Asia-Pacific
Economic Cooperation

Workforce Development and Global Supply Chain
Final Report and Roadmap

Intermodal & Intelligent Transportation Systems Experts Group

Transportation Working Group

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Executive Summary

Global logistics and intermodal supply chain connectivity are essential to the continued economic growth and development of APEC and the world. The APEC IIEG and the TPT groups have emerged as a significant source of expertise and guidance for economies seeking to develop their global trade and logistics expertise. These efforts are essential to continued facilitation of trade and economic development. The current report reviews the existing situation in the APEC regions and the need for continued workforce development efforts. The report is also based on several focus groups and surveys completed by representatives of APEC member economies. Finally the report offers several suggestions and a roadmap for APEC activities in the coming years to continue the development of the global soppy chain and intermodal skills workforce development efforts needed to continue to expand and global trade efficiencies in the APEC regions.

The simple fact of the matter is that global projections for increased trade have increased significantly. A recent UN study (ESCAP, 2005) projects that global container traffic will increase by 8% to 6.5% until 2015 (see Figure 1). Other estimates place the longer term increase in trade as much higher over the next twenty to thirty years. While there has been a recent economic downturn in the past 18-24 months recent data suggest that trade in the form of container traffic has nearly returned to 2007 (pre recession) levels in some locations (e.g. Seattle, WA).

It is well known that trade between Asia and the US has grown dramatically. A report by the US Bureau of Transportation Statistics indicated that US container traffic nearly doubled over the last decade and that it is expected to continue. On the balance the US is the net importer while China and Asia the next exporters. Furthermore, intra-Asia container traffic is also expected to rise by as much as 20% in the near future.

Coupled with this increase in traffic, overall economic productivity in the Asia Pacific region is also expected to rise. Significant increases in China as well as Japan, Korea, and Singapore will occur as will those for developing economies. To meet the increases in demand the physical infrastructure will need to expand as will the size of the labor force. In order for the APEC region to take full advantage of increased economic activity, significant improvements in human capital will also need to take place. Most notably, Indonesia, Philippines, Thailand, and Viet Nam are the economies most in need of these skills. Advances in the human capacity of these economies will enable them to take better advantage of the increased economic activity.

Most importantly, in addition to expanding trade there is global estimate of significant shortages in available workers. For example, a recent survey indicated that "29 percent of employers worldwide would have hired more professional staff over the past six months if candidates with the right skills would have been available" (page 2, Manpower, 2006). In APEC member economies the results are higher with estimates of increased hiring by Peru at 46%, USA 45%, Japan 45%, Mexico 41%, Australia, Hong Kong, China and New Zealand at 32%, China 31%, Singapore and Chinese Taipei 21% , and Canada 26%. Interestingly, 55% of respondents from Singapore indicated that talent shortages were forcing them to pay higher salaries. (Manpower, 2006).

Education is widely seen as a way of increasing workforce capacity. A recent study by the World Bank suggests that the impact of broad based general education, while valuable to an economy and the population, may be supplemented effectively by targeted educational programs providing specific skills to the workforce. Thus, short-term targeted training may be useful in developing workforce capacity to be able to take advantage of the economic activity resulting from increased container traffic.

The present report identifies the need for continued training in the areas of global supply chain and logistics skills. The four key areas of interpersonal, analytical, technical and foundational skills were repeatedly identified by survey respondents as critical and essential to the training go of qualified professionals. Unfortunately, as was true a few years ago and is still so today the opportunity to obtain triaging in a wide variety of skills I still not completely available.

The document suggests a roadmap for training and development of logistics and global supply china across APEC. This should consist of a number of key developments including the training of ministers and high levels executives in the MOTs as well as the ongoing support for a series of key and informative workshops that will be provided on a regular basis. APEC should sponsor a five year plan to develop the training trainers in each economy as well as a global center for intermodal and globally supply chain training that will support all economies equally.

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Introduction

Global container traffic has increased over the past thirty years with Asia becoming a net exporter and the more mature markets of the US and Europe being the net importers. Some economies in the Asia Pacific region have not taken full advantage of the expansion in trade for a number of different reasons. In order to compete on a global level, improvements in both human capital and transportation infrastructure will be needed. The identification of specific skill development needs in both the public and private workforce sector is essential in order to compliment advances in basic physical infrastructure increases.

Increased Global Container Traffic

Global projections for container trade have increased significantly. A recent UN study (ESCAP, 2005) projects that global container traffic will increase by 8% to 6.5% until 2015 (see Figure 1). Other estimates place the longer term increase in trade as much higher over the next twenty to thirty years. The ESCAP (2005) study found that growth rates have changed from 8.5% per year between 1980-2002 to 6.6% per year between 2003-2015. The total number of containers shipped internationally is expected to increase to 177.6 million TEUs by 2015, up from 77.8 million TEUs in 2002.

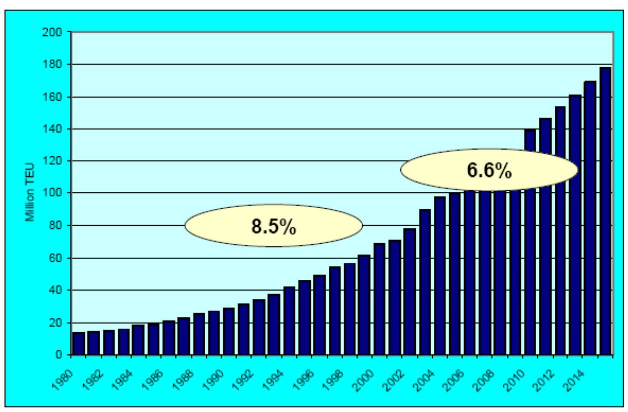


Figure 1. Growth of container traffic between 1980 and 2015.
(Source: ESCAP, 2005, page 28)

Similar results were obtained from a study by Drewry Shipping Consultants that indicated that World container traffic has increased by 200% since 1980 to over 400 million TEUs (see figure 2). In addition, Drewry (2006) estimates that global terminal operators will increase their activity by approximately 5.7% between 2005 and 2010 and that by 2011 these operators will control over 61% of the worlds capacity. While this is indeed a significant percentage there is considerable room for local and regional operators to enter specialized markets and opportunities.

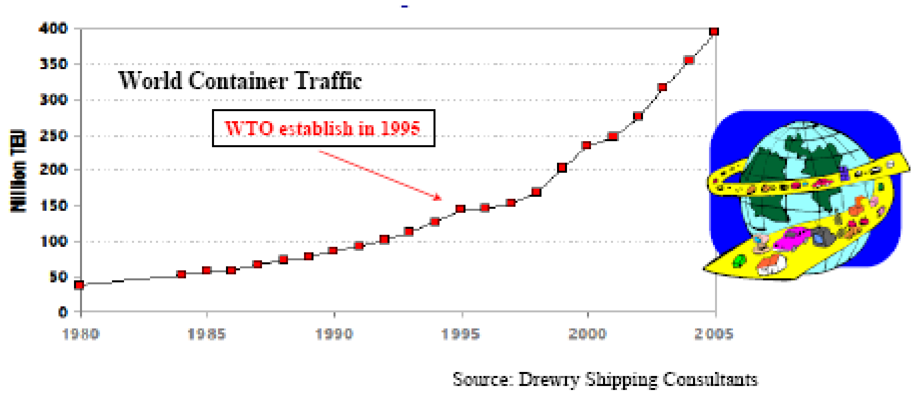


Figure 2. Drewry Estimates of Container Activity. (from Drewery)

A report by Evergreen Shipping, based on traffic estimates from the Journal of Commerce, estimates that global container traffic will increase by 8% to 9% per year. This means that container traffic worldwide may nearly double within 10 years.

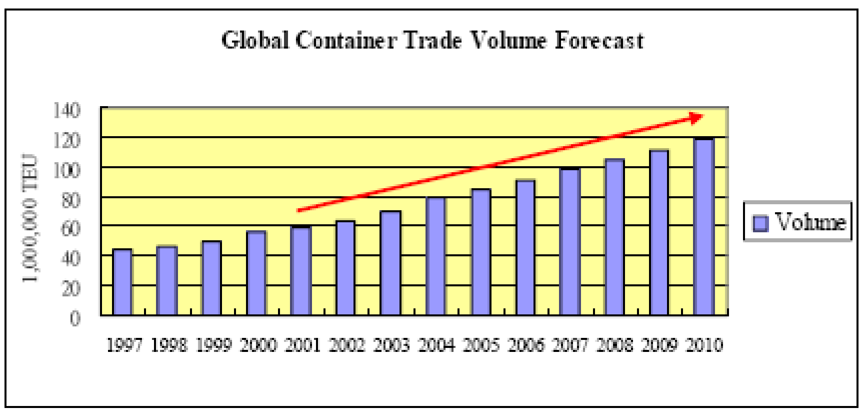


Figure 3. Evergreen Shipping Estimates of Container Traffic. (from Evergreen website)

These estimates are based on projections from various sources. However, it should be noted that according to the ESCAP (2005) study, growth in container traffic is a function of growth in the global economy. Thus, predictions of increases in the global economy in turn drive estimated increases in container traffic. Analyses from the study indicate that for "every 1 percent per annum increase or decrease in the estimated global economic growth, the rate of growth in container volumes will change by approximately 1.5 percent per annum. " (ESCAP, *2005*, pg. 29).

Most definitely however, it is clear that as the economy increases there is a continued need for skilled workers and professionals to manage and implement the international trade operation. Those economies that possess the human capital resources are best able to compete in the global marketplace.

US Container Traffic

It is well known that trade between Asia and the US has grown dramatically. Since 1997 US container imports have nearly doubled. A review by Maloni & Jackson (2005) concluded that existing ports in North America are approaching their capacity. In order to address the increased traffic it will be necessary to attempt to identify process improvements to handling freight as opposed to expecting that capacity will be increased through the development of new infrastructure. On a recent tour of the Port of New Jersey it was apparent that there were no further opportunities to expand container, chassis, or berths. The only alternative was "up" according to Robert Leef, Vice President of Container Port Group.

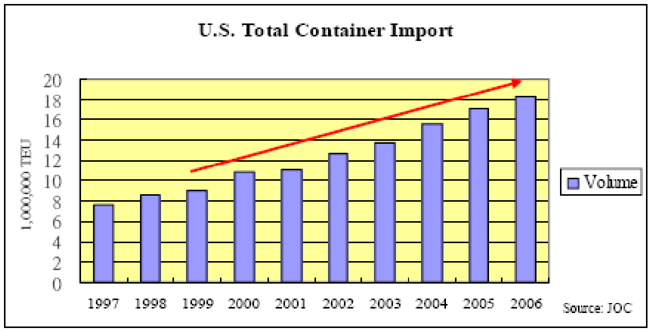


Figure 4. US Total Container Imports. (*Source Journal of Commerce and Evergreen Shipping.*)

In addition, the projections for US container traffic show that there will be steady increases in imports over the next ten years. These projections then suggest that there will be a steady draw on the resources of the APEC region to provide goods to the US consumer markets. While there has been a noticeable downturn globally due to the recession of 2009-2010 there are indications that container traffic into the US has begun to return to 2007 levels. For example, in Seattle WA *the Journal of Commerce* reported that

> The Port of Seattle saw huge gains in container volume in February. Seattle, which benefited from a joint service of Maersk Line and CMA CGM that began last June, recorded especially strong gains. Seattle's inbound containers were up 84 percent compared to February 2009, exports increased 49.2 percent and total container volume was up 48.5 percent. Year-to-date, Seattle's inbound volume increased 55 percent, outbound 56.4 percent and total container volume 33.3 percent compared to the first two months of 2009.(JOC, March 24, 2010)

Increasing traffic and demand will create additional pressures on the Asian ports to export and process the goods that will be heading to the US. Consequently, there will be continued opportunities for developing economies to take advantage of the trade flows and to identify ways to participate in the global supply chain.

Asian Productivity

Coupled with this increase in traffic, overall economic productivity in the Asia Pacific region is expected to rise.

Again, citing the ESCAP (2005) report "In looking at the intra-Asian cargo flows between nine major Asian economies: Hong Kong, China; Indonesia; Japan; Malaysia; the Philippines; Republic of Korea; Singapore; Chinese Taipei and Thailand. It was estimated that in 1997 estimated total for 1996 was 5.5 million TEU, a little short of double the 1991 total. This translates to a growth rate of 13 percent per annum, compared to a growth in global container trade over the same period of around 8 percent per annum." (pg. 35).

Looking at the estimates for growth in SE Asia it appears that at least steady 6% increases in Gross Domestic Product (GDP) are projected for most economies in SE Asia. If this projection holds true then a corresponding level of container traffic might also be expected based on the assumptions listed above. In some cases the projected GDP is less than 6% however there would still be an overall increase in container traffic to various APEC economies shown in Figure 5.

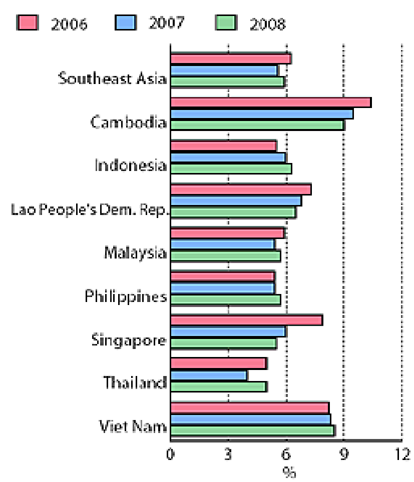
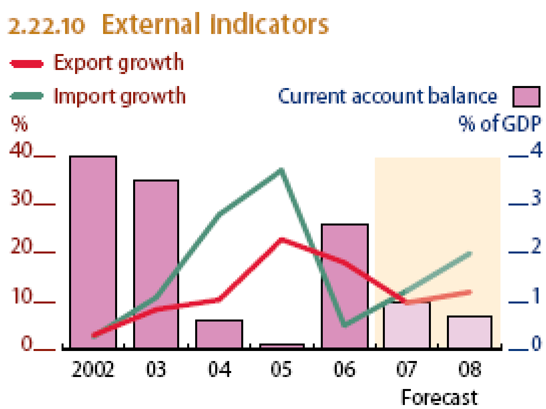


Figure 5. Estimated GDP for SE Asian Economies.
(Source: Asian Development Bank Outlook 2007).

The Asian Development Bank report (ADB 2007) suggested that Indonesia, Malaysia, and Thailand "need to enhance the skills of their workforces to move up the value-added chain in production." (www.adb.org/Documents/Books/ADO/2007/part010303.asp). Indonesia in particular may be experiencing a relative increase in imports due to several recent major natural disasters as well as political challenges. Furthermore, estimates of increasing numbers of locations with a high concentration of TEU shipments is also on the rise (see Figure 5a.)

Figure 6a. Ports estimated to handle over 1 mil TEU annually by 2015.
(Source Dong Woo Ha 2007 presentation , UNESCAP)



Sources: Bank Indonesia; staff estimates.

Figure 7. Expected economic activity in Indonesia by 2008.

Figure 6 suggests that an increase in imports and a slight increase in exports will begin to occur by the end of 2007 (ADB Outlook 2007, pg 211). It bodes well for improved economic activity.

From us state Dept:

Indonesia's overall macroeconomic picture is stable. By 2004, real GDP per capita returned to pre-financial crisis levels and income levels are rising. In 2009, domestic consumption continued to account for the largest portion of GDP, at 58.6%, followed by investment at 31.0%, government consumption at 9.6%, and net exports at 2.8%%. Investment realization had climbed in each of the past several years, until the global slowdown in 2009. It is again rebounding in 2010.

Exports and Trade: Indonesia's exports were $116.5 billion in 2009, down 14.8% from a record $136.8 billion in 2008. The largest export commodities for 2009 were oil and gas (16.3%), minerals (14.3%), crude palm oil (12.5%), electrical appliances (8.2%), and rubber products (5.0%). The top four destinations for exports for 2009 were Japan (12.3%), the U.S. (10.7%), China (9.1%), and Singapore (8.2%). Meanwhile, total imports in 2009 were $96.86, down from $128.8 billion in 2008. Indonesia is currently our 28thlargest goods trading partner with $18.0 billion in total (two-way) goods trade during 2009. The U.S. trade deficit with Indonesia totaled $8 billion in 2009 ($5.1 billion in exports versus $12.9 billion in imports).

> Higher Education: A partnership with the University of Kentucky is assisting three Indonesian universities to upgrade their academic programs in areas critical for economic growth such as agriculture, business, engineering, and public administration. A three-way partnership between USAID, the Government of Aceh Province and Chevron supports the development of the Aceh Polytechnic, a new institution to provide quality education in applied technology fields such as information technology and electrical engineering that are in high demand in the region.
>
> In keeping with presidents' joint higher education initiative announced in June 2010, USAID is initiating three new ventures in Indonesia. The Higher Education Leadership and Management Program will help reinvigorate the administration and learning environment of tertiary education. An additional $17 million will be used to expand the number and depth of partnerships between Indonesian and U.S. universities. Finally, a special investment will engage the resources of higher education institutions in improving the quality of math, science, and technology instruction throughout Indonesia's elementary schools.

(SOURCE: http://www.state.gov/r/pa/ei/bgn/2748.htm)

Overall economic performance of the larger economies of Southeast Asia was variable. High interest rates designed to reduce inflation apparently slowed growth in Indonesia in 2005. In the Philippines, growth edged up from 2005, supported by a strong showing in agriculture. In Thailand, net exports lifted growth, but gathering political uncertainty dented domestic demand, and business and consumer confidence ebbed. Growth accelerated in Malaysia, largely primed by another year of consumption and greater public investment spending (ADB, 2007).

Another factor to consider is the potential for increased trade between ASEAN countries and China which was discussed at a recent ASEAN meeting. According to published reports, China and ASEAN are each other's "fourth-largest trading partner, and China-ASEAN trade volume is surging at an average of 22 percent on year-on-year basis." (Xinhua News, 11-3-2006 www.china.org.cn/english/business/187512.htm). Reportedly, according to the State Ministry of Commerce, China-ASEAN trade volume in last year has hit US$130.3 billion, and in the first three quarters this year, bilateral trade volume between China and ASEAN countries exceeded US$116.3 billion. Thus, potential increases in intra-Asian trade are possible and the report concluded that "intra-Asian trade will continue to outperform global container growth by some percentage points", 8.3% per year is estimated.

Finally, a recent study released by UPS indicated that business leaders are positive about increased prospects for intra-Asia trade in 2007, with 74% of study participants indicating expectations of increased trade between their country and the rest of the region. The positive job outlook for 2007 also bodes well for labor, with over 89% of respondents across all countries expecting to maintain, if not increase, the size of their workforce. The greatest increase is expected in India (79%). Even in mature markets such as Hong Kong, China and Japan, 34% of respondents anticipate workforce growth (UPS, http://www.ups.com/content/cn/en/about/news/press_releases/04132007.html).

Data specially provided by Global Insight, Inc for this report indicate that there are steady increases in container traffic projected for South East Asia. Looking specifically at Indonesia, Philippines, Thailand and Viet Nam there is a 345% rise in total container traffic (import and export) predicted from the year 2000 to 2025.

Again, recent reports from shippers indicate the promise of increased trade. A report in the Journal of Commerce Nov 10, 210 indicated that A.P. Moeller Maersk was reporting that container traffic grew 7% in the first three quarters of 2010.

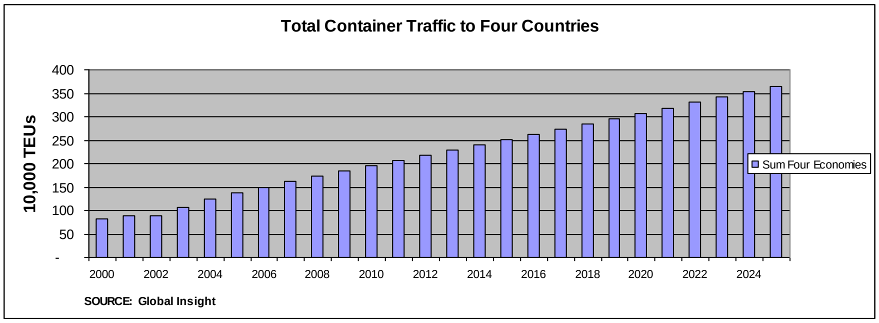


Figure 8. Total container traffic for Four South East Asia economies.
(Source: UNESCAP 2005)

In addition, Indonesia and Thailand are projected to see the largest increase in trade volumes. Consequently, their economies are most likely those most in need of additional training and education to deal with the large increases in activity.

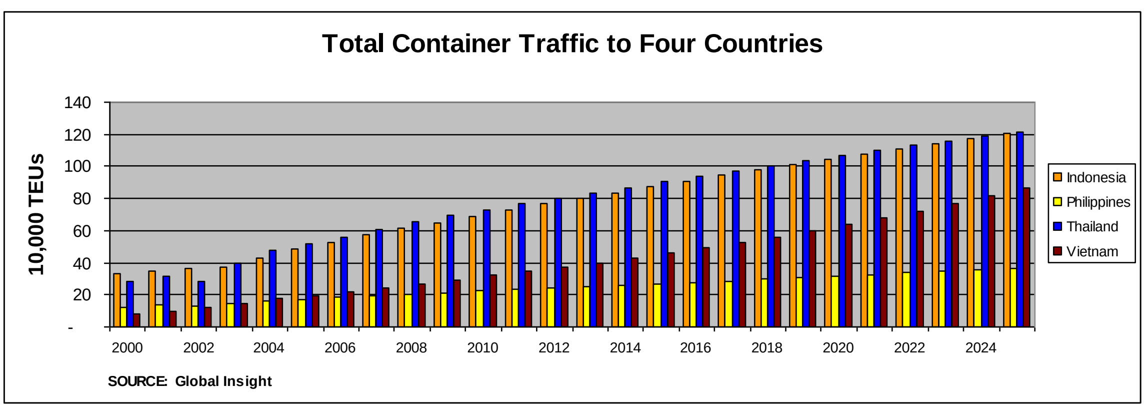


Figure 9. Breakdown of total container traffic to four South East Asia economies.
(Source: UNESCAP 2005)

The ESCAP (2005) report estimated that in order to handle the anticipated port container traffic in 2015, around 570 new container berths will be required in the region.

Hong Kong, China and Chinese Taipei, will require 270 new berths by 2015. South-East Asia's requirements are around 150 berths, while North Asia (excluding China) and South Asia will require around 65 berths each.

It was further estimated that $36 billion would be required to cover the physical cost of developing the terminals (ESCAP (2005). Substantial additional investment in physical infrastructure will also be required to secure adequate access to the terminals by road, rail and inland waterways, which will be essential for the effective distribution of containers to expanded port hinterlands. The additional costs of dredging, the provision of breakwaters and the establishment of land transport links and intermodal interchanges could easily double this total. Finally, additional investment in developing human capital would also be required.

Employment Trends

The importance of developing the skills and expertise in this industry is apparent when we look at more mature markets such as the Chicago IL area. A recent study by the US BLS revealed that Estimates are that employment opportunities in transportation will increase by about 5% in the Chicago Joliet area alone. This is a market that has been the largest single intermodal center for activity in the US. Consequently, the training needs for the industry will likely continue and a need to develop train-the-trainer capability thus exists.

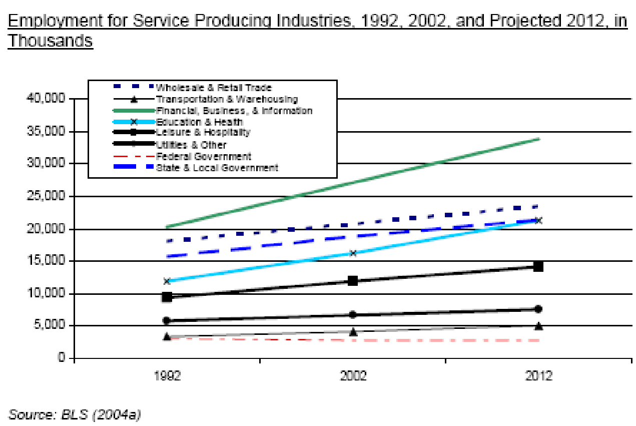


Figure 10. Demand for logistics personnel in a mature market.

Thus, to improve the overall market and reduce the cost of intra-Asian transportation there is a need for improved logistics in the region. "Underdevelopment of infrastructure has made logistics a bottleneck to China-ASEAN economic development," said Chen Gongyu, vice chairman of the China Society of Logistics (Xinhua News Agency November 3, 2006 - http://www.china.org.cn/english/business/187512.htm).

Taken together, these data suggest that economic activity will continue to increase in the South East Asian economies as well as China. By implication then, as the GDP increases we can also expect to see increases in the flow of containers which will in turn drive the need for skilled labor and professional management in the area of intermodal logistics and supply chain activity. To take full advantage of the increased economic activity there is a need for highly trained personnel. Thus, the need for an adequately trained and prepared workforce is likely.

Despite the recent economic downturn indications of hiring and decreased unemployment has been noted recently. A recent study reported by the Association of Search Consultants revealed that:

> Worldwide senior executive hiring was on the increase in the third quarter of 2010, according to the latest report from the Association of Executive Search Consultants (AESC). The yearly trend – from Q3 2009 to Q3 2010 – was strong with both revenues and new search mandates rising across all regions and industry sectors (revenues +32%, new searches +18%). The quarterly trend – from Q2 2010 to Q3 2010 - saw revenues increase by 2.4 per cent, although the number of new searches declined (-5.3%). "The third quarter statistics confirm the strong trends experienced since the beginning of 2010 and indicate a continuing resurgence in executive demand in many regions and sectors of the world. In spite of a very uncertain economic environment during the summer months nevertheless it is clear that many organizations, having embarked upon strategic re-evaluation of their global markets since the worst days of the recession, were unwilling to put everything on hold until the picture again became clearer. Thus revenues for the worldwide search industry have sustained and even improved their already strong levels." Commented AESC President, Peter Felix. (https://www.bluesteps.com/blog/AESC-Q3-2010-Executive-Search-Industry-Report.aspx).

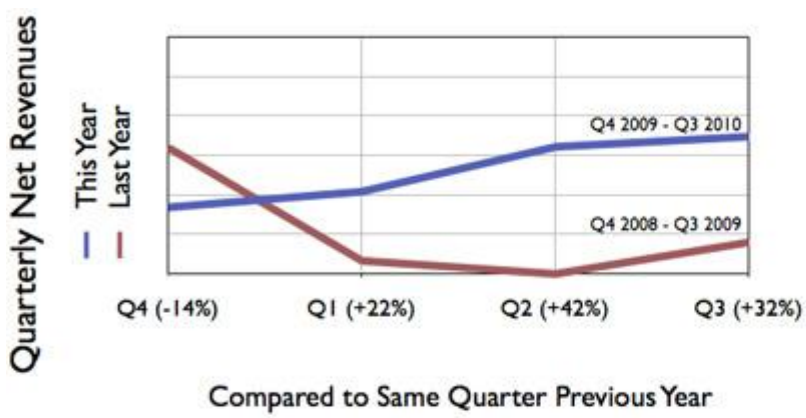
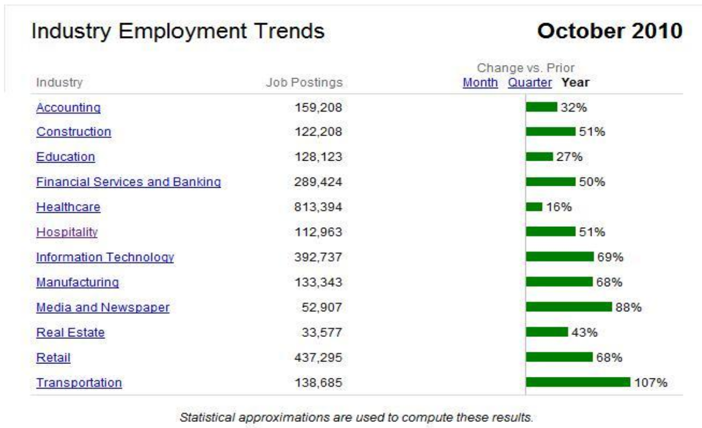


Figure 11. Demand for executives in 2010.

A study of hiring plans in Singapore for the second half of 2010 reveals small steady trends towards hiring more workers. Of the 229 companies who reported a likelihood of hiring 41% said they would increase their staff count by less than 5%, 43% stated a 5-10% increase and 16% intend to boost their headcounts by more than 10%. (Source: http://www.achievecareer.com/pdf/Hiring%20Trends%20Report%202H%202010%20FINAL.pdf) For the logistics and shipping industry 43% said that they would be hiring.

Job growth and hiring is tracked by a company called Indeed, Inc. (www.indeed.com) (http://www.recareered.com/blog/2010/11/18/october-2010-employment-trends-stalledfor-the-past-six-months/) whose October 2010 trend by industry survey shows growth in all fields. While health care shows the least growth from last year at 16% compared to October 2009, there were almost twice the number of health care openings (813K) than retail (437K), the next closest industry. The greatest changes were in transportation (a 107%), media/newspaper (88%), Information Technology surged to a 69% increase, manufacturing (68%) and retail (68%).


Industry Employment Trends — October 2010

Industry	Job Postings	Change vs. Prior Month Quarter Year
Accounting	159,208	32%
Construction	122,208	51%
Education	128,123	27%
Financial Services and Banking	289,424	50%
Healthcare	813,394	16%
Hospitality	112,963	51%
Information Technology	392,737	69%
Manufacturing	133,343	68%
Media and Newspaper	52,907	88%
Real Estate	33,577	43%
Retail	437,295	68%
Transportation	138,685	107%

Statistical approximations are used to compute these results.

Figure 12. Demand for executives in 2010.

In addition, Human resource professionals are showing confidence in the U.S. job market, according to the Labor Market Outlook Report by the Society of Human Resource Management. The report indicates 56% of respondents expect job growth for the third quarter of 2010; 49% are somewhat optimistic about job growth in the United States, and another 7% are very optimistic and anticipate job growth during the quarter. That represents a sharp increase from the third quarter of 2009, when a combined 37% of respondents expressed some level of optimism about job growth in the labor market. In the third quarter of 2010, 31% of companies plan to conduct hiring, up from 21% in the third quarter of 2009. Among employer categories, small companies (those with 1 to 99 employees) are likely to add jobs (36%) in the third quarter. (Source: *Society for Human Resource Management – August, 2010).*

APEC Economy Survey

The survey of APEC economies conducted in this study are reported in Appendix A. The rather small response rate necessitate the use of focus groups and interview to augment the results. Focus groups were conducted in Ho Chi Min City, Manila, Jakarta, Beijing, Singapore, and Seattle-Tacoma.

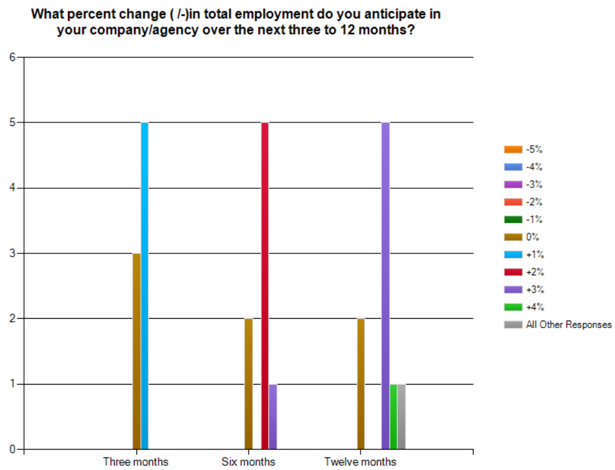


Figure 13. Anticipated growth in total employment in 2010.

The survey of APEC economies reveals small to modest anticipated hiring in the next three to twelve months of 2010. These trends are consistent with the previous reported findings and suggest that the economy is recovering and is in the early stages of an upturn.

In addition to the above data, respondents were also asked to indicate how likely it was that their company would actually hire people in the next 12 months. Responses to this question are displayed in the pie chart below. As can be seen33.3 % indicated that hiring was very likely, 44.4% indicated highly likely, and 22.2% indicated somewhat likely. No respondents indicated either unlikely or definitely not.

Role of Education and Training

One way to increase the overall economic condition and quality of the population is to provide educational opportunities for members of the eligible workforce. Education increases the capacity of the populace to take advantage of technological advances and to add value to the production of goods and services. Similarly, in the APEC region, as in others, adding to the transportation infrastructure decreases the cost of producing goods and services and thereby increases the value of the finished product. Likewise, improving the transportation infrastructure by enhancing the skills of labor and management adds value to the transportation system. Clearly, then, one way to take advantage of the impending increase in intermodal container traffic is through the preparation of the workforce to make the most advantageous use of the existing system. Improving the skill and expertise of the workforce in contributing to the effectiveness of the intermodal transportation system by education will have a number of desired outcomes.

A report by the Asian Development Bank (2005) suggested that "Today's world demands organizations designed on skill-based systems, which adapt quickly to the new circumstances and which react to the fact that, with globalization, the nature and content of jobs and the skills required are changing at a tremendously fast pace. This mismatch between the skills that firms demand and the practical knowledge that workers bring to the workplace has led to a cycle of lack of skills" and unemployment. (ADB, 2005, page 77).

According to a report released by Frost & Sullivan (2006) one of the main barriers to improved intra Asian shipping is that "The logistics industry in ASEAN also suffers from a lack of skilled labor and expertise, especially in 3PL services, which is a drawback in the face of increasing customer demand for tailor-made solutions that distinguish them from the competition." (Business Wire India, May 2, 2006). Frost & Sullivan's found that the ASEAN 3PL business could generate revenues of US $14.84 billion in 2006 and as much as US$27.85 billion in 2012. However, the top challenges facing this market included inadequate infrastructure, lack of skilled manpower and technology, rising oil prices and a highly diversified market.

In line with this thinking the ASEAN leaders commissioned a study (ASEAN, 2005) designed to determine what factors were needed to promote an effective and competitive Intra-Asian Shipping service. There were a number of recommendations including:

1. Foster sufficient and competent maritime human resources.
2. Improve management skills and expertise in maritime transport and overall logistics.
3. Develop logistics expertise.

In order for APEC members to take advantage of the economic activity it may be necessary to increase the skill of the workforces in certain key economies. The ADB suggested that it is necessary to determine whether key sectors of the workforce are receiving education of sufficient quality to obtain the desired results (ADB: ADB Outloook 2007 page 320). The ADB report recommended that "labor force surveys" are needed to be able to identify which educational interventions are needed where to have the desired effect. Since education is costly and difficult to implement it is imperative, in order to ensure the ongoing development of the economy and the population, that educational initiatives are in fact reaching the segment of the population and workforce with the needed skills training to make an impact on, and to take advantage of, the economic conditions. The ADB noted that "it is vital that governments and development agencies working in the field focus on systematically measuring education quality to work out whether interventions have the desired results. Similarly, labor force surveys need to collect data … so that the labor market outcomes of differently educated workers can be more fully analyzed (ADB, 2007, page 320). The implication is that the productivity of an economy and a population increases because "education enables well-placed personnel to introduce new technologies, activities, and outputs." (ADB, 2007, page 320). In other words, by educating key aspects of the workforce with the necessary skills they will be able to take good advantage of the opportunities presented. Otherwise, they are highly educated with skills that are not relevant to the economic conditions and opportunities that they face.

Learning these skills through seminars, certificate programs, or even on the job training might be preferential to obtaining the information from standard university training centers. Anecdotal information from shippers indicates that in-house training centers are beginning to provide specialized skills training to employees in a more cost effective way. However, when the economy is developing, large private companies may not exist to provide the training. In fact, in this case, since it is economic activity and facilitation of trade that we are trying to promote, it may be necessary for government to provide the training in certain specific types of activities.

A report issued by the World Bank addressed similar concerns and discussed the fact that:

> "Most of the knowledge that developing countries need to boost productivity and add value, in both high tech and traditional sectors, has already been discovered. The problem is that this existing knowledge is not always being employed in World Bank client countries. Therefore, a third, related aspect of capacity building involves enhancing the private sector's ability to acquire existing technology, improve and adapt it for the particular needs of local enterprises, and incorporate it into local production processes. In other words, this aspect of capacity building should focus on helping the private sector absorb and utilize technology that is already in use elsewhere in the world…Vocational…education must contribute to turning out graduates with the necessary skills. … Policy makers and business executives, therefore, need to devote more attention to enhancing their country's ability to scour the world for knowledge, import it into the country, adapt it for local use, and integrate it into local production processes. (World Bank, 2007)

As was discovered in the "Identification of Needed Intermodal Skills and Development of Required Training Programs" study (Sherry & Szyliowocz, TPT 01/2002) there are four main dimensions and over 32 different skills that managers need to function effectively in the intermodal transportation and supply chain industry. However, in order to optimize the effects of training, officials should attempt to identify the skills that are most needed in a particular economy given the unique economic circumstances and existing infrastructure. In this case, in the intermodal transportation industry, the skills needed are more general and conceptual, with some technical skill needed to operate, but not to develop sophisticated computer software. At higher levels of intermodal transportation and supply chain companies a basis in the technical aspects of business is needed but the development of new technology or the creation of totally new products and business processes is less likely. Thus, from an educational perspective providing information on best practices and possible solutions and opportunities will perhaps make the most sense. The hierarchy represented in Figure 10 reflects the type of training that is most appropriate for this industry. Furthermore, it may mean helping private sector economies develop the managerial skills and conceptual frameworks for handling complex enterprises and having the models with which to understand new possibilities for accomplishing and solving business problems.

Hierarchy of the Structure of Industrial Technology

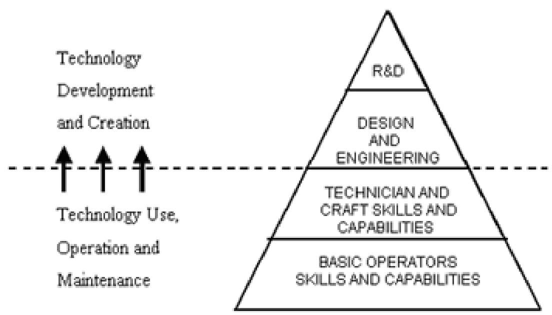


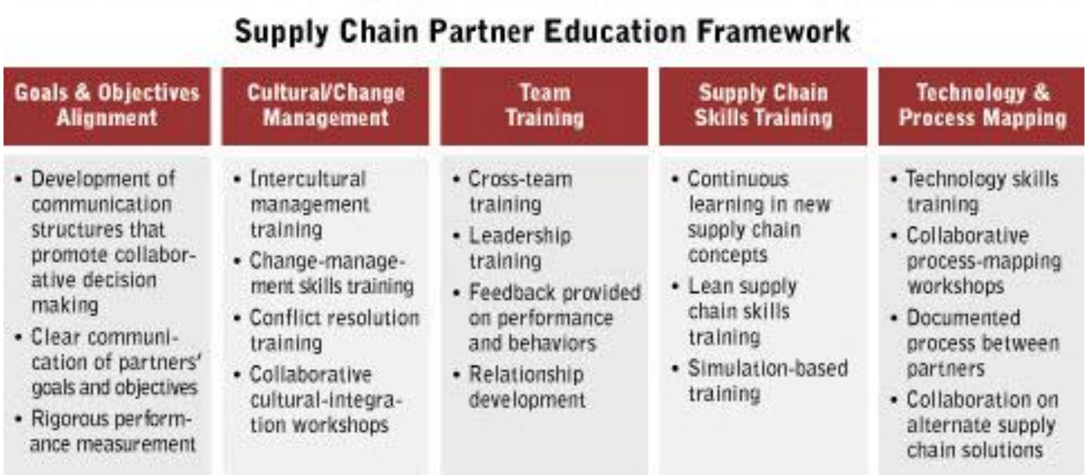
Figure 14. Type of training needed for intermodal transportation and supply chain.

Previous research suggests that preparation for a position in intermodal transportation logistics and supply chain management usually consists of the following:

- Broad based business skills, knowledge of the logistics process, and relevant work experience.
- Previous experience in the material procurement, inventory and warehouse management, transportation purchasing and management, order fulfillment, resource planning, & communications.
- Strong people skills, flexibility, analytical skills, computer skills, and communication skills.
- Logistics operations, planning and analysis, and manufacturing operations.
- Direct personnel, oversee teams, negotiate with suppliers, partners and customers, manage order fulfillment, and ensure high quality of services.
- Assesses the effectiveness of the current logistics or transportation system, designs facility layouts, develop standard operating procedures, and implement or deploy new technologies and information systems.

Training programs to develop the intermodal transportation and supply chain skills needed in a developing economy might also want to include representatives from shippers, carriers, regulators, and distributors to ensure that all members of the supply chain are exposed to best practices. Maylet & Visett (2007) report that recent efforts to improve the management of supply chain efforts have focused on the education and skill development of all members or parties in the supply chain team. A recent article by Francis (2007) reports on the educational activities of the supply chain managers in the area of team building which is being adopted as an industry standard. http://www.scmr.com/scm/article/CA603256.html. Efforts that focus solely on the "hard" elements (for example, structure, finances, and systems) across organizations and ignores the "soft" elements (such as skills, behavior, learning, and values) will likely fall short (Trent, 2005, see Figure 11). Thus, developing a broad based coalition of members of the supply chain to participate in educational efforts is very much needed.

APEC member economies should develop a comprehensive approach that first identifies key stakeholders and then attempts to deliver training to all appropriate constituents. Moreover, a process that is in place that will continue to deliver training is needed to ensure that key members of the workforce are in fact skilled enough to drive the skills training to the lowest levels of organizations and to also promote these skills throughout the region.


Supply Chain Partner Education Framework

Goals & Objectives Alignment	Cultural/Change Management	Team Training	Supply Chain Skills Training	Technology & Process Mapping
• Development of communication structures that promote collaborative decision making • Clear communication of partners' goals and objectives • Rigorous performance measurement	• Intercultural management training • Change-management skills training • Conflict resolution training • Collaborative cultural-integration workshops	• Cross-team training • Leadership training • Feedback provided on performance and behaviors • Relationship development	• Continuous learning in new supply chain concepts • Lean supply chain skills training • Simulation-based training	• Technology skills training • Collaborative process-mapping workshops • Documented process between partners • Collaboration on alternate supply chain solutions

Figure 15. Training Model for Supply Chain Team.
(Source: Trent, 2005)

Thus, in the developing APEC economies efforts should be made to identify the specific skills needed by the work force and the additional members of the supply chain and attempt to identify which skills are most in need of development given the economic circumstances and existing infrastructure. Such a strategy is most appropriate for developing economies with a range of skills and resources. For example, the ADB (2006) noted that "in Indonesia and, especially, the Philippines… priorities should be improving the provision of infrastructure … transport … and labor markets." It is premature to expect the free market system to be able to identify and develop skills in the workforce for which there is yet not a sufficient economic demand or need.

Results of APEC Survey of Workforce Training Needs

The APEC/NCIT survey of workforce training and development needs was conducted in the last quarter of 2010. Results of the survey reveal a strong desire among workforce representatives to see training in several key areas.

As can be seen from the following four charts, the importance of and need for skill development in each of the four main skill areas of Interpersonal, technical , analytical, and foundational skills is seen as highly important by the survey respondents.

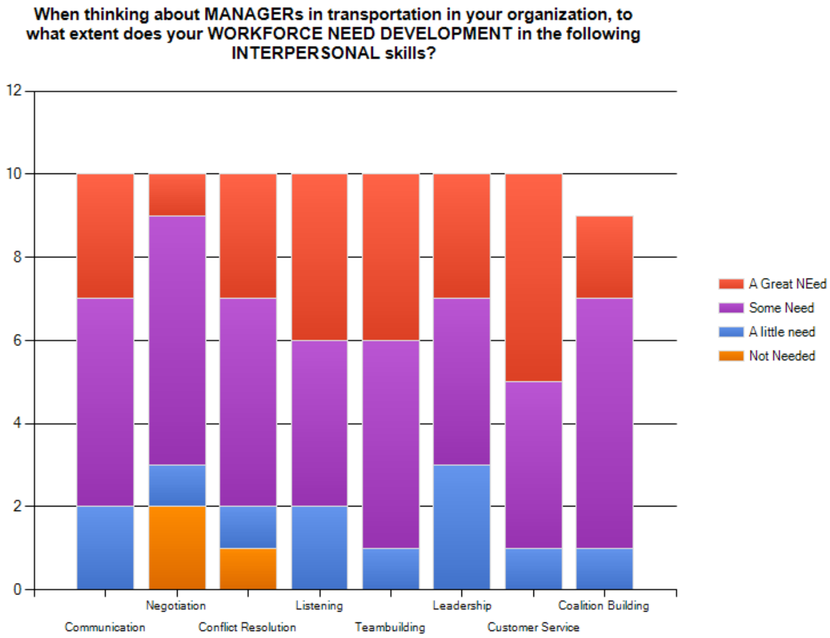


Figure 16. Need for training in INTERPERSONAL skills.

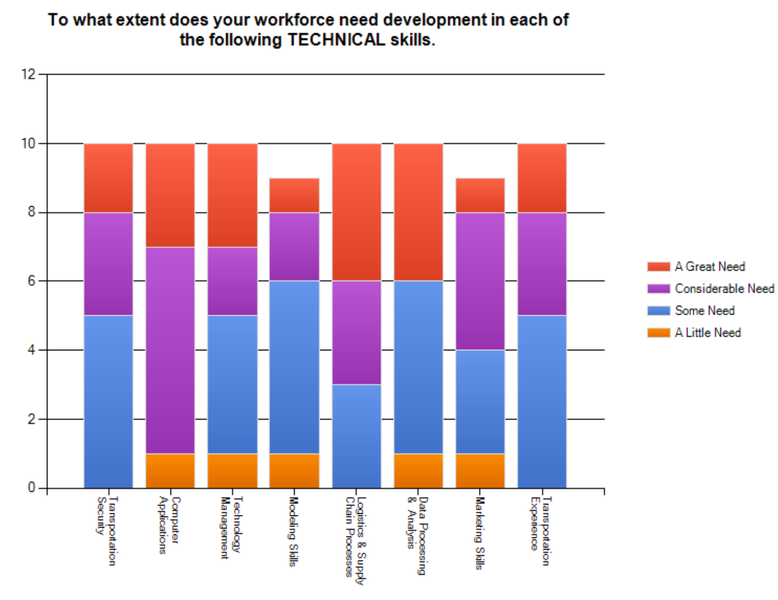


Figure 17. Need for training in TECHNICAL skills.

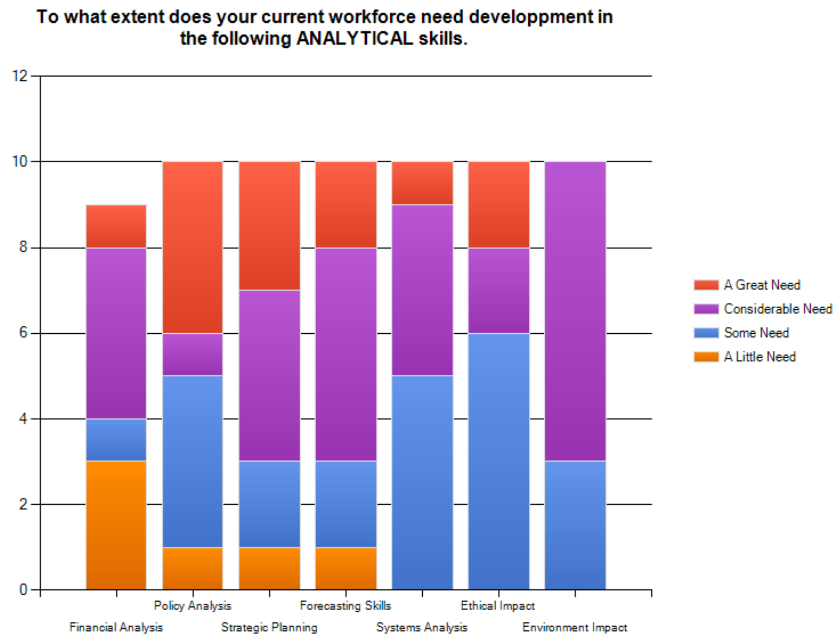


Figure 18. Need for training in TECHNICAL skills.

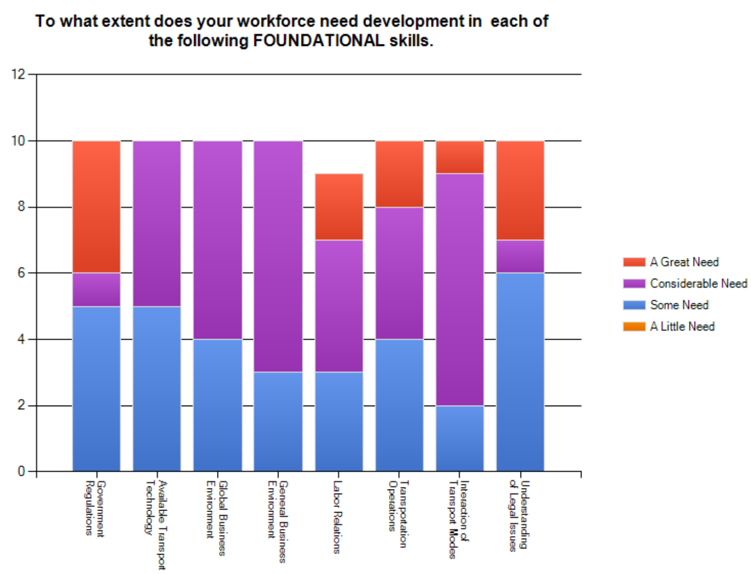


Figure 19. Need for training in FOUNDATIONAL skills.

Geographic Regions Where Skill Development is Needed

In terms of specific locations where skill development is needed, Indonesia is particularly in need with respect to additional training and education in the area of intermodal and supply chain warrants considerable attention as it is arguably Asia's least well-educated country. With 30% of its 242 million population school-aged, only 0.03% of the Indonesian workforce has earned a university degree, according to government statistics (World Bank web site).

Examples of the training of intermodal and supply chain workforce from more mature economies suggest that there are a range of activities from entry level on the job training for basic entry level drivers and clerks to more advanced training for managerial personnel (see Figure 12). Research on the training needs of persons in the Seattle region indicate that even in a fairly mature market there are still needs for the training of person who will participate in the Logistics and Intermodal transportation industries. In the US these individuals receive various types of training as depicted in Figure 12.

Most jobs in logistics require at least a bachelor's degree because they are considered management-level jobs. However, many in the field entered without a degree and obtained experience on the job and continued their education once they had some experience. While you may start out without a degree, to get ahead in the field, it is almost a necessity to go back and complete at least an undergraduate education.

	Occu-pations	Share	Number employed	Share	Average entry wage	Average mean hourly wage	Proj. Annual Openings 2002-2012
Short-term OJT	54	24.1%	12,426	34.7%	$10.29	$13.83	12,372
Moderate-term OJT	30	13.4%	9,337	26.0%	$13.25	$19.30	3,612
Long-term OJT	21	9.4%	3,311	9.2%	$14.99	$21.53	1,775
Post-secondary vocational training	16	7.1%	2,210	6.2%	$16.81	$23.06	903
Work experience in related occupation	19	8.5%	2,829	7.9%	$17.46	$27.19	1,777
Associate degree	7	3.1%	66	0.2%	$18.28	$24.77	1,149
Bachelor's degree	40	17.9%	2,843	7.9%	$22.46	$34.08	5,258
Work experience, & bachelor's degree	15	6.7%	930	2.6%	$29.01	$49.15	1,322
Master's degree	2	0.9%	7	0.0%	$21.79	$29.95	53
First professional degree	1	0.4%	11	0.0%	$27.68	$52.98	325
No category defined	9	4.0%	1,776	5.0%	$17.29	$29.30	1,431
Training info unavailable	10	4.5%	99	0.3%	$15.71	$20.15	7
TOTAL	224	100.0%	35,846	100.0%			29,984

Figure 20. Training experiences for intermodal transportation in a mature economy.
(Source CSCMP)

Availability of Training Programs

According to the Council of Supply Chain Management Professionals (CSCMP), the demand for logistics managers at all levels is high and Logistics is the second largest employment sector in the United States. In addition, senior logistics managers are in the shortest supply. This means those with extensive logistical experience while in the military and with a degree in the field are the most in demand.

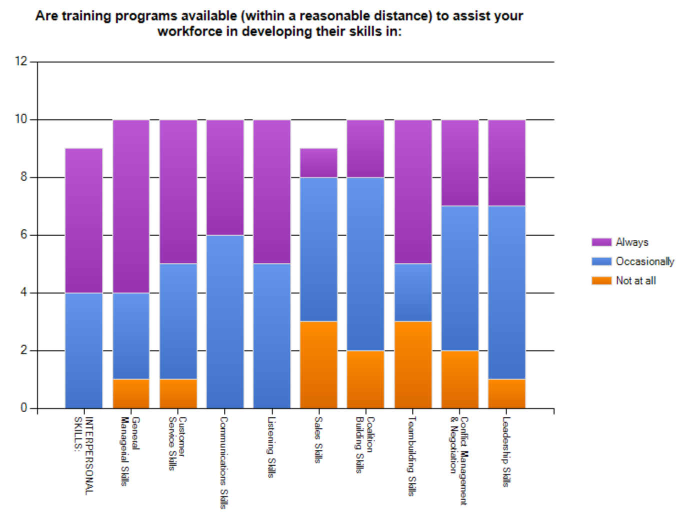
La Londe & Ginter (2006) recently completed a study of 109 individuals with careers in logistics and supply chain in the US. They determined that the average salary for manager and director level professionals in this field were upwards of US$100,000 and that all respondents at this level had a bachelors degree.

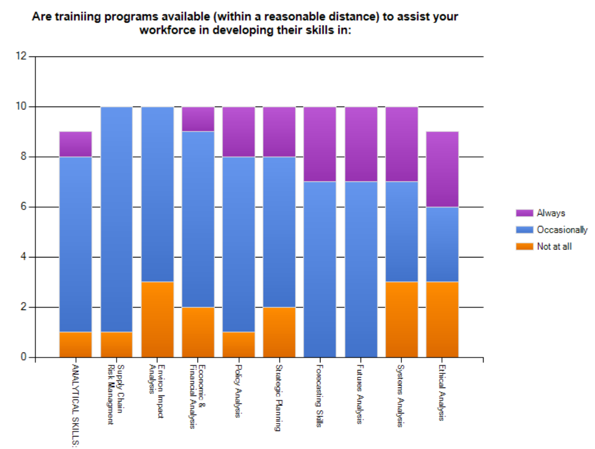
According to a report by Bolton & Sleigh (2007) for Accenture, they noted that as service standards rise customers focus more on the total cost of error. In fact, they reported that between 85 percent and 90 percent of all distribution initiatives in China fail because of workforce errors. To address these issues China will need to increase its supply of skilled logistics professionals. However, many companies do not spend money to attract quality staff. In fact, they estimate that "by 2010 China will need an estimated 400,000 logistics professionals" but that local universities struggle to produce logistics graduates. Moreover, "untrained local staff often have few incentives to perform well. High-performance companies recognize that even the best supply chain is meaningless without the skills base to support it." If China does not have nearly enough qualified logistics experts, smart companies will need to identify how to attract and retain the best people with logistics expertise. Competency-based training that builds necessary skills and knowledge will be essential.

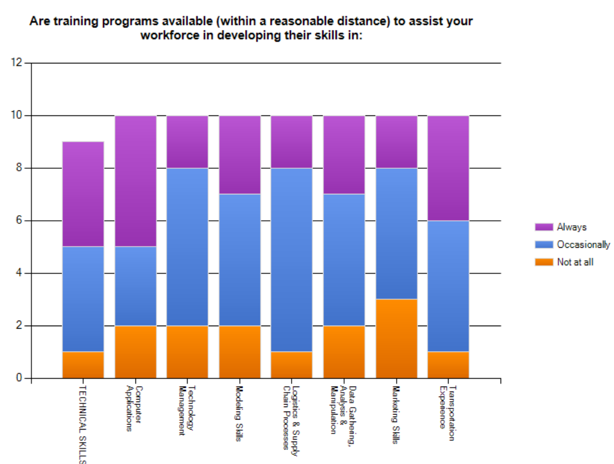
The CSCMP web site also indicates that one of the best areas of growth in the field is third-party logistics firms. Manufacturing and merchandising firms are outsourcing their logistics activities to these firms, and are looking for experienced and enthusiastic logistics managers to handle this additional work.

The CSCMP web site also projects steady job growth in logistics within transportation companies. According to the Council, motor carriers, railroads, air carriers, and ocean carriers represent the largest portion of logistics costs and assert the greatest impact on the success of the logistics process. As a result, continued growth is expected in this area.

Results of the APEC/NCIT survey revealed that felt that training in Foundational Knowledge and Skills was available only occasionally (78%), Interpersonal was available more frequently (56%), analytical only occasionally (78%), and technical somewhat more frequently (44%). These results can be seen in more detail in the following charts.







In summary, in both developing and more mature economies persons in intermodal and supply chain careers are likely to find that there are a number of training and education experiences that can prepare them for work in the field. Entry level employees are likely to be able to begin with on the job training. Almost all managerial level employees have relevant job experience, a university degree and additional training in intermodal transportation and supply chain. Demand for employees at all levels is strong ranging from a small but steady demand for employees in entry level jobs and a high demand for managers and directors in more mature economies to an even stronger demand for both in developing economies. Clearly, then there is a need to develop the work force in these areas in economies for which there are few existing training opportunities.

"Train the Trainer"

As we have attempted to demonstrate, relevant and purposeful education is likely a key to economic development. The question becomes then, what is the best system for delivering the training and education to produce the needed skills and competencies required to take advantage of the economic opportunities that will present themselves in the next ten years?

1. **Approaches need to be country specific and targeted to the specific gaps that exist**. The more mature and developed economies have sufficient infrastructure in place to promote and provide the necessary training. Less developed economies however may need more specific and targeted interventions. Relevant and purposeful education, markets that support labor mobility and flexibility.
2. **Systems of transportation vary from economy to economy**. Thus, the need for customized delivery systems are apparent.
3. **The ongoing delivery of the knowledge will need to be self-sustaining**. The current approach taken by the IIETS Experts group has allowed for a team of experts to deliver the majority of the content. This has met with considerable success, however, it is only a first step and creating a mechanism for ongoing delivery of the material will be needed to maintain the extension.
4. **Additional training materials** that are relevant to the specific challenges faced by the organizations is also needed.
5. **The development of a train-the-trainer program** that will contribute to the development of a sustainable educational effort that will promote human capacity in this area.

Road Map Recommendations

Based on these considerations it is recommended that the Intermodal Experts Group conduct a workforce assessment survey and a train the trainer program that will address the following:

1. Increasing opportunities for employment will begin to occur in the near term.
2. Logistics and supply chain occupations will continue to be in demand. In some cases the demand will be quite high.
3. While greater than a few years ago, the availability of training programs is increasing but will still need to be increased. Not all economies have access to training in these areas.
4. APC IIEG can benefit the entire logistics sector by providing additional training to **higher level ministers** officials who have a limited awareness of the need for logistics skills. Upper level training programs aimed at policy and other initiatives are sorely needed.
5. Increased emphasis on analytical and interpersonal skill is needed. These skills are harder to obtain in the outlying areas.
6. APEC TPT should hold a planned series of workshops and training sessions for higher level MOT officials in ALL economies that emphasizes the overall need for a *systems approach* to the logistics and transportation sector.
7. Much waste of money and planning time is currently occurring in economies focused on a modal approach to transportation planning. Existing governmental and regulatory agencies need to be streamlined in a better functioning whole.
8. APEC TPT should conduct a series of training workshops each year in all of the developing economies with various members of the MOT and also key representatives of the supply chain to ensure that they have a clear idea of the best practices in global supply chain and logistics and that both senior and lower level officials are knowledgeable and committed to developing high quality global supply chain and infrastructure systems
9. APEC should sponsor the development of a GLOBAL TRAINING CENTER that seeks to be the hallmark and provider of global training in global logistics and supply chain. Too much is left to chance with the existing structure.
10. Key presentations at next Ministerial Summits should address the need for a coordinated effort across economies to integrate planning and operations activities to encourage a more systematic approach to transportation.

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Asia-Pacific Economic Cooperation

TPT 02-2009A

Intermodal & Intelligent Transportation Systems Experts Group

Workforce Development and Global Supply Chain Final Report and Roadmap

Appendix A

Survey Results

Submitted by

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University of Denver

December 3, 2010

1. What percent change (+/-)in total employment do you anticipate in your company/agency over the next three to 12 months?

	-5%	-4%	-3%	-2%	-1%	0%	+1%	+2%	+3%	+4%	+5
Three months	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	37.5% (3)	**62.5% (5)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0 (0
Six months	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	25.0% (2)	0.0% (0)	**62.5% (5)**	12.5% (1)	0.0% (0)	0.0 (0
Twelve months	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	22.2% (2)	0.0% (0)	0.0% (0)	**55.6% (5)**	11.1% (1)	11. (1
answered questi											
skipped questi											

2. Will your company/agency hire new employees in the next 6 to 12 months?

	Response Percent	Response Count
Very likely	33.3%	3
Highly likely	**44.4%**	**4**
Somewhat likely	22.2%	2
Unlikely	0.0%	0
Defintely not	0.0%	0
answered question		**9**
skipped question		**1**

3. How many positions will your company/agency fill within the next 6 to 12 months?

	1-2 positions	3-5 positions	6-10 positions	11-20 positions	21-30 positions	31-40 positions	Respons Count
next 3 months	**85.7% (6)**	14.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
next 6 months	**57.1% (4)**	14.3% (1)	28.6% (2)	0.0% (0)	0.0% (0)	0.0% (0)	
next 9 months	28.6% (2)	**42.9% (3)**	0.0% (0)	28.6% (2)	0.0% (0)	0.0% (0)	
next 12 months	**37.5% (3)**	**37.5% (3)**	0.0% (0)	12.5% (1)	12.5% (1)	0.0% (0)	
						answered question	
						skipped question	

4. How many positions at each level do you think your company/agency will fill?

	1-2 positions	3-5 positions	6-10 positions	11-20 positions	21-30 positions	31-40 positions	Respons Count
Logistics Managers	**100.0% (4)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Sales Managers	**100.0% (4)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Warehouse Operators	**100.0% (2)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Warehouse Managers	**100.0% (3)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Drivers	**50.0% (1)**	0.0% (0)	0.0% (0)	0.0% (0)	**50.0% (1)**	0.0% (0)	
Operators	**33.3% (1)**	**33.3% (1)**	**33.3% (1)**	0.0% (0)	0.0% (0)	0.0% (0)	
Technicians	**50.0% (2)**	**50.0% (2)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Other	**50.0% (1)**	0.0% (0)	**50.0% (1)**	0.0% (0)	0.0% (0)	0.0% (0)	
						Other (please specify)	
						answered question	
						skipped question	

5. How many positions at each level do you think your company/agency will fill?

	1-2 positions	3-5 positions	6-10 positions	11-20 positions	21-30 positions	31-40 positions	Respons Count
Managers	**100.0% (2)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Analysts	**100.0% (1)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Policy Analysts	**100.0% (4)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Sales Managers	**100.0% (4)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Inspectors	**100.0% (3)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Managers	**66.7% (2)**	0.0% (0)	33.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	
Specialists	**85.7% (6)**	14.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Technicians	**50.0% (2)**	**50.0% (2)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
Other	0.0% (0)	0.0% (0)	**100.0% (1)**	0.0% (0)	0.0% (0)	0.0% (0)	
						Other (please specify)	
						answered question	
						skipped question	

6. Please indicate the reason/s that people leave or quit working for your company/agency.

	Response Percent	Response Count
Salary/Wage	44.4%	4
Employment conditions	0.0%	0
More career advancement opportunities in other companies	**55.6%**	**5**
More flexible work practices in other companies	22.2%	2
More interesting work in other companies	44.4%	4
Work location	11.1%	1
Workplace culture and values	0.0%	0
Family reasons	11.1%	1
Retirement	44.4%	4
End of contract	11.1%	1
Redundancy	0.0%	0
Other (please specify)	0.0%	0
	answered question	**9**
	skipped question	**1**

7. When hiring an entry level MANAGER in transportation, how important are each of the following INTERPERSONAL skills in your decision.

	Not at all important	Somewhat Important	Important	Very Important	Extremely Important - Absolutely Necessary	Response Count
Communication	0.0% (0)	0.0% (0)	11.1% (1)	33.3% (3)	**55.6% (5)**	9
Negotiation	0.0% (0)	0.0% (0)	33.3% (3)	**55.6% (5)**	11.1% (1)	9
Conflict Resolution	0.0% (0)	11.1% (1)	**44.4% (4)**	11.1% (1)	33.3% (3)	9
Listening	0.0% (0)	11.1% (1)	11.1% (1)	33.3% (3)	**44.4% (4)**	9
Teambuilding	0.0% (0)	0.0% (0)	25.0% (2)	**37.5% (3)**	**37.5% (3)**	8
Leadership	0.0% (0)	11.1% (1)	0.0% (0)	33.3% (3)	**55.6% (5)**	9
Customer Service	0.0% (0)	0.0% (0)	11.1% (1)	33.3% (3)	**55.6% (5)**	9
Coalition Building	0.0% (0)	14.3% (1)	**57.1% (4)**	14.3% (1)	14.3% (1)	7
					Other (please specify)	1
					answered question	**9**
					skipped question	**1**

8. When hiring an entry level manager in transportation, how important are each of the following ANALYTICAL skills.

	Not at all important	Somewhat Important	Important	Very Important	Extremely Important - Absolutely Necessary	Response Count
Financial Analysis	0.0% (0)	0.0% (0)	**66.7% (6)**	33.3% (3)	0.0% (0)	9
Policy Analysis	0.0% (0)	0.0% (0)	33.3% (3)	**55.6% (5)**	11.1% (1)	9
Strategic Planning	0.0% (0)	0.0% (0)	**44.4% (4)**	22.2% (2)	33.3% (3)	9
Forecasting Skills	0.0% (0)	0.0% (0)	**44.4% (4)**	22.2% (2)	33.3% (3)	9
Systems Analysis	0.0% (0)	0.0% (0)	**44.4% (4)**	33.3% (3)	22.2% (2)	9
Ethical Impact	0.0% (0)	0.0% (0)	**44.4% (4)**	33.3% (3)	22.2% (2)	9
Environment Impact	0.0% (0)	0.0% (0)	25.0% (2)	**75.0% (6)**	0.0% (0)	8
					Other (please specify)	1
					answered question	**9**
					skipped question	**1**

9. When hiring an entry level manager in transportation, how important are each of the following FOUNDATIONAL skills.

	Not at all important	Somewhat Important	Important	Very Important	Extremely Important - Absolutely Necessary	Response Count
Government Regulations	0.0% (0)	11.1% (1)	11.1% (1)	**55.6% (5)**	22.2% (2)	9
Available Transport Technology	0.0% (0)	0.0% (0)	**66.7% (6)**	11.1% (1)	22.2% (2)	9
Global Business Environment	0.0% (0)	11.1% (1)	**44.4% (4)**	**44.4% (4)**	0.0% (0)	9
General Business Environment	0.0% (0)	0.0% (0)	**55.6% (5)**	22.2% (2)	22.2% (2)	9
Labor Relations	0.0% (0)	0.0% (0)	22.2% (2)	**66.7% (6)**	11.1% (1)	9
Transportation Operations	0.0% (0)	0.0% (0)	33.3% (3)	22.2% (2)	**44.4% (4)**	9
Interaction of Transport Modes	0.0% (0)	0.0% (0)	**33.3% (3)**	**33.3% (3)**	**33.3% (3)**	9
Understanding of Legal Issues	0.0% (0)	0.0% (0)	25.0% (2)	**50.0% (4)**	25.0% (2)	8
					Other (please specify)	0
					answered question	**9**
					skipped question	**1**

10. When making a new hire, how important are each of the following TECHNICAL skills.

	Not at all important	Somewhat Important	Important	Very Important	Extremely Important - Absolutely Necessary	Response Count
Transportation Security	0.0% (0)	11.1% (1)	33.3% (3)	**44.4% (4)**	11.1% (1)	9
Computer Applications	0.0% (0)	11.1% (1)	22.2% (2)	**44.4% (4)**	22.2% (2)	9
Technology Management	0.0% (0)	22.2% (2)	33.3% (3)	**44.4% (4)**	0.0% (0)	9
Modeling Skills	14.3% (1)	**42.9% (3)**	28.6% (2)	14.3% (1)	0.0% (0)	7
Logistics & Supply Chain Processes	0.0% (0)	11.1% (1)	22.2% (2)	**33.3% (3)**	**33.3% (3)**	9
Data Processing & Analysis	0.0% (0)	22.2% (2)	**66.7% (6)**	11.1% (1)	0.0% (0)	9
Marketing Skills	12.5% (1)	0.0% (0)	**50.0% (4)**	37.5% (3)	0.0% (0)	8
Transportation Experience	0.0% (0)	0.0% (0)	11.1% (1)	**66.7% (6)**	22.2% (2)	9
					Other (please specify)	0
					answered question	**9**
					skipped question	**1**

11. When thinking about MANAGERs in transportation in your organization, to what extent does your WORKFORCE NEED DEVELOPMENT in the following INTERPERSONAL skills?

	Not Needed	A little need	Some Need	A Great NEed	Response Count
Communication	0.0% (0)	20.0% (2)	**50.0% (5)**	30.0% (3)	10
Negotiation	20.0% (2)	10.0% (1)	**60.0% (6)**	10.0% (1)	10
Conflict Resolution	10.0% (1)	10.0% (1)	**50.0% (5)**	30.0% (3)	10
Listening	0.0% (0)	20.0% (2)	**40.0% (4)**	**40.0% (4)**	10
Teambuilding	0.0% (0)	10.0% (1)	**50.0% (5)**	40.0% (4)	10
Leadership	0.0% (0)	30.0% (3)	**40.0% (4)**	30.0% (3)	10
Customer Service	0.0% (0)	10.0% (1)	40.0% (4)	**50.0% (5)**	10
Coalition Building	0.0% (0)	11.1% (1)	**66.7% (6)**	22.2% (2)	9
				Other (please specify)	1
				answered question	**10**
				skipped question	**0**

12. To what extent does your current workforce need developpment in the following ANALYTICAL skills.

	A Little Need	Some Need	Considerable Need	A Great Need	Response Count
Financial Analysis	33.3% (3)	11.1% (1)	**44.4% (4)**	11.1% (1)	9
Policy Analysis	10.0% (1)	**40.0% (4)**	10.0% (1)	**40.0% (4)**	10
Strategic Planning	10.0% (1)	20.0% (2)	**40.0% (4)**	30.0% (3)	10
Forecasting Skills	10.0% (1)	20.0% (2)	**50.0% (5)**	20.0% (2)	10
Systems Analysis	0.0% (0)	**50.0% (5)**	40.0% (4)	10.0% (1)	10
Ethical Impact	0.0% (0)	**60.0% (6)**	20.0% (2)	20.0% (2)	10
Environment Impact	0.0% (0)	30.0% (3)	**70.0% (7)**	0.0% (0)	10
				Other (please specify)	0
				answered question	**10**
				skipped question	**0**

13. To what extent does your workforce need development in each of the following FOUNDATIONAL skills.

	A Little Need	Some Need	Considerable Need	A Great Need	Response Count
Government Regulations	0.0% (0)	**50.0% (5)**	10.0% (1)	40.0% (4)	10
Available Transport Technology	0.0% (0)	**50.0% (5)**	**50.0% (5)**	0.0% (0)	10
Global Business Environment	0.0% (0)	40.0% (4)	**60.0% (6)**	0.0% (0)	10
General Business Environment	0.0% (0)	30.0% (3)	**70.0% (7)**	0.0% (0)	10
Labor Relations	0.0% (0)	33.3% (3)	**44.4% (4)**	22.2% (2)	9
Transportation Operations	0.0% (0)	**40.0% (4)**	**40.0% (4)**	20.0% (2)	10
Interaction of Transport Modes	0.0% (0)	20.0% (2)	**70.0% (7)**	10.0% (1)	10
Understanding of Legal Issues	0.0% (0)	**60.0% (6)**	10.0% (1)	30.0% (3)	10
				Other (please specify)	0
				answered question	**10**
				skipped question	**0**

14. To what extent does your workforce need development in each of the following TECHNICAL skills.

	A Little Need	Some Need	Considerable Need	A Great Need	Response Count
Transportation Security	0.0% (0)	**50.0% (5)**	30.0% (3)	20.0% (2)	10
Computer Applications	10.0% (1)	0.0% (0)	**60.0% (6)**	30.0% (3)	10
Technology Management	10.0% (1)	**40.0% (4)**	20.0% (2)	30.0% (3)	10
Modeling Skills	11.1% (1)	**55.6% (5)**	22.2% (2)	11.1% (1)	9
Logistics & Supply Chain Processes	0.0% (0)	30.0% (3)	30.0% (3)	**40.0% (4)**	10
Data Processing & Analysis	10.0% (1)	**50.0% (5)**	0.0% (0)	40.0% (4)	10
Marketing Skills	11.1% (1)	33.3% (3)	**44.4% (4)**	11.1% (1)	9
Transportation Experience	0.0% (0)	**50.0% (5)**	30.0% (3)	20.0% (2)	10
				Other (please specify)	0
				answered question	**10**
				skipped question	**0**

15. Please list the TRAINING PROGRAMS available to you employees to improve their skills in Intermodal and SUpply Chain Management

	Response Count
	10
answered question	**10**
skipped question	**0**

16. Are training programs available (within a reasonable distance) to assist your workforce in developing their skills in:

	Not at all	Occasionally	Always	Response Count
FOUNDATIONAL KNOWLEDGE:	0.0% (0)	**77.8% (7)**	22.2% (2)	9
Government Regulations & Policies	0.0% (0)	**70.0% (7)**	30.0% (3)	10
Available Transport Technology	10.0% (1)	**60.0% (6)**	30.0% (3)	10
Global Business Environment	0.0% (0)	**80.0% (8)**	20.0% (2)	10
General Business Environment	0.0% (0)	**80.0% (8)**	20.0% (2)	10
Labor Relations	0.0% (0)	**90.0% (9)**	10.0% (1)	10
Various Transportation Modes	0.0% (0)	**60.0% (6)**	40.0% (4)	10
How Modes Interface	10.0% (1)	**60.0% (6)**	30.0% (3)	10
Understanding of Legal Issues	10.0% (1)	**80.0% (8)**	10.0% (1)	10
			Please name the provider	2
			answered question	**10**
			skipped question	**0**

17. Are training programs available (within a reasonable distance) to assist your workforce in developing their skills in:

	Not at all	Occasionally	Always	Response Count
INTERPERSONAL SKILLS:	0.0% (0)	44.4% (4)	**55.6% (5)**	9
General Managerial Skills	10.0% (1)	30.0% (3)	**60.0% (6)**	10
Customer Service Skills	10.0% (1)	40.0% (4)	**50.0% (5)**	10
Communications Skills	0.0% (0)	**60.0% (6)**	40.0% (4)	10
Listening Skills	0.0% (0)	**50.0% (5)**	**50.0% (5)**	10
Sales Skills	33.3% (3)	**55.6% (5)**	11.1% (1)	9
Coalition Building Skills	20.0% (2)	**60.0% (6)**	20.0% (2)	10
Teambuilding Skills	30.0% (3)	20.0% (2)	**50.0% (5)**	10
Conflict Management & Negotiation	20.0% (2)	**50.0% (5)**	30.0% (3)	10
Leadership Skills	10.0% (1)	**60.0% (6)**	30.0% (3)	10
			Please name the provider	2
			answered question	**10**
			skipped question	**0**

18. Are trainiing programs available (within a reasonable distance) to assist your workforce in developing their skills in:

	Not at all	Occasionally	Always	Response Count
ANALYTICAL SKILLS:	11.1% (1)	**77.8% (7)**	11.1% (1)	9
Supply Chain Risk Managment	10.0% (1)	**90.0% (9)**	0.0% (0)	10
Environ Impact Analysis	30.0% (3)	**70.0% (7)**	0.0% (0)	10
Economic & Financial Analysis	20.0% (2)	**70.0% (7)**	10.0% (1)	10
Policy Analysis	10.0% (1)	**70.0% (7)**	20.0% (2)	10
Strategic Planning	20.0% (2)	**60.0% (6)**	20.0% (2)	10
Forecasting Skills	0.0% (0)	**70.0% (7)**	30.0% (3)	10
Futures Analysis	0.0% (0)	**70.0% (7)**	30.0% (3)	10
Systems Analysis	30.0% (3)	**40.0% (4)**	30.0% (3)	10
Ethical Analysis	**33.3% (3)**	**33.3% (3)**	**33.3% (3)**	9
			Please name the provider	1
			answered question	**10**
			skipped question	**0**

19. Are training programs available (within a reasonable distance) to assist your workforce in developing their skills in:

	Not at all	Occasionally	Always	Response Count
TECHNICAL SKILLS:	11.1% (1)	**44.4% (4)**	**44.4% (4)**	9
Computer Applications	20.0% (2)	30.0% (3)	**50.0% (5)**	10
Technology Management	20.0% (2)	**60.0% (6)**	20.0% (2)	10
Modeling Skills	20.0% (2)	**50.0% (5)**	30.0% (3)	10
Logistics & Supply Chain Processes	10.0% (1)	**70.0% (7)**	20.0% (2)	10
Data Gathering, Analysis & Manipulation	20.0% (2)	**50.0% (5)**	30.0% (3)	10
Marketing Skills	30.0% (3)	**50.0% (5)**	20.0% (2)	10
Transportation Experience	10.0% (1)	**50.0% (5)**	40.0% (4)	10
			Please name the provider	1
			answered question	**10**
			skipped question	**0**

20. In your experienc what are the most important factors affecting a persons decision to take a job in your industry?

	Not at all important	Somewhat Important	Important	Very Important	Extremely Important	Response Count
Opportunities for training	0.0% (0)	0.0% (0)	33.3% (3)	**44.4% (4)**	22.2% (2)	9
Reputation of company	0.0% (0)	0.0% (0)	**50.0% (5)**	20.0% (2)	30.0% (3)	10
Opportunities for travel	0.0% (0)	**40.0% (4)**	30.0% (3)	10.0% (1)	20.0% (2)	10
Educational benefits	0.0% (0)	0.0% (0)	**44.4% (4)**	33.3% (3)	22.2% (2)	9
Health care benefits	0.0% (0)	0.0% (0)	30.0% (3)	30.0% (3)	**40.0% (4)**	10
Flexible work hours	11.1% (1)	0.0% (0)	33.3% (3)	**55.6% (5)**	0.0% (0)	9
Career stability	0.0% (0)	0.0% (0)	10.0% (1)	**50.0% (5)**	40.0% (4)	10
Quality of co-workers	0.0% (0)	0.0% (0)	30.0% (3)	**40.0% (4)**	30.0% (3)	10
Opportunity for financial gain	0.0% (0)	0.0% (0)	20.0% (2)	**40.0% (4)**	**40.0% (4)**	10
Lifestyle preferences	0.0% (0)	0.0% (0)	**88.9% (8)**	11.1% (1)	0.0% (0)	9
Workplace diversity issues	0.0% (0)	0.0% (0)	**80.0% (8)**	20.0% (2)	0.0% (0)	10
Opportunites for advancement	0.0% (0)	0.0% (0)	**40.0% (4)**	**40.0% (4)**	20.0% (2)	10
Supportive management	0.0% (0)	0.0% (0)	30.0% (3)	**40.0% (4)**	30.0% (3)	10
					Other (please specify)	0
					answered question	**10**
					skipped question	**0**

21. Please use this space for any additional comments you would like to make. Thank you.

	Response Count
	4
answered question	4
skipped question	6

22. Your Name - (voluntary, used only for tracking purposes).

	Response Count
	8
answered question	8
skipped question	2

23. Name of Company or Agency you work for:

	Response Count
	9
answered question	9
skipped question	1

24. Department

	Response Count
	8
answered question	8
skipped question	2

25. Location (City, State, Country)

	Response Count
	9
answered question	9
skipped question	1

26. Your Phone Number

	Response Count
	6
answered question	6
skipped question	4

27. Your Mailing Address

	Response Count
	5
answered question	5
skipped question	5

28. Your City

		Response Count
		7
	answered question	7
	skipped question	3

29. Your State

		Response Count
		5
	answered question	5
	skipped question	5

30. Your Zip Code

		Response Count
		5
	answered question	5
	skipped question	5

31. Your e-mail address

	Response Count
	6
answered question	**6**
skipped question	**4**

1. How many positions at each level do you think your company/agency will fill?

	Other (please specify)	
1	we are governmental agency, mostly related with developing regulation and inspection	Nov 23, 2010 2:45 AM
2	PPA Ratinalization Plan is still for approval by another Govt Agency	Dec 2, 2010 8:33 AM

1. When hiring an entry level MANAGER in transportation, how important are

	Other (please specify)	
1	Emotional Intelligence	Sep 24, 2010 10:16 AM

1. When hiring an entry level manager in transportation, how important are each

	Other (please specify)	
1	social & cultural impact should be considered also	Nov 23, 2010 3:25 AM

1. When thinking about MANAGERs in transportation in your organization, to

	Other (please specify)	
1	Instituting Discipline by Motivating Employees	Dec 2, 2010 8:37 AM

1. Please list the TRAINING PROGRAMS available to you employees to improve

	Response Text	
1	Communications. Inter-relation Team work Conflict resolution	Sep 20, 2010 9:44 AM

1. Please list the TRAINING PROGRAMS available to you employees to improve

	Response Text	
2	send staff for training oversea such as the Netherlands, send to train in other terminals in Taiwan, Singapore	Sep 23, 2010 8:42 AM
3	1. SCM Training 2. Transportation Security 3. Logistics Services 4. 3PL Management 5. 2PL Management 6. Control Logistics	Sep 24, 2010 10:24 AM
4	1. SCM Training 2. Transportation Security 3. Logistics Services 4. 3PL Management 5. 2PL Management 6. Control Logistics	Sep 27, 2010 3:51 AM
5	There is no program avaliable.	Nov 22, 2010 2:27 AM
6	Sorry I have no idea.	Nov 22, 2010 2:31 AM
7	currently, we only attend and follows many seminars/workshops in house of Ministry of Transportations, in National Level like Logistics Association of Indonesia conducted, and Internationally like in ASEAN or Japan. Not yet a specific training on intermodal or suplly chain management	Nov 23, 2010 3:36 AM
8	PISM SCM programs TIP and La Salle SCM programs	Nov 30, 2010 1:19 AM
9	i heard that Bangkok, Madrid and another city had a short course to training us.. i'm sorry, i don't know exactly and detail.. :)	Nov 30, 2010 10:30 AM
10	None	Dec 2, 2010 8:43 AM

1. Are training programs available (within a reasonable distance) to assist your

	Please name the provider	
1	ALI (Indonesian Association of Logistics), R &D Ministry of Transportation RI, Policy Dialog on Logistic by MLIT-Japan	Nov 23, 2010 3:39 AM
2	Various Government and Non-Government Organizations	Dec 2, 2010 8:44 AM

1. Are training programs available (within a reasonable distance) to assist your

	Please name the provider	
1	well, because in seminars/workshop, the interpersonal skills is not considered in thomeeting	Nov 23, 2010 3:51 AM
2	Various government and non-government organizations	Dec 2, 2010 8:45 AM

1. Are trainiing programs available (within a reasonable distance) to assist your

	Please name the provider	
1	Government and Non-government organizations	Dec 2, 2010 8:46 AM

1. Are training programs available (within a reasonable distance) to assist your

	Please name the provider	
1	Government and non-government organizations	Dec 2, 2010 8:47 AM

1. Please use this space for any additional comments you would like to make.

	Response Text	
1	Job Maintaining is important	Sep 27, 2010 3:53 AM
2	We appreciate if APEC/NCIT can assist us to develop the skills in inter modal and supply chain managements through training and workshop	Nov 23, 2010 3:57 AM
3	hope we can share any info about transport.. thank u :)	Nov 30, 2010 10:39 AM
4	No more comments	Dec 2, 2010 8:48 AM

1. Your Name - (voluntary, used only for tracking purposes).

	Response Text	
1	Jocleyn Tran	Sep 20, 2010 9:48 AM
2	Bui Van Quy	Sep 23, 2010 8:49 AM
3	Barry Akbar	Sep 24, 2010 10:27 AM
4	Barry Akbar	Sep 27, 2010 3:53 AM
5	xie xie	Nov 22, 2010 2:36 AM
6	Xu Shibo	Nov 22, 2010 2:37 AM
7	FARIDA MAKHMUDAH	Nov 23, 2010 4:00 AM
8	Dewi Sianturi	Nov 30, 2010 10:40 AM

2. Name of Company or Agency you work for:

	Response Text	
1	MAST Industries	Sep 20, 2010 9:48 AM
2	Saigon Newport / Newport Cypress	Sep 23, 2010 8:49 AM
3	APL-NOL	Sep 24, 2010 10:27 AM
4	APL-NOL	Sep 27, 2010 3:53 AM
5	waterborne transportation institute, MOT, PR.China	Nov 22, 2010 2:36 AM
6	waterborne transportation institute of MOT, China	Nov 22, 2010 2:37 AM
7	MINISTRY OF TRANSPORTATIONS, REPUBLIC OF INDONESIA	Nov 23, 2010 4:00 AM
8	Ministry of Transportation	Nov 30, 2010 10:40 AM
9	Philippine Ports Authority	Dec 2, 2010 8:49 AM

3. Department

	Response Text	
1	Marketing	Sep 23, 2010 8:49 AM
2	Management	Sep 24, 2010 10:27 AM
3	Management	Sep 27, 2010 3:53 AM
4	MOT	Nov 22, 2010 2:36 AM
5	container research center	Nov 22, 2010 2:37 AM
6	Freight Transportation Section, Directorate General of Land Transportation	Nov 23, 2010 4:00 AM
7	Planning Bereau	Nov 30, 2010 10:40 AM
8	Human Resource Management Department	Dec 2, 2010 8:49 AM

4. Location (City, State, Country)

	Response Text	
1	HCMC, Vietnam	Sep 20, 2010 9:48 AM
2	Ho Chi Minh City, Viet nam	Sep 23, 2010 8:49 AM
3	Ho Chi Minh City	Sep 24, 2010 10:27 AM
4	Ho Chi Minh City	Sep 27, 2010 3:53 AM
5	Beijing	Nov 22, 2010 2:36 AM
6	xitucheng road 8, beijing	Nov 22, 2010 2:37 AM
7	Karya Building 8th floor, Merdeka Barat No.8, Jakarta 10110, Indonesia	Nov 23, 2010 4:00 AM
8	Jakarta, Indonesia	Nov 30, 2010 10:40 AM
9	Manila, Philippines	Dec 2, 2010 8:49 AM

5. Your Phone Number

	Response Text	
1	84-903392779	Sep 23, 2010 8:49 AM
2	86-01062079607	Nov 22, 2010 2:36 AM
3	86-13810640262	Nov 22, 2010 2:37 AM
4	+62-21-3506124	Nov 23, 2010 4:00 AM
5	+628153121793	Nov 30, 2010 10:40 AM
6	632-527-4825	Dec 2, 2010 8:49 AM

1. Your Mailing Address

	Response Text	
1	Haidian district, xituchenglu 8,	Nov 22, 2010 2:38 AM
2	xushibo@wti.ac.cn	Nov 22, 2010 2:38 AM
3	Karya Building 8th floor, Medan Merdeka Barat No.8, Jakarta 10110 Indonesia	Nov 23, 2010 4:01 AM
4	Komp. De Latinoz Cluster La Vintage P9 no. 11	Nov 30, 2010 10:41 AM

1. Your Mailing Address

	Response Text	
5	Philippine Ports Authority, Bonifactio Drive, South Harbor	Dec 2, 2010 8:52 AM

2. Your City

	Response Text	
1	Ho Chi Minh City	Sep 23, 2010 8:49 AM
2	Ho Chi Minh	Sep 27, 2010 3:53 AM
3	Beijing	Nov 22, 2010 2:38 AM
4	beijing	Nov 22, 2010 2:38 AM
5	Jakarta	Nov 23, 2010 4:01 AM
6	Tangerang	Nov 30, 2010 10:41 AM
7	Manila	Dec 2, 2010 8:52 AM

3. Your State

	Response Text	
1	Vietnam	Sep 23, 2010 8:49 AM
2	beijing	Nov 22, 2010 2:38 AM
3	Indonesia	Nov 23, 2010 4:01 AM
4	Banten	Nov 30, 2010 10:41 AM
5	Philippines	Dec 2, 2010 8:52 AM

4. Your Zip Code

	Response Text	
1	084	Sep 23, 2010 8:49 AM
2	100088	Nov 22, 2010 2:38 AM
3	100088	Nov 22, 2010 2:38 AM
4	10110	Nov 23, 2010 4:01 AM
5	1018	Dec 2, 2010 8:52 AM

5. Your e-mail address

	Response Text	
1	buivanquy@yahoo.com	Sep 23, 2010 8:49 AM
2	xxie@wti.ac.cn	Nov 22, 2010 2:38 AM
3	xushibo@wti.ac.cn	Nov 22, 2010 2:38 AM

5. Your e-mail address

	Response Text	
4	farizka@yahoo.com	Nov 23, 2010 4:01 AM
5	deuyw@yahoo.com	Nov 30, 2010 10:41 AM
6	virgiegarcia@yahoo.com	Dec 2, 2010 8:52 AM