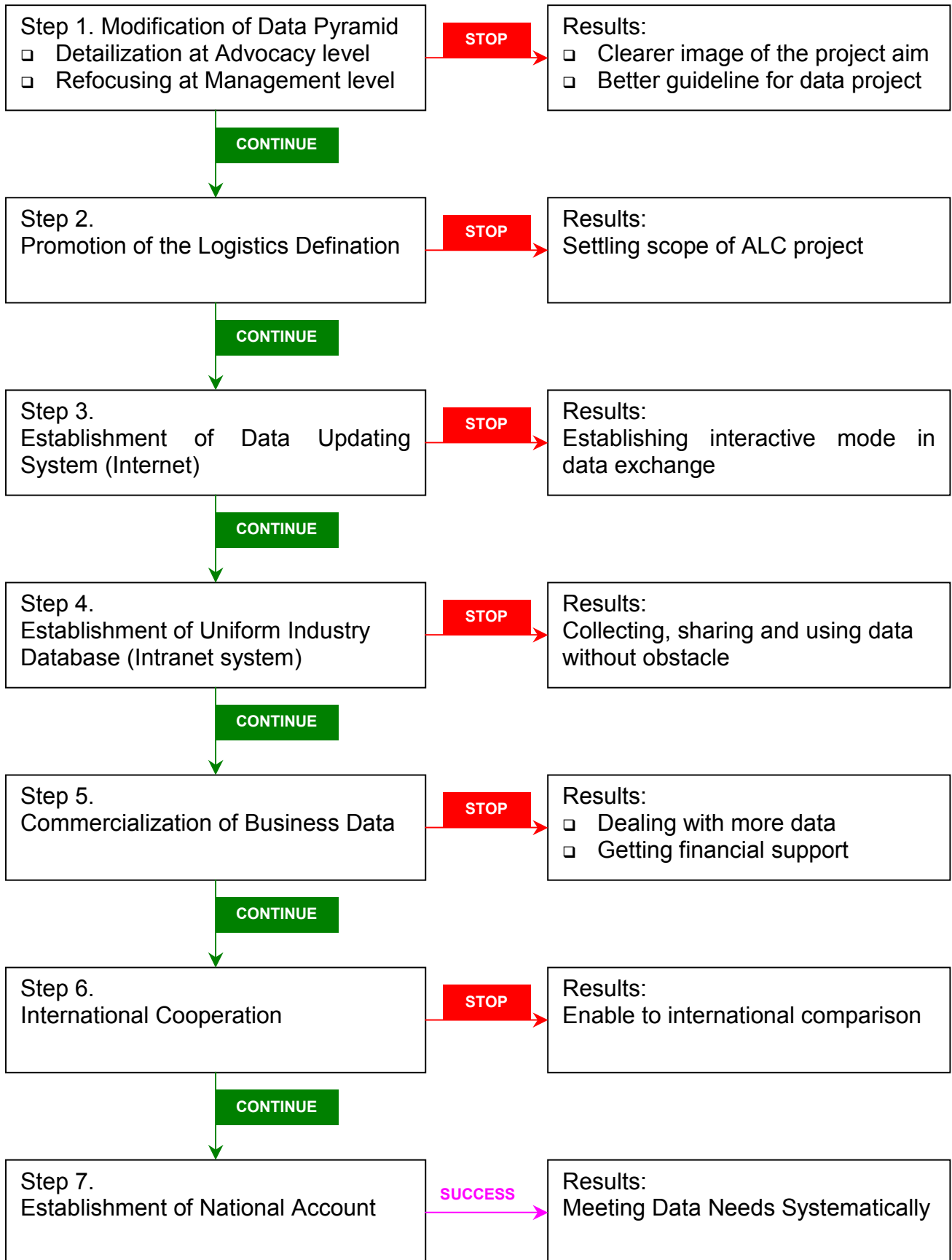
5 Suggestions

From the above conclusion, we can see that the logistics data are currently far from satisfactory in terms of meeting the requirement of ALC's data needs.

We believe that the problem is on two levels: First, there are large amount of data, especially for advocacy, exist in different kinds of stakeholder's system. The current data system is not adequate to organize these sources so that we cannot get access to some of the data. The second problem is the industry does not have enough organized data at performance and management level. These data are not collected and processed in a systematic way so that large proportion of them does not exist in current sources.

According to above analysis, we make following suggestions as shown in Chart 1, Page 17. The suggested works are listed from easy to hard in complexity, current to future in timeline and low to high in achievement level. They are steps in a complete project, which will lead a total satisfaction of ALC's data needs. At the same time, every step can be the objective of an individual project, which leads to partially meeting the data requirements.

Chart 1. Suggestion and Recommendation on Data project Flow Chart



5.1 Modification of Data Pyramid

ALC's Data Pyramid (2005) is an important guideline to all the work in the project. We also followed this guideline in collecting and categorising the data to get a better understanding of industry data status. On the basis of our results, we find an improvement of this Data Pyramid is necessary. We suggest the two main improvements as follows,

➤ Detailization at Advocacy level

The advocacy level shown in the Data pyramid is not detailed enough to provide information of data needs. We suggestion that detailed data needs are added to the Advocacy level. The important data include task (industry scope), size (economic importance), investment and return (economic value) and employment (social value). Also, quality and quantity data of overseas logistics industry are another important need for international comparison, which will lead to industry improvement in Australia.

➤ Refocusing at Management level

The management level data are specially provided to business members in the logistics industry. The Data Pyramid puts this part at the bottom of Pyramid, which is the biggest among three levels. We agree to the position of this part though, however, we believe the specific data should be concentrated on business improvement.

The data needs of training, safety, investment in infrastructure and O&H are very important. But, the managers in the industry are most concerned about the business performance of their companies. Therefore, management data should include majority of information on business system, business opportunity and business operation innovation. The change will improve the efficiency of management data collection and utilization. It also will get bigger support from business enterprises, which are the biggest resource of all ALC's projects.

The change of ALC Data Pyramid gives the industry clear image of the aim of the data project. It also provides good guideline for people working in the data project both in ALC and other stakeholder.

5.2 Promotion of the “Logistics” Definition

ALC has adopted the BTRE (2001) definition of Freight Logistics:

“The activities required for the movement and handling of goods and materials, from inputs through production to consumers and waste disposal.”

(It includes associated reverse flows such as product and equipment returns, and recycling. Some of the major logistics activities are transport, storage, procurement, inventory management, and packaging.)”

This concept needs to be promoted at present so that a good basis for further progress could be settled for all of ALC projects. The concept is best promoted in various kinds

of activities such as industry meeting, fact sheets, events, speeches, Public Relation activities and daily work in all the projects.

(However, we would mention that the including of packaging in the definition of Logistics is not agreed by us. Packaging is more related to production because package of a product is a part of product itself, rather than other activities in Logistics that are separated from the products in the end.)

5.3 Establishment of Data Updating System (Internet)

As we have found in the work, the update of industry data lags behind the need of ALC. We suggest that ALC organizes a Data Updating System, which include related government, associations and firms.

The Internet system uses software to connect stakeholder's independent systems. The software gives ALC access to its member's newest updated data and also enable it to distribute relative information to members according to difference needs. The stakeholders notify ALC about the newest update in the sectors automatically (by software) or manually (by email or other message). The system provides an interactive mode in which the requesting and providing of updated data are easily conducted between ALC and data owners. The system can be established through signing agreements or contracts among stakeholders. Limited IT technology is required to start and maintain the system.

5.4 Establishment of Uniform Industry Database (Intranet system)

ALC, cooperated with government departments, promotes (or requires) stakeholders in the industry to use a uniform method of data collecting, storing, displaying, accessing and categorising. ALC needs to develop related software and hardware (where necessary) to establish an intranet, which ensure the results of such method are compatible. The uniform method can be based on current work of some associations such as ARA and refers to other good models. ALC administrates the system and has access to all members' database. The stakeholders have access to related information by logging in to the system.

Using this method, the data of industry is collected by ALC at the same time they are put into stakeholder's information system. Meanwhile, stakeholders will be benefited by collecting, sharing and using the data at lower prices.

5.5 Commercialisation of Business Data

We suggest that ALC set up subsidiary company at proper time to deal with "extension" of the business-related data at management lever.

The company is invested or operated by ALC. The mission of the company is to explore the business values in industry data and provide service to improve the business performance of other firms in the industry.

The business scope of the suggested company covers business opportunities

matching, advertising, private funding managing, consultation and other business activities. The accessing of industry data by ALC is the biggest advantage of this commercialisation. The company, on the other hand, will support the data project financially when it starts operation normally. This will enable ALC to deal with more specific management level data. It also provides the data project continuous funding to help achieve ALC's ultimate mission.

5.6 International Cooperation

With the success in steps mentioned above, it is possible to improve international cooperation. The task is to establish international network with foreign government departments, Logistics organizations and firms in other countries. The network can be in the form of international logistics organization, annual conferences, meetings or events.

The network helps the international stakeholders exchange information of the industry and promote the recognition of Logistics industry internationally. It also provides ALC plenty of resources in international comparison. As a result, the international cooperation will enhance the endeavour of ALC to promote Australian Logistics Industry.

Moreover, the international cooperation led by ALC will give logistics firms in Australia more information of international market. This is especially useful when Australian logistics companies are expanding in the world market. Therefore, it is benefit to performance and management improvement.

5.7 Establishment of National Account

Establishment of National Account for Logistics Industry based on uniform information system in Australian industry and the effective comparison with international industry is possible. According to Strategic design & Development Pty Limited (2006), the formal National Accounts framework is crucial to developing estimates of the economic significance of logistics as an activity, sector and industry. We believe the National Account also will enhance the definition of logistics and improve the performance and management decision.

ALC may promote the National Account in a “bottom-to-up” way. As the industry information has been established, this way of promotion is not too hard and costly. Moreover, if ALC has enough information of logistics data system in other countries as support, the change of the National Account in favour of Australian Logistics Industry is most feasible.

After this stage, the ALC Data Project will engaged more in the activities described as ‘pull’ rather than ‘push’ as before. The information system works automatically with little maintenance necessary. ALC will concentrate on the best use of data in all level of its tasks.