Asia-Pacific
Economic Cooperation

EFFECTIVE LABOR MARKET SIGNALING:

A STRATEGY ADDRESSING UNEMPLOYMENT AND TALENT MISMATCH

HUMAN RESOURCES DEVELOPMENT WORKING GROUP

SEPTEMBER 2012

APEC HRD 03/2010
Prepared by:
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FOREWORD

The global financial crisis has the world's economies at a stalemate. While economies grope for form and search for answers, the crisis slowly turns into a global job dilemma. Unemployment levels are hitting all time highs and economic growth is at an unwanted pace, affecting even the once unruffled major economies and labor markets. The questions and problems the global financial crisis has surfaced, underscored the importance of labor market information (LMI) and analysis for the development and implementation of employment strategies and labor policies. However, amongst APEC member economies, only a handful has sufficient and reliable LMI and established systems that provide adequate economic data.

With these reasons, the Philippine Department of Labor and Employment, with the support of the Asia Pacific Economic Cooperation through the Human Resources Development Working Group - Labor and Social Protection Network, has implemented the project entitled "Effective Labor Market Signaling: A Strategy for Solving the Problem of Unemployment and Talent Mismatch." The Project endeavors to address the current challenges that confront the labor market today. It seeks to address the problem of structural unemployment and talent shortage by effective labor market signaling between the demand and supply sides of the global labor market, particularly affecting the APEC economies. A comprehensive survey on the key and emerging industries of each member economy was conducted to ascertain skills requirements in industries that are vital and factor in the progress of the member economy. After which, a Forum was organized as a venue to present the results and gain insights from the APEC member economies in discussing and assessing identified signals and LMI issues that aid monitoring and analyzing socio-economic and employment policies and programs.

The Department is hopeful that this initiative will be fully optimized leading to the development of responsive and effective labor market signaling system that would solve the problems of unemployment and talent mismatch. Moreover, we believe that this venture contributes to the continuous strengthening of the regional economic integration in the Asia Pacific region.

DANILO P. CRUZ
Undersecretary, Department of Labor and Employment

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Also, we deeply appreciate those who have reviewed and contributed in the improvements of this report.

Moreover, special recognition is given to the officials and staff of the Bureaus, Labor Communications Office, Planning Service, Administrative Service, and Financial and Management Service of the Department of Labor and Employment, who have showed dedication and hard work from the planning until the implementation of this endeavor. They have indeed demonstrated public service not only for the Philippines but for the whole region.

Above all, we are thankful to the Father Almighty for His unconditional love and guidance throughout this venture which was dedicated for the love of the entire humanity.

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ACRONYMS

APEC	Asia Pacific Economic Cooperation
CBA	Collective Bargaining Agreements
CHED	Commission on Higher Education
CLO	Commercial Lending Offices
DepEd	Department of Education
HEI	Higher Education Institutions
HRD	Human Resource Development
HRSDC	Human Resources and Skills Development Canada
ICT	Information and Communication Technology
IT	Information Technology
KEG	Key Employment Generators
JSA	Job Services Australia
SCC	Service Canada Centers
MRT	Marginal Rate of Transformation
PJN	Phil-JobNet
PrES	Private Employment Service Agencies
TESDA	Technical Education Skills Development Authority
TVET	Technical Vocational Education and Training
USA	The United States of America

Part I:

Literature Review and Survey Result Analysis

APEC Member Economies

EFFECTIVE LABOR MARKET SIGNALING:

A STRATEGY FOR ADDRESSING UNEMPLOYMENT AND TALENT MISMATCH (*A LITERATURE REVIEW AND SURVEY RESULTS ANALYSIS)*

Manila, Philippines
August 2012

I. Introduction

For the past decades, the economies in the Asia-Pacific region have been experiencing a pattern of increased national income and standards of living ascribed to an increasing investment in education, skills development, and technology adoption (Shamounki & Orme, 2003; Pande, 2003). Likewise, Pande (2003) has emphasized that several economies in the region engaged in technology-oriented curriculum as a measure in its trade-led development strategy providing demand signals for the skills required for enhancing competitiveness. As such, the role of education in human resource development (HRD) in the Asia-Pacific region is characterized by a sturdy linkage between the yield of the educational sector and the manpower requirements of an expanding macro-economy. This has been made possible through the implementation of flexible education policies that respond to changes in the domestic and global markets in the midst of globalization. Consequently, these economies have experienced brisk growth.

However, such growth pattern may not be realized in the future by the economies in the region if there are bottlenecks in the process of human resource development as well as imbalances in the labor market. One such bottleneck is the problem of the unemployment and talent mismatch. In this light, we will tackle on how the economies in the region are addressing the labor and talent mismatch through the provision of information specifically market signaling. Although mismatch of talents is rooted on many reasons, information gaps have been cited as a major culprit in the labor disconnect. Since information asymmetry is a market imperfection, the role of government is crucial particularly in the provision of information. Under normal circumstances there are no incentives for firms and educational institutions to provide the optimal information that will narrow the information gap between suppliers and consumers of labor services. We will examine the various ways, mechanisms and programs the various stakeholders pursue to narrow the information imbalances.

The study is organized with a review of literature on the causes and consequences of labor and talent mismatches as starting point of discussion. Subsequently, we highlight the different ways economies are addressing labor and talent mismatch through multi-stakeholder initiatives. Lastly, a discussion on the results of the survey conducted by the Department of Labor and Employment of the Republic of the Philippines on market signaling by identifying core labor market signals in key industries. Aside from comparing similarities and differences in the economies'

approaches, we will emphasize some of the best practices that can be implemented in other economies in addressing talent mismatch and structural unemployment.

II. Labor Market Signaling: A Literature Review

2.1. Diagnosing the Persistence of Labor Market Mismatches

2.1.1. The Inadequacies of Human Capital Theory

The human capital theory generally views education as a form of investment where individuals compare the direct, indirect, psychic, and opportunity costs of education to the future benefits of education (Todaro & Smith, 2008). This was derived from Adam Smith's idea that investment in education and skill formation is a significant factor in economic growth comparable with investments in gross fixed capital formation. According to Schultz (1961), individuals continue to invest in education until the marginal benefits are equal with the marginal costs. Moreover, Schultz (1961) deemed that human resources can be treated as a form of capital. Meanwhile, Becker (1964) supposed that investment in knowledge, skills, and health will not only benefit the individual for it can also increase the economy's human capital resource pool and potential productivity. As such, the accumulation of human capital is made possible by investments made on a person's skills and well-being. Investments range from those that yield long-run returns such as education, job training, healthcare, or migration to those that yield immediate returns such as basic sustenance.

Additionally, Becker (1962, 1964) and Mincer (1958, 1962, and 1974) emphasized on how the procurement of greater levels of schooling increased an individual's productivity. The returns associated with this increased level of productivity come in the form of higher compensation levels and wages. According to Linsley (2005), this suggested that earnings are primarily determined by supply-side (worker) characteristics, especially in the absence of exogenous shocks that induce demand-side changes. Empirical studies supporting the human capital theory have emphasized the presence wage differentials between individuals that possess high levels of education, job training, and experience and those with relatively little.

Under these assumptions, firms are said to adjust their production processes in order to fully utilize the skills possessed by the pool of laborers available to them. Thus, firms will pay its workers wages equal to their marginal productivities under competitive assumptions (Auerbach & Kotlikoff, 1987).The implications of the theory are clear: if there were to be mismatches in the labor market, it will manifest in the short-run when firms are still embroiled in the process of adjusting their production processes in order to fully utilize the human capital of their workforce. In the long-run, a state of equilibrium is achieved when the adjustment process is completed and mismatches are completely eliminated (Desjardins & Rubenson, 2011).

Meanwhile, Linsley (2005) claimed that under this framework, an initial tendency for individuals in pursuit of higher wages to overeducate themselves might exist. When the labor force becomes increasingly more educated, the relative wages of high-skilled laborers are likely to fall. As the wage differential between low-skilled and high-skilled workers narrow, firms begin to substitute low-skilled workers for high-

skilled ones in order to increase effective output. This reduces the foreseen benefits of procuring higher levels of education and thus lesser investment in human capital. As such, the problem of over-education becomes but a temporary phenomenon that dissipates after market adjustments occur.

Despite its intuitive nature, the human capital theory has been criticized for assuming labor-market clearance and equilibrium conditions. The presence of frictions in the labor market in the form of asymmetric information, mobility costs, and principal-agent problems has been well documented. Such imperfections in the market inhibit the unbridled market adjustments that efficient labor markets require. Hartog (1985) cast some doubts on the human capital theory's ability to explain labor market mismatches by showing how the theory focuses too much on the long-run supply side of the labor market but remains mute on demand-side characteristics such as the nature of occupation and specific job tasks. The claim that marginal productivity is the primary determinant of wages implicitly suggests that the nature of a person's job has nothing to do with earnings and is thus assumed to be homogenous.

Given such glaring deficiencies of the human capital theory, it will be insightful to explore other theories that seek to explain the presence of disequilibria in the labor market.

2.1.2 Technological Change Theory

As economies in the Asia-Pacific region converge toward technological advancement, so does the requirements for human resource development that compels delicate attention on specialized education in order to preserve the technological environment.Technological change is usually illustrated using the Linear Model of Innovation as mentioned by Rogers (2003). However, this model has been largely rescinded and has been replaced with a model of technological change that involves innovation at all stages of research, development, diffusion, and use (Rogers, 2003). As such, modeling technological change is a process of continuous improvement oftentimes represented by a curve illustrating decreasing costs over time. Moreover, technical change was conventionally thought to have exhibited factor-neutrality. Despite causing a shift of the production function (i.e. more output for a given set of inputs), the marginal rate of transformation (MRT) of factor inputs was expected to remain the same as per the study of Violante (2008). Assuming that these conditions hold, technological improvements would provide proportional productivity gains to all factors of production.

Contrary to conventional thought, technical change theory posited that recent advancements in production technologies have been biased towards skilled workers. Progress in the field of information technology and computers seem to have increased the relative productivity of skilled-workers relative to their less skilled counterparts. Evidence to this claim comes from the fact that between 1965 and 1995, college-wage premiums have risen from 1.45 to 1.7 despite the sharp increase in the relative supply of college graduates (Violante, 2008; Galor & Moav, 2000). This widened productivity disparity between the skilled and unskilled has significantly

increased the relative demand, and consequently, the relative wages, of the former. This has already been implied by the study of Martin (1998) wherein results revealed that research and development enhanced productivity of human capital. It also enhanced productivity of the rest of the economy especially for firms that finance a good portion of technological research that created spillover effects that enhanced the supply of human capital, particularly graduate students with specialization in science and technology (Martin, 1998).

The plausibility and economic foundations of the technological change theory can be presented through three alternative formulations. For instance, Griliches (1967, 1969) supported the claim that skilled labor seemed to exhibit a higher degree of complementarity with physical capital than did unskilled labor. Indeed, the efficient operation and full utilization of increasingly sophisticated but complex technologies (e.g. computer software, information systems) required users to possess more advanced skill-sets and in some instances, specialized knowledge. As these equipment and technologies became cheaper over time, more firms began shifting to more capital-intensive production methods. These changes gave rise to an increase in the relative demand for skilled laborers who were capable of operating the newly-acquired equipment and technologies.

Meanwhile, Nelson & Phelps (1966) veered away from studies that merely relate the role of education towards repetitive jobs. They contended that higher levels of schooling are crucial to jobs that require individuals to keep abreast with constant technological innovations. On the most basic level, a more experienced worker is better equipped to adapt to technological changes since it is less costly and time-consuming to acquire the additional knowledge required by a new technology. On a managerial level, a skilled individual is more capable of choosing which among alternative technologies will be the most appropriate to introduce and integrate. Likewise, the ability to modify and tailor-fit a new technology in such a way that it can be applied to current production methods certainly requires a substantial amount of technical proficiency. The studies penned by Greenwood & Yorukoglu (1997), Caselli (1999), and Galor & Moav (2000) have confirmed that recent technological progress has indeed been skill-biased as more educated people find it less difficult to adapt to these changes.

The last explanation is made by the proposition of Milgrom & Roberts (1990) wherein technological progress in several aspects of firm activity have induced firms to reorganize into “flatter” entities with fewer hierarchies. For firms to be able to maximize technological progress in various fields such as product design, engineering, and information, and marketing, it must be able to exploit and coordinate the operations of these distinct but highly complementary functions. Milgrom & Roberts (1990) cite the growing popularity of “design for manufacturability” in several firms in the United States of America (USA). Given how computers have made it extremely easy to modify initial product designs, compare the merits of alternative product designs, and evaluate pecuniary implications associated to using a particular design, the process of product design now involves greater levels of synergy between process engineers, designers, and manufacturing managers. All in

all, workers are now expected to be able to perform multiple tasks and take on a diverse set of responsibilities. These changes in firm organization have thus endowed skilled workers with yet another competitive advantage over their unskilled cohorts.

Desjardins & Rubenson (2011) provided three reasons that attempt to explain how skill-biased technological change may give rise to labor market mismatches. First, skill underutilization may occur if firms are unable to adopt new technologies or reorganize production methods due to reasons such as costs and other barriers to the seamless transfer of technology. In this particular instance, the skills gained by laborers that enable them to make full use of new innovations are rendered unused. Second, firms are said to have every incentive to hire overqualified workers in anticipation of future technological changes that may require increased capacities to learn and adapt. Firms employ this strategy to protect themselves from unforeseen changes in the economic landscape. Last, the rapid technical progress may create an illusion that those currently employed are actually undereducated without considering the skills obtained from experience and on-the-job training.

2.1.3 Career Mobility Theory

The career mobility theory, according to Sicherman & Galor (1990), states that the returns to education comprise not only of higher income streams but also higher probabilities of occupational upgrading, either through intra-firm career mobility (promotion) or inter-firm mobility. It claims that wage penalties for over-educated laborers are remunerated by much better promotion prospects (Buchel & Mertens, 2001). Though wage differentials between more educated and less educated individuals may initially be narrow, much of the returns to education are actually reaped during the later stages of one's career. This means that analyzing the motivations behind an individual's decisions procure higher levels of schooling must be done under the presumption that he/she foresees long-term benefits in the form of increased career mobility and promotion possibilities. Hence, an individual may choose low-paying entry level jobs if the effect of schooling on the probability of promotion is higher within the firm he chooses to work for. The choice of accepting a job that has a lower job requirement that what one possesses may well be a rational and strategic decision on the part of the applicant (Garcia-Serrano & Malo, 2002).

Likewise, according to Buchel & Mertens (2001), results have shown that overeducated workers have markedly lower relative wage growth rates than correctly allocated workers, while undereducated workers enjoy higher rates of relative wage growth. Moreover, the results of Buchel & Mertens (2001) have supported the finding that "overeducated workers have less access to formal and informal on-the-job training, while undereducated workers are more likely to be admitted to such programs."

In addition, the results of the study of McGuinness & Wooden (2007) suggested that over-skilled workers have higher probabilities of quitting their current job and they have relatively low confidence in finding an improved job match. Furthermore,

McGuinness& Wooden (2007) argued that "some of the greater mobility observed among over-skilled workers is due to involuntary job separations, and even in instances where job separations are voluntary, the majority of moves do not result in improved skills matches."

This hypothesis may explain why over-education – where a worker's qualifications exceed that of his/her job requirements – is quite prevalent in the labor market (Buchel & Mertens, 2004). This situation is termed by Todaro & Smith (2008) as underemployment by skill. More interestingly, the theory of Sicherman & Galor (1990) implied that over-education is a transient phenomenon that slowly corrects itself during later stages of a working career. As an individual spends more time working for a firm, his/her true productivity is slowly revealed. This provides a clear basis for wage increases that compensate the individual for investing in human capital and a promotion that aligns qualifications with job tasks.

However, career mobility theory is criticized by Buchel & Mertens (2004) for its inability to explain the prevalence of under-education within the labor market.

2.1.4 Job Search Theory

The job search theory attempts to explain labor-market mismatches by pointing to the presence of imperfect information and job-search costs (Fitzgerald, 1998; McCall, 1970; Stigler, 1962). While in the process of looking for jobs, aspirants do not possess prefect information about the nature and characteristics of the jobs (or more precisely, production processes) that they are applying for. Likewise, most young applicants have limited networks and job-search experience, both of which lessen the probability of finding the right job. Combined with the pressure to accept a job due to mounting costs associated with a prolonged search, these factors increase the likelihood that a worker will accept a job with tasks not necessarily commensurate to his/her credentials and actual capabilities.

Based on the study of Addison, Centeno & Portugal (2004), the net effect of an increase in the probability of an offer on duration is generally negative. This implies that its effect on the asking price outweighs the effect of more offers. This is consistent with the study of Lancaster & Chesher (1983) that exploited the informational value of the job search theory by computing the key reservation wage and duration elasticities using data from a dataset containing information on individuals' reservation wages, unemployment benefits, and accepted wages.

The consequences of imperfect information are borne not only by prospective employees but also by individuals who are in the process making decisions regarding the level of schooling and the type of degree they will procure. The absence of complete information on present and predicted labor market outcomes may mislead individuals into specializing in a degree that will no longer be of huge demand come graduation. Likewise, the absence of information also disables educational institutions from being able to develop degree programs and short

courses that meet rapidly change industry demands for human resources that possess specific skillsets.

2.1.5. Signaling and Screening Hypothesis

Traditional human capital theory states that an individual's wages is incumbent upon productivity, which in turn is accumulated largely through education and experience in the labor market (Mincer, 1974). Such a proposition thus considers education as a form of investment, the return of which may come in the form of higher wages in the future. However, Spence (1973) introduced an alternative relationship between education, among other personal characteristics, and wages. It is said that an individual's productivity cannot be known instantaneously at the point of hiring. Hence, the hiring process effectively becomes a form of investment under uncertainty. Although the employer seeks to maximize the returns of hiring a particular individual, very little information about the actual productivity of an applicant is known. Nonetheless, it is posited that there exists other observable characteristics that may facilitate an employer's assessment of an applicant's marginal product to the organization (Spence, 1973). These substitutes to the unobservable productivity come in the form of education, previous work experience, race, age, sex, and other personal records. In the absence of better alternatives, employers, then, are left with no choice but to rely on such indices and signals to determine employability and offered wages.

The identified characteristics are within the applicant's control while others are inherent, and thus, are beyond alternation. Of greater concern are the characteristics that can be subject to manipulation by the individual. Spence (1973) termed these as signals. Specifically, educational attainment is seen as one of the more potent characteristics that can signal the presence of higher productivity and distinguishing talents (Spence, 1974; Riley, 1979). However, concomitant to the procurement of such signals are costs. For instance, the signaling costs to education are comprised of both direct costs such as tuition fees and daily expenses, and opportunity costs of forgone employment for the duration of study. Hence, Spence (1973) argued that the aim of the applicant is to maximize the difference between signaling costs and offered wages.

As such, education still remains to be a form of investment. However, the difference between the screening hypothesis and traditional human capital theory lies in the instrumentation of education not as a tool to increase productivity, but as a signaling apparatus. These claims by Spence (1973) of education as merely a signaling mechanism still fall in line with the empirical proofs of Psacharopoulus & Woodhall (1995) that education does improve productivity.

The screening hypothesis constitutes a powerful explanation as to why job applicants have the tendency to overeducate themselves. Prospective employees tend to exploit the inability of employers to accurately measure an individual's productivity during the hiring stage. Indeed, firms are left with no choice but to select those who are able to signal higher levels of skill. Likewise, the screening hypothesis

also warns of the possibility of over-skilled workers taking over jobs that conventionally employ less skilled workers (crowding-out effect).

In addition, Desjardins & Rubenson (2011) showed how the process of signaling creates a cycle that induces workers to progressively overeducate themselves. The desirability of procuring higher levels of education increases the number of individuals who do so. As the number of individuals that possess a certain level of qualification increases, the signaling power of the said qualification begins to diminish. This prompts workers to seek even higher qualifications in order to distinguish themselves from the rest.

2.1.6 Job Competition Theory

Thurow (1975) posited that wages are largely determined by job-specific characteristics (or requirements) and less by individual ones. Simply put, earnings are influenced by demand-side factors alone while educational attainment exhibits little to no direct impact on earnings (Linsley, 2005). The model assumes that workers compete for high paying jobs in the labor market. This process creates a job queue that ranks jobs based on earnings and a labor queue that ranks workers based on their predicted training costs. Since workers with higher levels of education will require less training, the labor queue is reduced to workers being ranked based on their educational attainment (Leuven & Oosterbeek, 2011). After the ranking process, highly educated workers are then matched to higher paying jobs.

An increase in the average level of schooling of the relevant population may thus induce overeducation. Though the job queue remains unchanged, the labor queue's distribution shifts. This causes lower-skilled laborers to move down the labor queue and consequently face lower-paying jobs or worse, to be bumped-out of the labor market and face unemployment. As workers struggle to maintain their position in the labor queue, obtaining education in excess of what jobs require becomes an attractive choice for workers.

According to Linsley (2005), "the job competition model predicts that overeducation persists, and that it creates economic costs in the form of suboptimal investments in education, allocative inefficiencies, and increased income inequalities."

2.1.7 Labor Market Segmentation Theory

The Segmented Labor Market Theory was developed from the findings of Reich, Gordon &Edwards (1973) arguing that political and economic forces within American capitalism gave rise to segmented labor markets, and that the sources of segmented markets are not exogenous to the economic system. Moreover, Reich, Gordon & Edwards (1973) defined labor market segmentation as the historical process wherein political and economic forces encourage the division of the labor market into separate submarkets or segments which are distinguished by different labor market characteristics and behavioral rules. They have noted and observed four different types of labor market segmentation. The first is segmentation into primary and

secondary markets, wherein primary jobs requires skill, wages are relatively high and job ladders or promotions are offered while secondary jobs offer low wages, turnover is high and are mostly offered to minority workers which are the women and youth. The second is segmentation within the primary sector ("subordinate" vs. "independent"), Subordinate primary jobs are known to be those factory and office jobs while Independent primary jobs are those that have professional standards for work. The third is segmentation by race wherein there are certain jobs that are fueled by prejudice and labor market institutions. Last is segmentation by sex wherein there are jobs that are restricted only to men and the wages of women are relatively low and the women are known to do "serving" jobs for the male.

On the other hand, Dickens & Lang (1988) described the dual labor market model to be consisted by two sectors, the primary and secondary sectors. The primary sector that gives high wages provides a good working environment, and high returns to human capital variables such as education and experience. The secondary sector, which offers low wage, does not provide favorable workplace. The placement of an individual in the labor market sector influences taste and preference, behavioral patterns, and cognitive abilities.

2.1.8 Assignment Theory

Assignment theory can be substituted between human capital theory and job search theory. Though it does recognize the capacity of education to raise an individual's productivity, it contends that actual productivity usually falls short of what can theoretically be achieved due to job mismatches. Sattinger (1993) contended that an individual's productivity and earnings is not solely determined by job performance alone but also by the nature of job an individual happens to be assigned to. The extremely diverse nature of jobs simply imply that they vary in terms of tasks, responsibilities, and expected output; the combination of skillsets a typical worker must possess; and technologies employed and resources combined with labor. Due to this, a set of equally educated individuals will inevitably have varying degrees of performance when made to accomplish the same task. Thus, job characteristics constitute an intermediate step between individuals' characteristics and their actual earnings.

Under this framework, labor market mismatches arise when workers choose jobs whose characteristics are not congruent with their own qualities. This allocation problem is partly caused by information asymmetries that prevent workers from having knowledge on both the full range of jobs available to them and attributes or characteristics of each occupation. Likewise, employers' inability to adjust their technologies in ways that will better complement the current pool of workers has also led to persistent skill mismatches.

This model also prescribes a more efficient matching process that increases the probability that prospective workers are able to invest in the most appropriate form of human capital and find a job in which they have a comparative advantage. According to Desjardins & Rubenson (2011), the next best alternative to a highly infeasible

approach of allocating workers top-down based on their skills would be to rely on developing better labor market signaling systems.

2.1.9. Towards a Synthesis: Labor Mismatch and Adjustments Costs

Given the above discussion on the various theories explaining the phenomenon of mismatch in the labor market it is interesting to revisit the concepts of mismatch and its causes before we can recommend appropriate policy prescriptions on how to address this pervasive problem in the APEC region. Disconnect between the human talents and skills, on the one hand, and the job requirements of the workplace, on the other hand, emanates from the various views on the concepts and causes of mismatch. This divergence can arise from the inappropriate responses of firms arising from the over-education of graduates and the under-education of graduates. Similarly, the mismatch can be viewed as a consequence of the incompatible responses of individuals to changes in the workplace. Lastly, the gap between demand for and supply of talents can surface from information asymmetry among actors in the labor market.

The decision of individuals to invest too much in education or training, although inefficient from the social point of view, has rational basis on a personal level as elucidated in the previous section. Human capital theory posits higher productivity and wages with more education. On the other hand, job completion model asserts that more education can serve as an insurance to bump a less educated individual in a queue for jobs in a tight market. Even if education has weak links with productivity as signaling and screening hypothesis assumes, more education can serve as a signal for productivity in the absence of a direct and tangible measure for productivity. In addition, the more educated individual is ably prepared to handle changes brought about by innovations and technological progress. More education can also serve as an avenue for greater likelihood for career mobility in the future. From the labor segmentation model, enhanced education demand is based on the desire of the individual to enter the primary internal labor market where the working conditions and career path educated and skilled workers are encouraging. Given these decisions of the individuals firms or the workplace does not adjust appropriately thus creating a mismatch.

Under-investment in education, on the other hand, can be attributed to the lack of financial resources of the individuals and the presence of an imperfect credit market to provide the necessary funds to finance the cost of acquiring more education. But beyond financial constraints, the concept of under-investment in education can be viewed as a result of inadequate preparation graduates of educational and training institutions. Mismatch again emerges because firms are reluctant to provide training to those who have under-invested in education or to graduates who are entering the labor market with inadequate skills preparation. Given this latter perspective on under-investment in education, talent mismatch can likewise occur because educational and other training institutions are slow, if not reluctant, to adjust to the changing demands of the workplace brought about by intense competition, globalization and technological innovations.

It may very well be that the problem of mismatch is based on the economics of adjustments. In a situation where there is an over-educated workforce, the mismatch can be addressed by firms having to adjust in terms of changing their production processes to accommodate an ever increasing skilled workforce. This may be costly as it implies huge investments in state of the art equipment and modern production processes.

On the other hand, in the case of under-investment, the burden of adjustment can be done either by educational institutions or by the firms themselves. Any sector that will adjust will have to shoulder the cost of adjustment. But because of the huge costs, both educational institutions and firms may have apprehensions to adjust to address the incongruence.

If educational institutions will adjust, training institutes will have to re-align their academic programs and curriculum to the demands of the workplace. Although this adjustment may be appropriate and can be feasibly implemented in technical and vocational schools, this avenue may find problems of implementation in higher educational institutions. Although universities are contributing to manpower training these institutions of higher learning also have other objectives including expansion of the frontiers of knowledge through research and development and to be of service to the community. Thus, aligning the curricular programs of universities to suit the demands of the workplace may create rigidities in skills of graduates of academic institutions and may be counterproductive in the light of the dynamism in the workplace. The rigidities may arise as higher education institutions stress the technical and professional component of the curriculum that may be out of date by the time the graduates exit the universities. To mitigate these rigidities an appropriate curriculum can be crafted so that schools can produce graduates that are trainable and flexible to the changes in technology and the varying demands of the workplace.

If firms will have to adjust, they have to provide training to graduates with inadequate preparation that are entering the workforce. The cost of training may be too costly for the individuals to take. For firms to finance the training there is an assumption that the labor market is tight or there are difficulties if not the prohibition in hiring qualified trained foreign workers. Aside from the cost, the reluctance of firms to undertake these training programs stem from the fact that these training programs may differ from on-the-job training and may be considered as general training which is not specific to the job requirements. It may be argued that as general training it should be financed by the workers and can be done in educational and training institutions.

If both educational institutions and firms do adjust, there will be less adjustment cost on both sides. For educational and training institutions crafting a curriculum geared towards trainable and flexible critical thinkers who are good communicators and disciples of education for life, these graduates can adapt easily to the demand of the workplace. Given these type of graduates, it will be very easy for firms to conduct specific training programs to these trainable and flexible graduates.

But beyond inappropriate responses to over-education and under-investment in education and to the dynamic changes in the workplace, labor and talent mismatch is rooted in the information asymmetry as articulated in the signaling and screening hypothesis, job search theory and assignment theory. Since information asymmetry is a market failure, it is interesting to examine the crucial role of government in providing measures to address this market failure since there may be no incentive for the actors in the labor market to provide information that mitigate if not address the problem of mismatch of talents and labor services.

The rest of the paper will discuss on the mechanisms, programs and institutions that various stakeholders in providing information and market signal to address information gaps.

2.2. Best Practices and Proposed Solutions

According to Gary, et al. (1996), the provision of labor market information used to rely on what is known as the "manpower requirements approach." This method uses statistical tools and economic data for the purpose of estimating the present and predicting the future supply of manpower in the labor market. Results are then used to determine the presence of disequilibria in various industries. For instance, a shortage (surplus) for a particular occupation may prompt need to reduce (increase) educational and training investments in the relevant subject or degree.

Manpower forecasting was thought to have the capacity to accurately predict occupational requirements within a particular location (Gary, et al., 1996). Unsurprisingly, several government agencies made use of approach as a basis for policy-making and budgetary allocations within the educational and labor markets (Clark, 1986). However, the 1970s and 1980s marked a gradual departure from the method as economists began to realize the approach was neither accurate nor reliable. First, manpower forecasting failed to accommodate and make use of organizations' own feedback systems that were capable of identifying the presence of disequilibria. Second, it also suffers from the inability of labor force data to determine and expose industry-specific problems due to excessively aggregated data. Last, the method has also been criticized for its blatant disregard for the presence of internal labor markets within firms that provide training for unskilled workers.

The evident failure of the manpower requirements approach led economists to search for better indicators that could better capture the true state of the labor market. According to Middleton, Ziderman & Van Adams (1993), the ideal approach must be one that captures information on a wide-range of issues such as social benefits, educational investment, as well as training costs; and remains dynamic to the ever-changing economic landscape.

Gary, et al. (1996) indicated that a sound labor signaling system must provide data that is able to accomplish the following:

Aid in the decision-making of private individuals as to how much and which type of educational training investment to make. This implies the availability of information on wage fluctuations and trends, job vacancy rates, graduate placements, and enrollment data (to estimate future distributions of skills/specialization). This facilitates an individual's assessment of the costs and benefits associated to procuring a higher level of education and choosing a particular specialization.

Aid in the management of training systems. This requires the use of reverse tracer studies which are designed to identify levels and combinations skill acquisition that lead to certain occupations and the provision of accompanying data on costs associated to acquiring each qualification set. Other pertinent information includes rates of return associated with various skill acquisition choices, measurement of cost effectives, new industry trends, and productivity rates.

Improve labor market efficiency. Doing so will require information that effectively reduces labor market frictions that inhibit those searching for a job from finding one that is most appropriate to their individual characteristics. For instance, information on wage differentials and job characteristics better equip workers to assess compensation-risk trade-offs. Meanwhile, information on the internal labor markets or the presence of public subsidies for training within a particular industry not only allows workers to assess non-wage considerations that may affect their job choices but also disables firms from engaging in monopolistically competitive activities within the local labor market. Information on labor codes, evidence of low labor mobility, and obstacles to wage flexibility may also aid government policy-making

Serve as a framework for government planning on public investments in training. This will require information on present and future (1) industry demand for specific professions and workers and (2) distribution of labor supply by skill level and specialization. Such information will include private training capacity, programs offered by educational institutions, skills supply and demand imbalances, market imperfections, and continuing structural changes.

III. Analysis of Survey Results

3.1. The Questionnaire

The survey on Labor Market Signaling System conducted by the Department of Labor and Employment of the Philippines consists of three sets of questionnaire for government agencies, industry associations, and higher education institutions. Although the general thrust of the survey is to elicit information for labor market signaling, the construction of the survey differs in the role of these institutions in the labor market and in addressing the labor shortages and talent mismatch.

From the industry associations on labor, employment and manpower, four major questions were asked to elicit information on the following: key industries that experienced substantial increase in employment in 2005-2010, top key employment generators (KEGs), industries likely to expand/emerge in the next decade, and the uses of labor market information.

From the employment service providers, including associations of human resource development managers and recruiting agencies the following information were solicited: Procedures in Recruiting Candidates, Positions/ occupations that are easy to place, Positions/occupations difficult to place, Reasons for Difficulties in successful Placement of job Applicants, Feedback mechanisms on labor Mismatch, Skills Needed by Applicants as viewed by Placement Agencies, Challenges in Recruitment/Talent Search, and Recommended Strategies to overcome recruitment challenges.

From the public and private higher education institutions and training institutes, questions on the following were included in the questionnaire: Schools with placement referrals of graduates, Availability of short-term non-degree course, Schools that have access to labor market information, Awareness of occupations that are in demand, Factors schools consider when they offer courses, Feedback mechanism on shortage of manpower from business and industry, and Agreement of schools with local industries for placement of graduates of schools with local industries for placement of graduates.

As the Survey Questionnaires were to be accomplished by respondents which belong to the private sector, due the inadequacy of the information supplied by its respondents in several aspects of the three Survey Questionnaires, government agencies in some economies, like in the case of Australia and New Zealand, supplemented the non-government responses with additional information.

3.2. The Respondents

Out of the 21 APEC economies only five economies responded to the survey namely, Australia, Brunei Darussalam, New Zealand, the Philippines and Thailand. In each economy there were also a limited number of key informants from various sectors. For industry associations, there were three in Australia with 33,000; 70 and an

unspecified number of members. The Australian Government also provided an economy-level response to the survey. For Brunei Darussalam, no association responded but there were five establishments that answered the survey. For New Zealand, a report submitted by the Department of Labor thereby accomplishing all the information needed and required in the Questionnaires. The Philippines, there were two associations with a combined membership of 98 members but no establishment participated. For Thailand, only one association with 43 members and one establishment responded to the questionnaire.

For educational institutions, Australia has two association-respondents with a combined membership of 1,161 institutions, and one institution for private education and training. Likewise, a complete report on the data and information covering the Survey Questionnaire from the Department of Education, Employment and Workplace Relations was received. For Brunei Darussalam, one institution, but no association responded. For New Zealand, no response from any educational institution was received. For the Philippines, four institutions responded with no association. For Thailand, two institutions responded and none for the association.

For employment service providers, Australia had submitted one accomplished Survey Response from an association with 2000 members and one agency. Brunei Darussalam submitted no survey response. For New Zealand, a report with current and relevant information was submitted by the Department of Labor. For the Philippines there were eight associations that responded but with no agency. Thailand had four associations with combined membership of 28 and six agencies that answered the survey instrument.

Given the limited number of respondents, collated tables for each economy and the descriptive statistics for the key questions were prepared. Likewise, the analysis cannot go beyond the descriptive statistics given the limited number of sample size, thus resorting to other means in securing other the information for each the APEC economies on their mechanisms in labor market signaling.

3.3. Survey Results

For the complete details of the survey questionnaire and survey results, refer to the Appendix. This section analyzes the results of the survey based on the following basic questions – (1) What labor information should be provided? (2) Who should provide and transmit the labor information? (3) How should the labor information be transmitted? (4) When will the information be transmitted? and (5) Where will the labor information be transmitted?

3.3.1. Industry Associations and Recruitment Agencies

In the case of Australia, in 2006, the retail trade industry had the highest number of employees (1.18 million persons), while Mining had the lowest number of employees at 132,500. In percentage terms, the Mining industry had the greatest growth in employment between 2006 and 2011, with the number of persons employed in the

industry increasing by 68% to 222,600. However, the largest number of new jobs generated was in the Healthcare and Social Assistance industry, which had become the largest employer by 2011. The number of persons employed in this industry grew from 1.06 million in 2006 to 1.32 million in 2011, an increase of 24%.

The respondents to the survey reported that there is currently a shortage of management executives and engineers. In addition, the modes of recruitment are through walk-in applicants, announcement of vacant positions in the internet, availing of private employment intermediary service providers, newspaper advertisements, placement services/units in universities, trade schools, and other training institutions, through "head-hunters", and overseas recruitment. That is, the required skills and competencies applicants should possess to be employed in Australia are relevant experience for the position, verbal and written communication skills, critical thinking, and agility, executive and managerial ability, self-discipline/work ethics, innovative problem solving skills, and technological progress. Hence, to be able to satisfy manpower the following actions are most commonly done by association members, up-skilling/multi-skilling of existing personnel to meet the demands of technological innovations or advancement in work processes, partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry, and commission an employment intermediary services provider for the specific requirements of firms/establishments.

Community aged care was the fastest-growing Australian sector (in terms of employment) covered by survey respondents. Difficulty in attracting nurses and allied health professionals to work in regional, rural and remote areas was the main recruitment problem encountered in this sector. Likewise, the specific positions that are difficult to fill-up in the construction sector are construction managers, while for the mining sector are the engineers of all types. The types of workers with fast turnover are the managerial and supervisory positions, professionals, associate professionals and technical staff. Furthermore, nurses have also a fast turnover. Meanwhile, under the category of managers, business managers and nurse-managers contributed to the success of the business operations of the aged care industry. Similarly, construction managers and finance managers contributed to the construction industry. Company executives, general managers, mining managers, and technical managers contributed to the mining industry.

Going to Brunei Darussalam, operations (operating oil and gas) have the highest employment at 956 employees. Moreover, by 2010, internal audit (internal control) have the highest growth rate of employment at 200%. Meanwhile, management executives and engineers are experiencing shortage while laboratory technicians, product or machine operators and database management experts are not experiencing any shortage. Additionally, 60% of the institutions cited that there is a need for management executives and engineers. It is also important to note that the most cited mode of recruitment is through newspaper advertisements. In addition, all institutions cited the use of newspaper as their mode of recruitment and the most relevant skill needed to qualify for a vacant position are possession of relevant experience in the position, critical thinking, and agility.

Additionally, association members are up-skilling/multi-skilling their existing personnel to meet the demands of technological innovations or advancement in work processes. Moreover, the following are also done to provide for the specific requirements of firms/establishments as a way to satisfy manpower - request from universities/colleges for applicants who possess the required qualification; partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry; and use multi-media advertisement for the hard-to-fill positions to be able to satisfy manpower. As such, the top key employment generator is the drilling sector of oil and gas. On the other hand, the 9th key employment generator is the hire purchase products. However, the positions which are hard to fill up in their top key employment generator are drilling engineers, petrophysicists, petroleum engineers, and strategic planners. Similarly, in the business support sector, there is a need for IT Specialist-system analyst while in the commercial banking there are only a number of Commercial Lending Officers (CLOs).

Meanwhile, the source of key employment generators for personnel recruitment is through newspaper advertisements and there is a fast turnover for an informational technology staff. It is also vital to note that other forms of work with fast turnover are bank teller and sales staff. Alternatively, there is a need for chemical engineers for downstream, petroleum engineers for deep water drilling, as well as property managers, property life cycle evaluators, and property maintenance for property management. It suggests that under the category of managers, strategic planners contribute to the success of business operations for the oil and gas industry. Similarly, petroleum engineers presented special recruitment problems in oil and gas activities, while drilling engineers presented a similar problem in drilling deep water activities.

Considering all industries, information technology (IT) specialists and occupations regarding marketing have presented special recruitment problems in IT and marketing respectively. On the other hand, in the financial services sector, risk managers, and treasury managers have presented the similar problem in policy making and policies and transactions activities respectively. Hence, the most cited perceived problems are still the lack of experience of technical personnel and limited number of highly skilled workers. Moreover, 100% of institutions cited these two problems in addition to the problem of school curriculum not responsive to industry needs. Such problems occur because the upgrading of curriculum of universities/colleges to be responsive to needs of industry brought about by the lack of qualified personnel or existing talent mismatch observed to support emerging industries. Therefore, services made available are providing skills training and list of available manpower with the required qualifications (manpower pooling). The recruitment assistance that is expected from the government are setting up an assessment center, more manpower with the relevant qualifications, more support from government to allow recruitment of skilled laborers from overseas, and better links of education institutions.

In New Zealand, health care and social assistance had the highest number of employees for 2005 reported at 170,600 workers while electricity, gas, water, and waste services had the lowest number of employees for the same year with 9,118 workers. Meanwhile, in 2010, health care and social assistance had the highest growth rate of employment posted at 14.88%. In addition, the mode of recruitment are through walk-in applicants, announcement of vacant positions in the internet, availment of public and private employment intermediary service providers, newspaper advertisement, placement services/units in universities, trade schools and other training institutions, through "head-hunters", and recruitment from overseas. As such, health care and social assistance is the top key employment generator followed by education and training; accommodation and food services, mining, and other services

On the other hand, institutions in New Zealand are very much engaged with the following labor market information - job vacancy statistics from administrative source, statistics of tertiary education graduates, statistics on graduates of technical/vocational education, professional registry (includes marine and teachers), labor turnover statistics, unemployment rate from labor force survey, courses offered by local universities, skills training institution locally in operation, inflation rate, occupational wages both local and overseas, wage structures of companies with Collective Bargaining Agreements (CBAs) or any other forms of employer-employee agreements, wage rates of entry level/common/highly skilled occupations, aggregate output, and balance of trade.

For developing countries like the Philippines, the modes of recruitment, as cited by institutions, are through walk-in applicants, announcement of vacant positions in the internet, availing of public and private employment intermediary service providers, newspaper advertisements, and placement services/units in universities, trade schools, and other training institutions. Each of these modes is 50% cited as their mode of recruitment. In addition, it is evident that the most relevant skills needed to qualify for a vacant position are the possession of relevant experience in the position, good verbal and written communication skills, self-discipline and/or work ethics, and possession of technological progress. Moreover, to be able to satisfy manpower, there is a need to implement up-skilling/multi-skilling of existing personnel to meet the demands of technological innovations or advancement in work processes. Meanwhile, establishing a formal tie-up with a training institution to conduct special training for candidates for the position and then recruit from their successful trainees; and partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry are not well known or practiced methods since none cited such actions. Likewise, direct information provided by other member-companies is commonly used for recruitment.

Furthermore, professionals, technicians, and skilled individuals in the Philippines are in demand for the power, electricity industry; the water tapping and services industry; as well as the information and communication industry (ICT). On the other hand, professionals, skilled individuals, and managers are needed for the transportation industry while professionals, skilled individuals, and workers are required for the

housing and construction industry. Also, managers and service workers are demanded in the tourism industry. Finally, teachers and technicians are required for technical education. Equally, under the category of managers, resident managers and division managers contribute to the success in the business operations of the forestry industry; under the category of professionals, foresters and logging engineers contribute to the success in the business operations of the forestry industry while engineers, CPAs, MDs, and nurses contribute to the wood manufacturing industry; under the category of technicians and associate professionals, equipment operators, and rangers contribute to the success in the business operations of the forestry industry, while mill operators and quality control contribute to the wood manufacturing industry; under the category of clerical support workers, computer technicians contribute to the success in the business operations of the forestry and wood manufacturing industry; and under the category of service and sales workers, sales clerks (college graduates) contribute to the success in the business operations of the forestry and wood manufacturing industry.

As far as Thailand is concerned, the rubber industry was the only industry to experience a substantial increase in employment reported at 300% growth rate from 2005 to 2010. From the survey results, Thailand is experiencing a shortage on laboratory technicians, production or machine operators and engineers. On the other hand, there is no shortage in skilled trades, management executives, accounting and finance staff, programmers and database management expert. In addition, the popular modes of recruitment in Thailand are walk-in application and announcement of vacant positions in the internet while recruitment from overseas and availing of private employment intermediary service providers are unpopular. Likewise, the most relevant skills needed to qualify for a vacant position are possession of relevant experience in the position, executive and managerial ability, and self-discipline and/or work ethics.

Survey results also showed that institutions in Thailand requesting from universities/colleges for applicants who possess the required qualification and partnering with an educational institution in offering apprenticeship program will ensure the available supply of skills and experience required by the industry. However, there is also a need to establish a formal tie-up with a training institution to conduct special training for candidates for the position and then recruit from their successful trainee, and commission an employment intermediary service to provide for the specific requirements of firms/establishments, which is not widely practiced in Thailand. Thus, the only key employment generator is manufacturing of automobiles. In addition, the source of recruitment of key employment generators are walk-in applicants, announcement of vacant positions in the internet, newspaper advertisements, placement services/units in universities, trade schools, and other training institutions, and through "head-hunters."

Meanwhile, the automotive industry in Thailand is in need of electro-mechanical engineers while under the managers category, manufacturing, marketing, purchasing, and HR contribute to the success in the business operations of the automobile industry. Likewise, computer engineers, finance, and logistics are the professionals

who contribute to business operations, while technicians and associate professionals of the same nature are the electronic, environment, and safety. Clerical support workers are secretaries, and the service and sales workers are those from marketing. Also, casting technicians have presented special recruitment problems in casting work for the automotive industry. Meanwhile, painting technicians (color coating) have also presented the same problem in vehicle painting, also for the automotive industry. As such, perceived problems such as lack of experience of technical personnel, limited number of highly skilled workers, school curriculum not being responsive to industry needs, pay scale not being competitive internationally, weak linkage with educational institutions, as well as many personnel in their present positions are either over-qualified or under-qualified. Furthermore, upgrading of curriculum of universities/colleges to be responsive to needs of industry, for companies to provide entry level skills training/apprenticeship program, for companies to provide up-skilling/multi-skilling programs to their employees to meet the skills requirements of technological innovations adopted by the companies, improving research and development initiatives, as well as to encourage industry-academe linkages and collaboration were all acknowledged to be vital. Hence, the recruitment assistance that must be provided by the government is cheap labor from neighboring countries, clear policy on educational system development and clear direction on the industry development.

3.3.2. Educational Institutions

In Australia, the construction industry reports that it is currently experiencing difficulties recruiting, particularly in the following areas: managers overseeing the implementation of major construction works; civil engineers engaged in the planning of major construction works; site supervisors providing direct supervision of construction works; estimators tasked to estimate quantity and cost requirement for construction projects; and construction trades workers in setting out, erecting and finishing construction works. Likewise, for the mining industry, mining engineers find it difficult to recruit professional engineers while geoscientists are problematic with the exploration and mine geology. Overall, it can be construed that the most cited perceived problem is the limited number of highly skilled workers. Despite the problems encountered being minimal, to produce highly skilled workers that would balance the supply and demand for competent personnel, there would still be a need for an upgrading of curriculum of universities/colleges to be responsive to needs of various industries; for companies to provide up-skilling/multi-skilling programs to their employees to meet the skills requirements of technological innovations adopted by the companies; to encourage industry-academe linkages and collaboration; as well as to increase public spending for and strengthen technical/vocational education in the economy were the most recommended courses of action to ease the problem of lack of qualified personnel or existing talent mismatch observed to support emerging industries.

Worthy to note that only one of the three respondents in the Australian economy for higher education indicated that the top short-term non-degree courses offered are the bridging courses namely mathematics, chemistry and physics; Mandarin

language courses and Chinese proficiency tests; and professional development in law courses. This may not hold true, however, in other universities or educational institution in the said economy, including that of the vocational education sector where no data or information was collected through the Survey. Also, the following information are commonly used to decide which degree or non-degree course to offer - availability of teaching skills to handle the course/s and the specific needs of local industries. In most cases, however, Australian education institutions often draw on information on professions which are experiencing strong demand from employers when making decisions about which courses to offer.

In addition, most institutions do not have any formal agreements for placement of graduates, while there are no institutions with formal agreements for placement of graduates. Meanwhile, while the Australian economy also encourages the formation of consortia with foreign institutions to upgrade education, issuance of accreditation on the classification of university/college status, and initiation of trade fairs for labor and employment, the freedom is also left to the institutions to decide in creating linkage with foreign partners.

Meanwhile, the only factors considered deciding which degree or non-degree courses to offer in Brunei Darussalam are the basic requirements of the Department/Ministry of Education. Government intervention may come in the form of the provision of strong career opportunities to keep up with fast changing technological development; and create/establish courses that offer apprenticeship for important industries to enhance the qualification of new graduates of the institutions. It is vital to emphasize that the only government regulation that affects educational institutions is regarding accreditation on the classification of university/college status. In Brunei Darussalam, there are two institutions that host regular symposium and public forum on challenges of the educational institution while there is only one institution that offers foreign exchange programs for faculty training. Note that the two fields of study covered are Business and IT.

In the Philippines, experienced foresters, rangers, and equipment operators have all presented special recruitment problems in field and very technical production oriented activities for the forestry sector. On the other hand, experienced managers, machine operators, and quality control technicians have also presented the same problem in plant and very technical production oriented activities for the wood manufacturing industry. Hence, from perceived problems such as the lack of experience of technical personnel, the limited number of highly skilled workers, and the retraining of staff due to rapid change of technology were persistent. Consequently, the upgrading of curriculum of universities/colleges to be responsive to needs of industry, for companies to provide entry level skills training/apprenticeship program, for companies to provide up-skilling and multi-skilling programs to their employees to meet the skills requirements of technological innovations adopted by the companies, to offer scholarships on courses/skills required by hard-to-fill occupations to ensure local supply, to encourage industry-academe linkages and collaboration, to increase public spending for and strengthen

technical/vocational education, as well as to provide tax incentives to emerging industries were highly needed.
Moreover, the Philippine government it is expected to provide recruitment assistance through strengthening TESDA in order to produce or match the manpower needs of forestry and wood manufacturing. Institutions are monitoring statistics of tertiary education graduates, unemployment rate from labor force survey, inflation rate, occupational wages both local and overseas, wages structure of companies with CBAs or any other forms of employer-employee agreements, aggregate output, and trade balance. Moreover, the degrees in demand among referrals are IT, Industrial Engineering, Business sales and Marketing, and Education. Likewise, there are 2 institutions that offer short-term non-degree courses and without short-term non-degree courses. The top short-term non-degree course is Finance.

The factors that are mostly considered in deciding which degree and non-degree courses to offer are basic requirements of the Department of Education and Commission on Higher Education, specific needs of local industries, and global developments in the field of research, education, and training. Hence, the following special training provided are training on the use of *Macromedia Flash Player* and training on the use of basic *Microsoft Office Programs*. Meanwhile, there are three institutions with formal agreement for placement graduates, and there is no data collected on institutions without formal agreements for placement of graduates. Moreover, reasons cited for the inexistence of formal agreement are that there are - no request for graduates received from local industries, no need because graduates are in demand both local and abroad, and no staff to attend to this type of external service; other reasons are that students apply and search.

The regulations of the Philippine government that mostly affects educational institutions are the regulation of curriculum content or syllabi of courses offered and issues of accreditation on the classification of university/college status. On the other hand, the government regulation that weakly affects educational institutions is the imposition of a quantitative quota on certain courses. There are two institutions that host regular symposiums or public forum about challenges faced by educational institutions. Other means of soliciting feedback on challenges faced by such institutions is through media, CHED, and DepEd. Moreover, there are three institutions with foreign exchange programs for faculty training. The fields of study covered in this program are management, exchange program with students, exchange of professors in the Physical Sciences.

Lastly, in Thailand, institutions utilize labor market information such as statistics on graduates of technical/vocational education and inflation rate. Likewise, the degrees in demand among referrals are Interior Architecture, Applied Computer Science, Mechanical Engineering, Chemistry, Printing Technique, Engineering, Agro Industry, Veterinary Medicine, Architecture and Agriculture. Furthermore, the most common factors considered in choosing a degree and non-degree courses to offer are basic requirements of the DepEd and CHED, demand of clients who have tie up with association members, specific needs of local industries, global developments in the field of research, education, and training, and provision of strong career opportunities

to keep up with fast changing technology. In addition, the following are the special training provided on needed technology - Project Risk Management, Professional Project Management, Industrial Cost Reduction, Post-harvest Technology, Energy and Environment Technology, and Specific skills in requested areas.

Finally, the regulations of the Thai economy such as accreditation on the classification of university/college status, encouragement of the formation of consortia with foreign institutions to upgrade education, and issuance of prospective list of courses that will increase in importance in 10 years will most likely affect educational institutions. As such, there are only two institutions with foreign exchange programs for faculty training covering Engineering, Natural Science, Physical Sciences, Social Sciences, Humanities and all fields.

IV. Conclusions and Recommendations

Although talent mismatch has numerous concepts and causes, asymmetric information seems to be the more dominant explanation emerging in the literature. As such the focus of the research report is to document various measures, programs and mechanisms on how the APEC economies are narrowing the gap in information asymmetry between the suppliers and consumers of labor services. Rectification of this market imperfection has to be addressed primarily by an agency of the public sector since the normal private participants in labor market transactions tend to under-provide the optimal level of information. This task of addressing information asymmetry has been assumed by the government as part of its role in correcting market imperfections and in promoting public interest.

However, the provision of information has to be done efficiently to properly address the problem arising from information asymmetry in the labor market. To have a better perspective on the optimal provision of information there is a need to respond to the following questions: (1) what labor information should be provided?; (2) why should it be provided?; (3) who should provide and transmit the labor information?; (4) who should use the labor information?; (5) how should the labor information be transmitted?; (6) when will the information be transmitted?; and (7) where will the labor information be transmitted?

The first question refers to the kind of information that is relevant to the actors and stakeholders in the labor market. At the national level, macro-economic data as well as labor force data are relevant information that can be provided by various agencies of the national and regional governments. On the other hand, there is another set data on the industry level including the state of employment, sunrise or sunset industries, manpower needs of the industry, and skills shortages in the medium term. Furthermore, specific information that may interest job seekers may include data on skills requirements, type of occupations, wage rates, and working environment provided at the firm level.

The above sets of data are related to the demand side in the labor market. But for an optimal provision of labor market information, data at the macro, industry as well as firm specific information on the supply side should likewise be provided. The macro data on educational trends may include enrollment trends, graduates by programs, and school participation rates at the national and regional levels. At the industry level, graduates of technical and vocational courses and graduates of higher education institutions may be relevant. At the firm level there are data from the HEIs on the number and quality of graduates, performance in licensure exams, programs offered, programs with accreditation, skills, and aptitude of graduates,

The second question refers to the basis for the provision of information. This is related to the first question and the answer to the question may concern the stakeholder's (particularly the government) response to a market failure arising from information asymmetry. Government agencies are mandated by law to provide and

transmit labor market information primarily to address the information imbalances between suppliers and users of labor services. However, for industry associations and firms including educational and training institutions, the purpose of producing and transmitting information is primarily to suit their internal and private needs and not primarily to address information asymmetry. For this reason, the private sector, employment services providers and even training institutions may produce and transmit information below what is socially optimal to address the problem of information asymmetry.

The third question deals with the identification of institutions or individuals that will be responsible in the production and transmission of labor market information. The production of information will depend on the types of data and information needed in the labor market. Macro data are normally produced by various agencies of the national and regional governments because data gathering and dissemination is part of their constitutional functions. There are also legal mandates on the production of these macro data to be used by the general public and other government agencies for transparency purposes, decision making and policy formulation. Information about the industry, on the other hand, is produced by the national and regional government and to some extent by the industry associations. For industry associations the absence of a legal mandate coupled with little incentive for the production of information as well as the cost of production may restrain them to gather, treat and transmit this information to the participants in the labor market. In the same manner, firm specific data are very useful but without legal directive beyond reportorial requirements from the national and regional governments there is no incentive for its production.

Thus, the systematic production, treatment and dissemination of firm specific labor information is difficult to undertake since it may deviate from the normal functioning of business firms and educational institutions and its cost may eat up a huge portion of its revenues. Although we can identify who should be responsible in producing various levels of labor market information, the difficulty lies in making sure that these institutions and individuals produce the appropriate amount of relevant information. These difficulties contribute to the market imperfection which brings about the problem of information asymmetry.

Although the task of addressing information asymmetry has been assigned to the public sector, the example of Australia in the privatization of an important component of this task through Job Services Australia may prove to be more efficient in matching the needs of the employers and the skills of job seekers. This practice can be adapted in other APEC economies.

Complementary to the third question is the fourth question on who should use the information. In general, the public and in particular various stakeholders in the labor market should have access to information generated by the government. However, because of the varied interests of these stakeholders there is no unique set of labor information relevant to all participants in the labor market. For example, employers may need macroeconomic information for their business expansion but also

information on the qualifications of the graduates of training institutions. On the other hand, training institutions may need, aside from the skills requirements of industries information, on the emerging industries. Employment services providers will need information on skills availability domestically and externally to match the information on manpower requirements of the domestic economy. The difficulties in answering this question will further complicate the answers to the first and third questions.

Having identified, with difficulties, who will produce and transmit the labor information and who will use this information, the fifth question revolves around the process on how the labor market information is transmitted to relevant stakeholders in the human resource development of the economy. With the rapid development of information and communications technology, this question can be readily answered. With the wide reach of the cyberspace various participants in the labor market have utilized the Internet and various social networking sites to transmit and access labor market information at the macro, industry, firm levels. Canada for example, has the Working in Canada Tool, while Malaysia established the one-stop center for online job matching facility called Electronic Labor Exchange.

Aside from information technology, the traditional classified ads, as well as job fairs, and face to face contacts with suppliers and consumers of labor services may still be relevant and efficient. In Thailand, the Department of Employment operates a national unemployment registration system and labor market information networks that connects all the participants in the labor market. In Australia, the publication of the Australian Jobs provides information that is relevant to job seekers and employers at the national and local levels. However, transmission can also be done through consultation and participation of the business sector in crafting the curriculum offered by various training and educational institutions. In the Philippines, the private sector is represented in the technical panels of various disciplines in higher education. In addition, a number of higher education institutions have invited key leaders in the private sectors as members of their board of advisers, primarily to guide them on the current developments in their respective fields relevant to the training of students and the job prospects of their graduates.

When will this information be transmitted? Although the information can be transmitted on an annual, quarterly basis or even on a more frequent basis, what is important is the usefulness of the information. The timeliness of the information is crucial in making decision for both employers and job seekers. Information which is out-of-date can be useless and cannot address the problem of information asymmetry. The frequency of transmission will depend again on what kind of information are produced and transmitted. The frequency of information will also depend on how the websites of various stakeholders are updated. Since information update is related with the production of information the cost of producing the appropriate and relevant labor market information may lead not only to the under provision of information, but also on the timeliness of information being transmitted. Thus, depending on the resources of the producers of information, labor market information can be produced and transmitted on an annual, quarterly or even on a monthly basis.

Where will this information be transmitted? We have already covered the important and increasing role played by ICT in the transmission of information. However, we cannot discount the value and role of physical venues in the transmission of labor market information. At the regional and local levels, real physical offices where job seekers can find information and seek assistance for very specific, unique and local concerns can be very useful in addressing information asymmetry. Examples of these avenues at the local level are the Job Services Australia (JSA) providers, and the Service Canada Centers (SCC) under the Human Resources and Skills Development Canada (HRSDC) in Canada.

From the above discussion, addressing the problem of information asymmetry in the labor market cannot be easily answered. As we have discussed above there are nuances in the provision of information that give rise to imperfect and insufficient information, thus the emergence of talent mismatch. Aside from the varying interests of the stakeholders, foremost reason is the insignificant, if not lack, incentives for the stakeholders in providing the appropriate information. Even if there are benefits, these benefits may accrue to others including competitors resulting to a free rider problem. Moreover, even if these benefits are readily internalized by those producing and consuming it, it may be costly to produce and secure this information. The additional benefits may not be as significant as the additional costs incurred in the production of the information.

In this study, we have reviewed various measures undertaken by APEC economies in addressing information asymmetry. The national and regional governments, on one hand, and the other stakeholders in the labor market, on the other hand, have provided macroeconomic, industry and firm level information with varying frequencies using different means of transmission. But despite these efforts, the problem of talent mismatch persists since information cannot be fully disclosed.

In the end, one cannot really know the productivity of the laborer until he is observed on the job. For example, the need for flexible, creative and resourceful workers can only be tested when these workers are already in the workplace. Similarly, the requirements for supervisory and managerial skills on their ability to manage priorities and multiple tasks and meet deadlines can only observed when they actually perform their supervisory and managerial functions on the job. Thus, productivity of workers can only be fully observed on the job. Prior to this, the participants in the labor market can only signal information coming from educational institutions and training institutions and individual job seekers. Hopefully, these sets of information are related or reflective of the productivities of job seekers. However, the existence of weak linkages of signals with job performance is one of the major causes of information asymmetry.

In addition, educational institutions may not be the best and efficient producers of skills. Although schools provide an environment for the cognitive, affective, psychological, behavioral, vocational and non-vocational development of students, skills training is best done on-the-job and not in school. Some tasks and specific skills can be learned from technical and vocational training institutions. However, for

higher education, employability of graduates may not be gauged on specific skills learned from school but on the trainability, adaptability and flexibility of job seekers to the dynamic changes in the workplace.

What is emerging from the data collected from macroeconomic profile of each APEC economy and the survey is the need to localize these information when transmitted to end-users, the increasing role and use of information technology in job matching, the privatization of the provision and transmission of some of the key components of this important public role in addressing information asymmetry in the labor market. Although the government is the key agency in addressing information asymmetry, it can also perform this social function by outsourcing this to the private providers. The key role of government in talent matching is primarily to address the under-served needs of special sectors of society and not to compete with the private employment services providers. Another emerging best practice is the utilization of various measures that may be more efficient and can serve the immediate needs of employers and job seekers. Although the use of the Internet and ICT in the Labor Exchange, the traditional means of job fairs, classified ads, and physical offices are likewise useful. These are not substitutes but complementary measures.

Although there are numerous mechanisms being implemented across the APEC economies, in addressing the information asymmetry through labor market signaling, they are not enough. Aside from the incentives and cost of production and transmission, these measures cannot provide the full or perfect information. The most it can do is to mitigate or narrow the information gap. As already mentioned, full information can only be disclosed at the work place where job seekers learn about the difficulties of the job, and the employers learn about the skills and work aptitude of the workers on the job. The most that mechanisms on market signaling can do to minimize the cost of skills and talent mismatch for both the job seekers and employers. These best practices are meant to assist individuals in their decision on what and how much to invest in human capital, assist in the management of training programs, improve labor market efficiency and serve as framework for planning on public investment in training. And these best practices that we have documented in various APEC economies can be shared, learned and applied to make human resource development in the region more efficient which in turn can contribute significantly in maintaining the momentum of economic progress in the region.

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VI. Appendix

GOVERNMENT-SOURCED DATA AND SURVEY RESULTS (ANALYTICAL TABLES)

Appendix 1.A
Australia
Source: Government Agency/ies

TOTAL EMPLOYMENT IN EACH BROAD INDUSTRY CLASSIFICATION (2006 and 2011)			
Industry	**Employed Total, 2006 ('000)**	**Employed Total, 2011 ('000)**	**Percent increase %**
Agriculture, Forestry and Fishing	350.8	328.1	-6.47%
Mining	132.5	222.6	68.00%
Manufacturing	1021.5	967.6	-5.28%
Electricity, Gas, Water and Waste Services	107	151.6	41.68%
Construction	914.8	1037.8	13.45%
Wholesale Trade	395.1	418.4	5.90%
Retail Trade	1176.5	1231.4	4.67%
Accommodation and Food Services	667.1	785.3	17.72%
Transport, Postal and Warehousing	507.7	585.4	15.30%
Information Media and Telecommunications	242.6	210.1	-13.40%
Financial and Insurance Services	387	423.6	9.46%
Rental, Hiring and Real Estate Services	195.8	199.1	1.69%
Professional, Scientific and Technical Services	738.3	870.3	17.88%
Administrative and Support Services	353.8	403.2	13.96%
Public Administration and Safety	626.1	723.6	15.57%
Education and Training	745.9	859.1	15.18%
Health Care and Social Assistance	1060.5	1317.7	24.25%
Arts and Recreation Services	177.3	212.1	19.63%
Other Services	420	452.3	7.69%
Total	**10220.4**	**11399.3**	**11.53%**

Source: Australian Bureau of Statistics (ABS) Labour Force Survey - Four Quarter Average, 2006 and 2011

Industries that provided the highest employment growth				
Name of key industries	**Specific economic activities**	**No. of Employees**		**% Increase**
		2006 000s	**2011** 000s	**2006/2011**
1. Medical and Other Health Care Services	Medical Services, Pathology and Diagnostic Imaging Services, Allied Health Service, Other Health Care Services (such as ambulance services, blood bank operation and health assessment services)	300.8	409.5	36.1
2. Food and Beverage Services	Cafes, Restaurants and Takeaway Food Services, Pubs, Taverns and Bars, Clubs (Hospitality)	577.3	663.8	15.0
3. Hospitals	Employment within in all hospitals	329.7	410.6	24.6
4. Public Administration	Central Government Administration, State Government Administration, Local Government Administration, Justice, Government Representation	439.9	519.8	18.2
5. Adult, Community and Other Education	Sports and Physical Recreation Instruction, Arts Education, some forms of Adult, Community and Other Education (such as driving schools, public speaking training, tutoring services and several other forms of non-accredited training)	71.8	139.2	94.0
6. Social Assistance Services	Child Care Services, Other Social Assistance Services (such as arranging child-aged adoptions, support for people with disability, youth counseling, etc)	261.9	327.5	25.1
7. Professional, Scientific and Technical Services	Scientific Research Services, Architectural, Engineering and Technical Services, Legal and Accounting Services, Advertising Services, Market Research and Statistical Services, Management and Related Consulting Services, Veterinary Services, Other Professional, Scientific and Technical Services (such as professional photographic services and specialized services such as interpreters, translators, and meteorologists)	626.8	690.5	10.2
8. Computer System Design and Related Services	Activities involved with providing expertise in the field of information technologies such as writing, modifying, testing or supporting software to meet the needs of a particular consumer; or planning and	116.1	179.8	54.9

	designing computer systems that integrate computer hardware, software and communication technologies			
9. Construction Services	Land Development and Site Preparation Services , Building Structure Services, Building Installation Services, Building Completion Services, Other Construction Services (such as landscape construction services, hiring of machinery with operators and highly specialized building activities such as installing petrol bowsers and erecting scaffolding)	645.6	693.2	7.4
10. Residential Care Services	Aged Care Services, Other Residential Care Services (such as operating children's homes, crisis accommodation, hostels for persons with mental health problems, hospices and respite care facilities).	170.5	214.2	25.6
Note: Data are at the ANZSIC06, Sub-Division Level *Source: ABS Labor Force Survey - Trend November 2011*				

Key Employment Generators (KEGs) Top Five KEGs in Australia in 2011			
Specific industries	**Industry Division (ANZIC)**	**Total Employment 2011 (000)**	**Growth in Employment 2011**
1. Auxiliary Finance and Insurance Services	Financial and Insurance Services	140.7	45.2
2. Public Administration	Public Administration and Safety	519.8	40.5
3. Hospitals	Health Care and Social Assistance	410.6	29.4
4. Medical and Other Health Care Services	Health Care and Social Assistance	409.5	27.2
5. Machinery and Equipment Wholesaling	Wholesale Trade	115.5	23.6
Source: *ABS Labor Force Survey –Trend November 2011*			

Future industries likely to expand or emerge by 2015-16	
Name of specific industry	**Expected increase in no. of employees (Percent change)**
1. Construction Services	163,600 (22.9%)
2. Professional, Scientific and Technical Services (Except Computer System Design and Related Services)	108,300 (15.8%)
3. Medical and Other Health Care Services	105,300 (26.7%)
4. Social Assistance Services	90,400 (26.7%)
5. Hospitals	71,500 (18.8%)

6. Food and Beverage Services	58,200 (8.9%)
Source: *DEEWR, 2011, Australian Jobs 2011* www.deewr.gov.au/Employment/ResearchStatistics/Pages/AustralianJobs.aspx	

New occupations likely to emerge due to expansion of existing industries or emergence of new industries	
Specific type of occupations likely to emerge	**Total Persons**
1. Caregivers and aides	112,600
2. Medical practitioners and nurses	85,500
3. Construction trades	68.900
4. Electrotechnology and telecommunications trades	68.700
5. Education professionals	63,800
6. Hospitality, retail and service managers	43,900
7. Sales assistants and salespersons	41,200
8. General-inquiry clerks, call centre, receptionists	38.700
9. Engineers	37,500
10. Hospitality workers	35.900
Source: DEEWR, 2011, *Australian Jobs 2011*, *www.deewr.gov.au/Employment/ResearchStatistics/Pages/AustralianJobs.aspx*	

Existing industries that are likely to experience lower levels of employment: 2011-2016			
Name of specific industry	**No. of Employees affected/to be affected**	**Name of specific industry**	**No of Employees affected/to be affected**
1. Transport Equipment Manufacturing	- 14,000	6. Polymer Product and Rubber Product Manufacturing	- 5,800
2. Accommodation	- 10,300	7. Fabricated Metal Product Manufacturing	- 5,200
3. Textile, Leather, Clothing and Footwear Manufacturing	- 7,000	8. Beverage and Tobacco Product Manufacturing	- 4,100
4. Wood Product Manufacturing	- 6,700	9. Publishing (except Internet and Music Publishing)	- 4,000
5. Furniture and Other Manufacturing	- 6,300	10. Motor Vehicle and Motor Vehicle Parts Retailing	- 4,000
Source: DEEWR, 2011, *Australian Jobs 2011*			

Higher Education Graduations		
Fields of Education	**2005**	**2009**
Education, Humanities & Arts, Social Sciences, Business & Law	111,067	119,435
Science, Engineering, Manufacturing & Construction	32,325	30,791
Agriculture, including Forestry, Fishery & Veterinary Medicine	Not published	2,968
Health & Welfare and Services	22,749	29,185
Source: *www.deewr.gov.au*		

Vocational Education and Training Graduations		
Fields of Education	**2005**	**2009**
Education, Humanities & Arts, Social Sciences, Business & Law	115,898	197,978
Science, Engineering, Manufacturing & Construction	66,033	90,843
Agriculture, including Forestry, Fishery & Veterinary Medicine	12,121	13,710
Health & Welfare and Services	10,281	16,397
Source: *www.deewr.gov.au*		

Response of Australian Government	
Perceived Problems	**Suggested Remedies**
Limited number of highly skilled workers	The Australian Government has taken steps to increase the number of places in universities and vocational education providers and also provide support for employers who wish to deliver nationally accredited training to their staff. The government also provides advice on skills in demand in the workforce to employers and the public.
Retraining of staff due to rapid change of technology	The Australian Government encourages individuals to undertake lifelong learning and upgrade their skills to adapt to changes in technology and broader economic developments. The government provides financial support for individuals who undertake training. Many employers also provide training to their staff and/or support them to undertake external training. As noted above, the Australian Government provides support for accredited training organized by employers.

Methods of Recruitment by Employers (Source ABS)	
Method of Recruitment	**Proportion of Employers using the method in their most recent recruitment round**
Newspaper advertisements	39%
Word of mouth or approached a job seeker	30%
Internet-based methods	22%
Recruitment agencies	14%
Approached by a job seeker	10%
Sign in window or a billboard	6%
Job Services Australia (Australia's public employment service providers)	5%

Total Employment in Key Industries				
Key Industries	**Total Employment**			
	2005	**2010**	**2050**	**% change**
Residential and community aged care (estimated change from 2007 to 2050)	**285,103**		**827,000***	**190.0**
Residential care (67%)- 2007 data	175,000			
Community care (33%)-2007 data	87,000			
Nurses (fulltime equivalent)- 2007 data	23,103			
Construction	**875,000**	**1,250,000**		**42.9**
Civil Construction	195,000	250,000		28.2
Commercial Construction	220,000	500,000		127.2
Residential Construction	460,000	500,000		8.7
Mining	**122,000**	**187,000**		**53.3**

Method of recruitment by Employers
Walk-in applicants
Announcement of vacant positions in the Internet
Avail of public employment intermediary service providers
Avail of private employment intermediary service providers
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Through “head-hunters”
Recruit from overseas
DEEWR, 2011, *Survey of Employers’ Recruitment Experiences. Combined Results for All Regions 12 months to June 2011.*

Appendix 1.B
Australia - Survey Results

**It is noteworthy that while the employment in the three Industries/Respondents covered by this Survey is rapidly growing, they do not necessarily represent the fastest growing industries in Australia, as their membership do not include the main employment-generating industries of the said economy.*

Total employment (in 000s) by type of workers and female participation							
Type of Workers	**Industry1 (HealthCare)**	***Industry2 (Construction)**	***Industry3 (Mining)**	All Assns	% Dist (Assns)	All Employed Australia*	% Assn to total
Total	285.1	1,037.8	222.6	1,545.5	100.0	11,399	. 13.6
Managerial & Supervisory Positions	23.1	103.4	21.0	147.5	9.5	1,459.5	10.1
Professionals	-	35.8	40.4	76.2	4.9	2,467.2	3.1
Associate Professionals/ Technical staff	207.0	545.5	54.4	806.9	52.2	1,676.9	48.1
Production services and support staff	55.0	353.1	106.8	514.9	33.3	5,795.7	8.9
Total Female Employed	268.0	119.3	34.5	421.8		5,186.7	8.1
% Share of female employees	94	12	16	27		45.5	

Industry 1 – Human health and social work activities [aged care], data based on the APEC survey
***Industry 2 – Construction**
***Industry 3 – Mining**
***Source of basic data:** *Official data released by Australian Bureau of Statistics (ABS) Labor Force Survey- Four quarter Average 2011.*

Respondents for selected key and emerging industries in Australia as of 2011			
ISIC Major Economic Activity	**No. of Association Members***	**Total Employment***	**Average Employment**
Total	34,714	1,535,303	44
Human health and social work activities	1,414	285,103	202
Construction	33,000	1,024,000	31
Mining	300	226,200	754

Major Products/Services and Principal Markets	
Industry and Main Product	**Principal Market**
1. Human health and social work activities (aged care)	Local
Products: Residential and community aged care and disability support and accommodation services	
2. Construction	Local
Products: Roads, ports, and other transport infrastructure; mining and energy infrastructure; office buildings, public buildings, commercial facilities; houses, townhouses and unit developments; renovations and refits	
3. Mining	Abroad
Products: Minerals, metals and coals	

Skills and competencies that applicants should possess to qualify for the available vacant positions in member establishments
Possess relevant experience for the position
Verbal and written communication skills
Possess skills, critical thinking and agility
Possess executive and managerial ability
Self-discipline/work ethics
Creative problem solving skills
Technological proficiency
Global awareness
Ability to collaborate and innovate

Courses of action taken by respondents to satisfy their manpower requirements
Establish a formal tie-up with a training institution to conduct special training for candidates for the position and then recruit from their successful trainees
Upskilling/Multi-skilling of existing personnel to meet the demands of technological innovations or advancement in work processes
Request from universities/colleges for applicants who possess the required qualification
Partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry
Commission an employment intermediary services provider for the specific requirements of firms/establishments
Multi-media advertisement for the hard-to-fill positions
Proactive recruitment

Top Five Specific Employment Generating Industries	
Specific Industries	**Total Employment in 2010**
Community aged care (2007 data)	87,000
Residential care (2007 data)	175,000
Nurses (Fulltime equivalent) (2007 data)	23,103
House Construction	330,000
Residential unit construction	170,000
Non-residential construction	250,000
Civil/Engineering construction	250,000

List of Positions in industry associations which are difficult to fill
1. Regional, rural and remote residential and community aged care nursing
2. Allied health
3. Construction Manager
4. Engineers (all types) in mines and construction
5. Site supervisor
6. Estimator
7. Trades workers in Mines/Plants maintenance and construction
8. Geoscientists
9. Metallurgists
10. Mining operators

Industry Association Members'Method of recruitment
Walk-in applicants
Announcement of vacant positions in the Internet
Avail of public employment intermediary service providers
Avail of private employment intermediary service providers
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Through "head-hunters"
Recruit from overseas

Key occupations that contributed to the success of business operations of association members	
Specific Industries	**Vital or Key Occupations**
Aged care	Business Managers
	Nurse Managers
	Nurses, allied workers
	Case Managers
	Personal care workers
Construction	Construction Managers
	Financial Managers
	Civil Engineers
	Quantity Surveyor
	Architects
	Site Supervisor
	Estimator
	Contract Manager
	OHS Officers

	Bookkeepers
	Administrative Support Staff
Mining	Company Executives
	General Managers
	Mine Managers
	Technical Managers
	Engineers (all types)
	Geoscientists
	Metallurgists
	Surveyors
	Statutory officials
	OHS Managers

List of hard-to-fill positions in their ranks	
Specific Industries	**Hard –to- fill Positions**
Aged Care	Nurses
	Nurse Manager
	Allied Health Professions
	Personal Care Staff
	Business Managers
Construction	Construction Manager
	Civil Engineers
	Site Supervisor
	Estimator
	Construction Trade Workers
Mining	Mine Managers
	Geoscientists
	Trades People
	Miners
	Project Managers

In-demand positions observed to be in short supply	
Specific Industries	**In-Demand Positions/Occupations**
Aged Care	Nurses
	Allied Health Professions
	Personal Care Staff
	Business Managers
Construction	Construction Manager
	Civil Engineers
	Site Supervisor
	Estimator
	Construction Trade Workers
Mining	Mine Managers
	Geoscientists
	Trades People
	Miners
	Project Managers

Perceived Problems and Suggested Remedies	
Perceived Problems	**Suggested Remedies**
Lack of experience of technical personnel	Training; regional/remote relocation incentives; migration; apprenticeship reform; help for people to change trades
Limited number of highly skilled workers	Training; migration; significant wage increases to make aged care competitive with health fields; ; more pathways from technical into professional roles; enhanced career advice; recruit from other industries; train more apprentices
Fast turnover of personnel for top positions	Professional pathways; wages commensurate with the responsibility and demands of the work; professional recognition; improve employment benefits
School curriculum not responsive to industry needs	More collaborative mechanisms between industry and school; reform vocational education and training sector to be demand responsive
Pay scale not competitive internationally	Raise pay rates
Weak linkage with educational institution	Specific aged care electives and traineeships; scholarships; greater access to work-integrated learning; industry adjunct staff
Many personnel in their present positions are either over-qualified or under-qualified (Mismatch)	Better career and workforce development tools for individuals and companies
Retraining of staff due to rapid change of technology	Necessary now

Availability of Labor Market Information and whether availed of	
Labor Market Information	**Information/Used**
Job vacancy statistics from administrative source	Information
Statistics on tertiary education graduates	Information
Statistics on graduates of technical/vocational education	Information
Professional registry (includes marine and teachers)	Information
Labor turnover statistics	Information
Unemployment rate from labor force survey	Information
Courses offered by local universities	Information
Skills training institution locally in operation	Information
Inflation rate	Information
Occupational wages, both local and overseas	Information
Wages structure of companies with Collective Bargaining Agreements or any other forms of employer-employee agreements	Information
Wage rates of entry level/common/highly skilled occupations	Information
Gross Domestic Product/Gross Domestic Investment	Information
Balance of Trade	Information

Number of graduates in 2005 and 2009 by broad fields of education*		
Fields of Education	**2005**	**2009**
Education, Humanities & Arts, Social Sciences, Business & Law	6,249	6,339

Science, Engineering, Manufacturing & Construction	2,468	2,068
Agriculture, including Forestry, Fishery & Veterinary Medicine	19	15
Health & Welfare and Services	1,024	1,566

*Data refer to one (1) responding institution.
The following tables provide the numbers of graduations in all levels of accredited qualifications for Australian domestic students in higher education and vocational education and training institutions in 2005 and 2009.

Offering of non-degree courses on a regular basis by the Survey Respondents
Community Services & Health
Business & Clerical
Tourism and Hospitality
Building and Construction
Retail, Sales and Personal Service
Bridging Courses (Maths B, Chemistry & Physics)
Mandarin Language Courses and Chinese Proficiency Tests
Professional Development in Law Courses
CISCO Networking Academy Courses
Continuing Professional Development in Law
Creative Industry Courses (Digital Storytelling Workshops; Photography & Media Courses)
Leadership & Management Development Programs
Nursing Professional Development Courses
Electricity Supply Training Courses
Railway Infrastructure Courses
Maths Professional Development Sessions for Teachers
Wound Management Education Workshops
ICD-10 Coder (Mortality & Morbidity) Training Course
Road Safety Courses
Business Process Modelling Courses
Radiographic Courses for X-ray Operators
Orthopedic Anatomy Course

On whether any association members conducted non-degree courses as a result of special request from private or government entities	
Name of Special Courses	**Number of Clients**
Advanced Health Assessment	1
Anatomical and surgical skills laboratory Workshops	20
Bar Practice Course	1
Biological Research Facility Workshops	1
Business Case Analysis Workshops	1
Business Process Management	13
Communication and Teamwork Training	1
Complex Project Management	3
Emerging Leaders Program	1
Environmental Management System Training	1

Executive Leadership Development Program (ELDP)	1
Facilitating Career Development	1
Image Processing	1
Leadership Development Program	2
Management Development Program	2
Mediation Skills Training	3
Project and Finance Workshop	1
Project Management	1
Public Sector Management Program (PSMP)	1
Select Issues in Health Law	1
Seminar Series: The Difference is the Data	1
Senior Leader Development	1

Access to Labor Market Information and whether used for curriculum planning	
Labor Market Information	**Used for Curriculum Planning ?**
Job vacancy statistics from administrative source	✓
Statistics on tertiary education graduates	✓
Statistics on graduates of technical/vocational education	✓
Professional registry	✓
Labor turnover statistics	✓
Statistics on overseas employment	✓
Courses offered by local universities	✓
Skills training institution in operation	✓
Salary and wage statistics	✓
Balance of Trade	✓
Unemployment statistics	✓
Local demand for technical/skilled labor	✓
Gross Domestic Product/Gross Domestic Investment	✓

Critical factors that educational institutions consider when they decide courses to offer
Basic requirements of the Department/Ministry of Education
Availability of teachers to teach the course/s
Demand of clients who have tie up with association members
Government's intervention
Specific needs of local industries
Global developments in the field of research, education, and training
Provide strong career opportunities to keep up with fast changing technology
Create/Establish courses that offer apprenticeship for important industries to enhance the qualification of new graduates of the institutions
Unmet demand

Membership by category of membership (APEC survey)	
Category of Membership	**Number of Association Members***
Total	2074
Private recruitment agency	2000
Online job websites	0

Public Employment Service Office	74 (sites)

Type of Market and percent share of available supply to total demand (APEC survey)	
Type of Market	**Percent Share of available supply to demand***
Local	10 – 70%
Overseas only	
Both local and overseas markets	

Industry Client and percent share to total available/registered manpower for placement by the association (APEC survey)	
Major Industry Division	**% Share to Total Registered Manpower***
Agriculture, forestry and fishing	5
Mining and quarrying	5
Manufacturing	10
Electricity, gas, steam and air conditioning supply	5
Water supply, sewerage, waste management & remediation activities	5
Construction	5
Wholesale and retail trade; repair of motor vehicles and motorcycles	10
Transportation and storage	10
Accommodation and food service activities	10
Information and communication	5
Financial and insurance activities	1
Real estate activities	1
Professional, scientific and technical activities	1
Administrative and support service activities	5
Public administration and defence; compulsory social security	1
Education	5
Human health and social work activities	5
Arts, entertainment and recreation	5
Other service activities	5
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1
*Based on one(1) respondent.	

Recruitment method/ procedure that association members adopt	
Recruitment method/ procedure	**Rank**
Partnering with local educational institutions	2
Advertisements for vacancies posted in the web or internet	1
Attend job fairs conducted by NGOs and/or local and national government	2
Multi-media Ads (TV, print media and radio)	2
Tie-up with foreign recruiters/talent search agencies	2

Tie-up with local employers	2
Internal candidates databases	2

Appendix 2
Brunei Darussalam
Survey Results

Employment in Major Industry Division of Economic Activity (*Based from Survey*)	
Major Industry Division	**Total Employment**
Mining and quarrying	3,671
Financial and insurance activities	1,080
Real estate activities	11

Main Products/Services and Principal Markets	
Industry and Main Products	**Principal Market**
1. Mining and quarrying	
Products: Exploration and Production	Local
Oil and Gas	Local and abroad
Methanol	Abroad
2. Financial and insurance activities	
Products: Financial Products	Local
Banking Products and Services	Local
3. Real Estate Activities	
Products: Land Houses, Shop Houses	Local

Total Employment of Employers by type of workers and Female participation				
Type of Workers	**Mining and quarrying***	**Financial and insurance activities**	**Real estate activities**	**All Respondents**
Total	3,671	1,080	11	4,762
Managerial & Supervisory positions	20	447	2	-
Professionals	40	30	5	-
Associate Professionals/Technical staff	15	19		-
Production services and support staff	18	584	4	-
Total Female Employed	-	699	10	-
Percent share of female employees	-	65%	98%	-
**One respondent did not provide breakdown by type of workers, hence, details do not add up to total*				

Key industries that provided the highest employment growth in 2005 and 2010 based on the Survey Responses				
Key industries	Specific economic activities	No. of employees		% Change
		2005	2010	2010/2005
Extraction of Oil and gas	Drilling, Exploration and development, Operations	1760	2379	35%
Business support	IT, Risk management information system, call center	19	46	142%
Banking	Internal Audit, Branch support	113	137	21%
Real Estate	Rental and Sales	5	11	120%

Method of recruitment
Walk-in applicants
Announcement of vacant positions in the Internet
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Through “head-hunters”
Recruit from overseas

Skills and competencies requirements
Possess relevant experience for the position
Verbal and written communication skills
Possess skills, critical thinking and agility
Possess executive and managerial ability
Self-discipline/work ethics
Creative problem solving skills
Technological proficiency
Global awareness
Ability to collaborate and innovate
Others, hardworking and dedication

Courses of action taken by respondents to satisfy their manpower requirements
Establish a formal tie-up with a training institution to conduct special training for candidates for the position and then recruit from their successful trainees
Upskilling/Multi-skilling of existing personnel to meet the demands of technological innovations or advancement in work processes
Request from universities/colleges for applicants who possess the required qualifications
Partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry
Commission an employment intermediary services provider for the specific requirements of firms/establishments
Multi-media advertisement for the hard-to-fill positions

Employment-Generating Industries (2010)	
Specific industries	Total Employment
Oil and gas drilling	100
Transport (FPSO/OSS) (Oil and Gas)	50

Banking products	631
Hire purchase products (Bank)	50
Retail/Consumer banking – Branch Services Centre	127
Business support -IT	40
Business Services Centre	65
Retail/Consumer banking – Card Centre	48
Commercial banking - Corporate banking	14

Vacancies	
Specific positions difficult to fill up	**Specific Industry**
Drilling Engineers	Oil and Gas Drilling
Petrophysicist	Oil and Gas Drilling
Petroleum Engineer	Oil and Gas Drilling
Strategic Planner	Oil and Gas Drilling
IT Specialist-Systems Analysts	Business support
Commercial Lending Officers	Commercial Banking
IT Programmers	Business support
IT Systems Administrator	Business support

Method of recruitment of industry association members' personnel
Walk-in applicants
Announcement of vacant positions in the Internet
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Referral recruitment

Future industries likely to emerge or expand from 2011 to 2020	
Name of specific industry	**Expected increase in no. of employees (% change)**
Down Stream Activities	30%
Internet Banking	-
Property Management	100%
Agriculture Industry	50%
Hard Industry(methanol, aluminum)	150%
Service Industries	50%

New occupations likely to emerge due to expansion of existing industries or emergence of new industries	
Specific type of occupations likely to emerge	**Specific Industry**
Engineering (Chemical)	Downstream
Petroleum Engineering	Deep Water Drilling
Property Managers	Property Management
Property Life Cycle Evaluators	Property Management
Project Managers	Property Management

Property Maintenance	Property Management

Vital or key occupations that contributed to the success of business operations by industry of respondent-establishments	
Industry	**Positions that contributed to the success**
1. Oil and Gas	a. Strategic Planner
	b. Petroleum Engineer
	c. Drilling Engineer
2. Financial Services/Banking	a. Head of Business & Support Unit
	b. Administrative workers /assistants
	c. Sales people
	d. Loan Officers
	e. IT Specialists/Staff
	f. Financial Planners
	g. Branch Operations & Sales staff
3. Real Estate	a. General Manager
	b. Marketing Specialist
	c. IT Specialist

Positions that have presented special recruitment problems to the industry	
Industry	**Hard-to-fill Occupations**
1. Oil and Gas	a. Strategic Planner
	b. Petroleum Engineer
	c. Drilling Engineer
	d. Human Resource Manager/Staff
	e. Drilling
	f. Subsurface
	g. Contract and Procurement
	h. Aviation
2. Financial Services/Banking	a. System Analyst (IT)
	b. Corporate Officer
	c. System Administrator
	d. IT Officers/IT Software Technicians
	e. Risk Manager
	f. Treasury Manager
4. Real Estate	a. IT Specialist
	b. Marketing Specialist

List of In-demand Positions observed to be in short supply in the industry	
Industry	In-demand Occupations
1. Oil and Gas	a. Petroleum engineer
	b. Drilling Engineers
	c. HR Strategic Management
	d. Drilling
	e. Subsurface
	f. Contract and Procurement
	g. Aviation
2. Financial Services/ Banking	a. IT Programmers
	b. IT Analyst

	c. Corporate Officers (Risk managements)
	d. Legal officers
4. Real Estate	a. IT Systems Manager

Perceived Problems by the Business Community/Industry	
Perceived problems	**Suggested remedies**
Lack of experience of technical personnel	Pre-employment training
	Allow more foreign specialists for transfer of knowledge
	Education specific to IT management
Limited number of highly skilled workers	Hire and train more
	Grass roots (not legible) identification
	Recruitment of certified workers
Fast turnover of personnel for top positions	Immigration benefits
	Increase salary range
School curriculum not responsive to industry needs	Synchronize
	Evaluate industry needs & align with education requirement
Brain drain (qualified workers going abroad)	Solidify retention policy
	Increasing benefits locally
	Increase salary range
Pay scale not competitive internationally	Hike pay for doctors
	Increase non-pecuniary benefits
	Align pay scale to Singapore as example
Weak linkage with educational institution.	Understand industry requirements
	Improve via dialogue
	Certification requirements for industry
Religious and cultural consideration	More flexibility & open-mindedness
	Irrelevant
Many personnel in their present positions are either over-qualified or under-qualified (mismatch)	Clearer career path, meritocratic ideals in organization
	High paying jobs are minimal & highly competitive. Pay scale consideration, better recruitment efforts. Better description of the job & roles
Inadequate support of government in training unemployable labor force	Give gov't commitment in employing those trained
	Incentives for further training for private sector
Retraining of staff due to rapid change of technology	Improvement of infrastructure & better direction-sharing
	Gov't incentives/ subsidies for retraining of staff
	Incentives for further training for private sector

Recommended courses of action
Upgrading of curriculum of universities/colleges to be responsive to needs of industry
Companies to provide entry level skills training/ apprenticeship program
Companies to provide upskilling/multiskilling programs to their employees to meet the skills requirements of technological innovations adopted by the companies
Companies to provide humane compensation packages to redundant workers who opt to retire

Improving research and development initiatives
Offer scholarships on courses /skills required by hard-to-fill occupations to ensure local supply
Encourage industry-academe linkages and collaboration
Increase public spending for and strengthen technical/vocational education
Tax incentives to emerging industries

Field of Education and Number of Graduates in 2005 and 2010		
Field of Education	**2005**	**2010**
Social Sciences, business and law	90	238

Non-degree courses conducted as a result of special requests from private or government entities		
Name of Special Course	**Participants Trained**	**Requesting Firm/Office**
Internet & Computing Core Certification (IC^3)	200	Government
Financial Planning	50	Bank

Labor Market Signals Access to Labor Market Information and whether used for curriculum planning	
Labor market statistics/information	**Used for Curriculum Planning?**
Job vacancy statistics from administrative source	✓
Statistics on tertiary education graduates	✓
Statistics on graduates of technical/vocational education	✓
Professional registry	
Labor turnover statistics	
Statistics on overseas employment	
Courses offered by local universities	✓
Skills training institution in operation	✓
Salary and wage statistics	✓
Balance of trade	
Unemployment statistics	✓
Local demand for technical/skilled labor	✓
Foreign demand for specific occupations	
Gross Domestic Product/Investment	

Critical factors considered in offering courses
Basic requirements of the Department/Ministry of Education
Government's intervention
Provide strong career opportunities to keep up with fast changing technology
Create/Establish courses that offer apprenticeship for important industries to enhance the qualification of new graduates of the institutions

Incentives/subsidies offered by government to encourage the offering of selected courses	
Selected Courses	**Nature/Kind of subsidy/incentives**
Business	Scholarship
IT	Scholarship
Master's Degree	Scholarship

Appendix 3
New Zealand
Source: Government Agency

Key industries that experienced the strongest growth across New Zealand: 2006-2011			
Name of key industries	No. of employees		Percent Increase
	2005	2010	%
Mining	4,133	5,643	36.50%
Electricity, Gas, Water and Waste Services	9,118	12,068	32.40%
Public Administration and Safety	80,683	98,413	22.00%
Health Care and Social Assistance	170,600	195,985	14.90%
Financial and Insurance Services	45,830	51,283	11.90%
Arts and Recreation Services	30,755	34,313	11.60%
Education and Training	154,408	170,428	10.40%
Professional, Scientific, and Technical Services	130,333	138,100	6.00%
Accommodation and Food Services	112,218	117,233	4.50%
Other Services	61,388	63,615	3.60%
Construction	106,825	108,385	1.50%
Agriculture, Forestry and Fishing	82,823	83,958	1.40%
Retail Trade	181,170	182,275	0.60%
Transport, Postal and Warehousing	78,708	77,605	-1.40%
Wholesale Trade	99,283	97,725	-1.60%
Information Media and Telecommunications	36,760	35,545	-3.30%
Rental, Hiring and Real Estate Services	26,730	25,038	-6.30%
Administrative and Support Services	88,925	81,180	-8.70%
Not elsewhere classified	2,493	2,188	-12.20%
Manufacturing	234,370	202,938	-13.40%
All Industries	1,737,555	1,783,903	2.70%
Source: *Statistics New Zealand, Linked Employer-Employee Data, total filled jobs (employees only) series*			

Method of recruitment for manpower requirements
Walk-in applicants
Announcement of vacant positions in the Internet
Avail of public employment intermediary service providers
Avail of private employment intermediary service providers
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Through “head-hunters”

Recruit from overseas
Note: Employers in New Zealand will use all available methods to recruit staff

Top five (5) key employment generators (KEGs) in 2010 as listed by respondents and their estimated total employment	
Specific industries of top 5 KEGs	**Total Employment**
Health Care and Social Assistance	195,985
Education and Training	170,428
Accommodation and Food Services	117,233
Mining	5,643
Other Services	195,985
Source: *Statistics New Zealand, Linked Employer-Employee Dataset (Sept 2009-2010), total filled jobs (employees only) series. Note that most industries experienced a fall in employment over this period*	

Where KEGs association members recruit their personnel requirements
1. Walk-in applicants
2. Announcement of vacant positions in the Internet
3. Avail of public employment intermediary service providers
4. Avail of private employment intermediary service providers
5. Newspaper Ads
6. Placement services/units in universities, trade schools and other training institutions
7. Through “head-hunters”
8. Recruit from overseas
Note: Employers in New Zealand will use all available methods to recruit staff

Industry Client and percent share to total available/registered manpower for placement by the association	
Major Industry Division	**Percent share***
A. Agriculture, forestry and fishing	4.7
B. Mining and quarrying	0.3
C. Manufacturing	11.4
D. Electricity, gas, steam and air conditioning supply	0.3
E. Water supply; sewerage, waste management and remediation activities	0.4
F. Construction	6.1
G. Wholesale and retail trade; repair of motor vehicles and motorcycles	15.7
H. Transportation and storage	4.4
I. Accommodation and food service activities	6.6
J. Information and communication	2
K. Financial and insurance activities	2.9
L. Real estate activities	1.4
M. Professional, scientific and technical activities	7.7
N. Administrative and support service activities	4.6

O. Public administration and defence; compulsory social security	5.5
P. Education	9.6
Q. Human health and social work activities	11
R. Arts, entertainment and recreation	1.9
S. Other service activities	3.6
T. Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	N/A
U. Activities of extraterritorial organizations and bodies	N/A
V. Not elsewhere classified	0.1

Note*: all industries use employment intermediary services, such as job vacancy websites. The shares shown in the table below are shares of employment*
Source: Statistics New Zealand, Linked Employer-Employee Data, total filled jobs (employees only) series

Appendix 4
The Philippines
Survey Results

Key and emerging industries in the Philippines as of 2011			
ISIC/Major Economic Activity	**No. of Association Members***	**Total Employment***	**Average Employment**
Total	370	585,250	1,582
A. Agriculture, forestry and fishing	15	70,000	4,667
A. Manufacturing	45	25,750	572
J. Information and Communication	140	350,000	2,500
K. Financial and insurance activities	20	50,000	2,500
L. Real estate activities	15	5,000	333
M. Professional, scientific and technical activities	100	75,000	750
N. Administrative and support service activities	17	2,000	118
P. Education	8	500	63
Q. Human health and social work activities	5	3,000	600
R. Arts, entertainment and recreation	5	4,000	800
Based on two (2) respondents only out of three (3).			

Major Products/Services and Principal Markets	
Industry and Main Product	**Principal Market**
Agriculture, forestry and fishing	
Forestry	Local
Manufacturing	
Cement	Local
Steel	Local
Motor vehicles	Local
Air conditioners	Local
Lumber and other wood products	Local
Information and communication	
Customer relations management	Abroad (USA)
Financial and insurance activities	
Financial & accounting outsourcing, financial services, insurance services, banking services, credit card services, financial analysis, audit services	Abroad (USA)
Real estate activities	
Office space rentals	Local
Professional, scientific and technical activities	
IT outsourcing, applications maintenance and development, software product development, engineering services, knowledge process outsourcing, consulting, hardware & software services, voice, systems	Abroad (USA)

integration, telecommunications	
Administrative & support services activities	
Executive search and recruitment, HR services	Local
Education	
Training institution	Local
Schools	Local
Human health and social work activities	
Health care BPO, health care information management, medical transcription	Abroad (USA)
Arts, entertainment and recreation	
Animation, game development, graphic design	Abroad (USA)

Total employment (in 000s) by type of workers and female participation

Type of workers	Forestry	Manufacturing	All Assns*	% Distribu-tion**	Total Employ-ment (Phils)	% Assn to Total
Total	70,000	25,750	585,250			
Managerial and Supervisory positions	140	100	240			
Professionals	75	90	165			
Associate Professionals/ Technical Staff	550	210	760			
Production services and support staff	69,235	25,350	94,585			
Percent Share of Female to Total Employed	15%	10%				

* Two respondents did not provide breakdown by type of workers, hence, details do not add up.
** Cannot be computed.

Subcontracting/Outsourcing for Year 2010*

Major Industry Group	Major Products/Services Offered	Location
Information and communication	Customer relations management	Local
Financial and insurance activities	Financial & accounting outsourcing, financial services, insurance services, banking services, credit card services, financial analysis, audit services	Local
Professional, scientific and technical activities	IT outsourcing, applications maintenance and development, software product development, engineering services, knowledge process outsourcing, consulting, hardware & software services, voice, systems integration, telecommunications	Local
Administrative & support	Executive search and recruitment, HR	Local

services activities	services	
Education	Training institution	Local
Human health and social work activities	Health care BPO, health care information management, medical transcription	Local
Arts, entertainment and recreation	Animation, game development, graphic design	Local
*Based on one (1) respondent only as the other two did not provide information		

Key industries that provided the highest employment growth 2005-2010*

Key Industry	Specific Economic Activities	No. of employees (000s)		% increase
		2005	2010	
Information and communication	Customer relations management, fiber optic connectivity, VOIP, Internet connectivity	112.0	344.0	307%
Financial and insurance activities	Banking, financial services, insurance	26.0	103.8	400%
Professional, scientific and technical activities	IT outsourcing, applications development and management, testing, software product development, others engineering services	14.8	53.6	362%
Real estate	Office and commercial development and leasing, brokerage	Not stated		
Human health and social work activities	Health care BPO and health information management	5.5	14.0	255%
Arts, entertainment and recreation	Animation, game development	4.5	9.87	219%
*Based on one (1) respondent				

Method of recruitment
Walk-in applicants
Announcement of vacant positions in the Internet
Avail of public employment intermediary service providers
Avail of private employment intermediary service providers
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Through “head-hunters”
Recruit from overseas
Direct or through info provided by other member-companies
Employee referral programs
TV program, radio, billboards

Courses of action taken by respondents to satisfy their manpower requirements
Establish a formal tie-up with a training institution to conduct special training for candidates for the position and then recruit from their successful trainees
Upskilling/Multi-skilling of existing personnel to meet the demands of technological

innovations or advancement in work processes
Request from universities/colleges for applicants who possess the required qualification
Partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry
Commission an employment intermediary services provider for the specific requirements of firms/establishments
Multi-media advertisement for the hard-to-fill positions
Employee referral programs

Specific industries of the Top 5 Key Employment Generators (KEGs)	
Specific Industries of Top 5 KEGs	**Total Employment in 2010**
Contact Centers	344,000
KPO/Back-office	103,750
IT Outsourcing	44,962
Medical transcription, health care BPO	14,000
Engineering services	8,640

Method of recruitment
Walk-in applicants
Announcement of vacant positions in the Internet
Avail of private employment intermediary service providers
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Through “head-hunters”
Recruit from overseas
Direct or through info provided by other member-companies
Employee referral programs
Billboards

Future industries likely to expand or emerge in 2011 to 2020	
Specific Industries	**Expected Increase in Employment (%)**
Power, fuel and electricity	200%
Water for human use	200%
Information and communication	300%
Transportation	150%
Housing and construction	150%
Tourism	300%
Technical education	200%
Software development	Not stated

Occupations likely to be required by expanding or emerging industries	
Specific Industries	**Occupations likely to be Required**
Power and electricity	Professionals
	Technicians
	Skilled
Water tapping and services	Professionals
	Technicians
	Skilled
Information and communication	Professionals

	Technicians
	Skilled
	Mobile apps and software developers
Transportation	Professionals
	Managers
	Skilled
Housing and construction	Professionals
	Skilled
	Workers
Tourism	Managers
	Service workers
Technical education	Teachers
	Technicians

Vital or key occupations that contributed to the success of business operations of association members	
Specific Industries	**Vital or Key Occupations**
Forestry	Resident Managers
	Division Managers
	Foresters
	Logging Engineers
	Equipment Operators
	Rangers
	Guards
	Computer Technicians
	Sales Clerks
Wood Manufacturing	Engineers
	Accountants (CPA)
	Medical Doctors
	Nurses
	Mill Operators
	Quality Control Technicians
	Computer Technicians
	Sales Clerks
Information Technology – BPO	Operations Managers
	Shift Managers
	Software Developers
	Programmers
	Animators
	Game Developers
	Customer Service Representatives
	Technical Support Representatives
	Medical Transcriptionists
	Legal Transcriptionist
	Telemarketers

Hard-to-fill positions by industry	
Specific Industries	**Hard –to- fill Positions**
Forestry	Experienced Foresters
	Rangers

	Equipment Operators
Wood Manufacturing	Experienced Managers
	Machine Operators
	Quality Control Technicians
Information Technology -BPO	Operations Director
	Six Sigma Master Black Belt Certified (Quality)
	Site Directors
	Country Managers

In-demand positions observed to be in short supply	
Specific Industries	**In-Demand Positions/Occupations**
Forestry	Skilled Equipment Operators
	Field Managers
	Plant Managers
Wood Manufacturing	Skilled Machine Operators
	Field Managers
	Plant Managers
Information Technology -BPO	Operations managers
	Team Leaders

Perceived problems encountered by the business community/industry and suggested remedies	
Perceived Problems	**Suggested Remedies**
Lack of experience of technical personnel	Further or re-training
Limited number of highly skilled workers	Competitive salaries & incentives
School curriculum not responsive to industry needs	Align school curriculum to industry needs
Brain drain (qualified workers going abroad)	Promote: Work abroad. Live here
Weak linkage with educational institution	Educational institutes should adopt industry recommendations

Availability of Labor Market Information and whether availed of:	
Labor Market Information	**Information/Used**
Statistics on tertiary education graduates	Used
Statistics on graduates of technical/vocational education	Used
Unemployment rate from labor force survey	Used
Courses offered by local universities	Information
Inflation rate	Used
Occupational wages both local and overseas	Information
Wages structure of companies with Collective Bargaining Agreements or any other forms of employer-employee agreements	Used
Gross Domestic Product/Gross Domestic Investment	Used
Balance of Trade	Information

Number of graduates in 2005 and 2010 by broad fields of education*		
Fields of Education	**2005**	**2010**
Education, Humanities & Arts, Social Sciences, Business & Law	3,693	3,195
Science, Engineering, Manufacturing & Construction	866	1,270

Agriculture, including Forestry, Fishery & Veterinary Medicine	399	377
Health & Welfare and Services	173	192
*Data refer only to three (3) responding institutions.		

Access to Labor Market Information and whether used for curriculum planning	
Labor Market Information	**Used for Curriculum Planning**
Job vacancy statistics from administrative source	✓
Statistics on tertiary education graduates	✓
Statistics on graduates of technical/vocational education	✓
Professional registry	✓
Labor turnover statistics	✓
Statistics on overseas employment	✓
Courses offered by local universities	✓
Skills training institution in operation	✓
Salary and wage statistics	✓
Balance of Trade	✓
Unemployment statistics	✓
Local demand for technical/skilled labor	✓
Foreign demand for specific occupations	✓
Gross Domestic Product/Gross Domestic Investment	✓

Critical factors that educational institutions consider when they decide on courses to offer
Basic requirements of the Department/Ministry of Education
Availability of teachers to teach the course/s
Demand of clients who have tie up with association members
Government's intervention
Specific needs of local industries
Global developments in the field of research, education, and training
Provide strong career opportunities to keep up with fast changing technology
Create/Establish courses that offer apprenticeship for important industries to enhance the qualification of new graduates of the institutions
Historical enrolment data

Formal agreement with local industries/employers association for the placement of their graduates	
Industry/Employer Group	**Courses/Occupations**
Fast-moving Consumer Goods	Information Technology, Business, Engineering, Sales, Management
Telephone Companies	Business, Engineering, Information Technology
Banking and Finance	Business, Management of Financial Institutions
Information Technology Development and Progress	Information Technology, Computer Engineering, Technology
Business-Academe Partnership	Not stated
Academe-Industry linkage	Engineering, Hotel, Restaurant, Tourism

Nature/kind of incentive/subsidy and the relevant courses	
Nature /Kind of Subsidy/Incentive	**Courses**
Center for Excellence	Biology, Chemistry, Mathematics, Physics, Information Technology, Teacher Education
Center of Development	Chemical, Civil, Computer, Electronics and Communication, Mechanical, Industrial Engineering
Grant, but grant has already transpired	Masters in Values Education
Study grants/scholarships	Faculty development
Scholarships	Availed by students

Providers of Employment Intermediary Services Membership by category of membership	
Category of Membership	**Number of Association Members***
Total	398
Private recruitment agency	18
Online job websites	0
Public Employment Service Office	380
*Based only on six (6) out of eight (8) respondents	

Type of Market and percent share of available supply to total demand	
Type of Market	**Percent Share of available supply to demand***
Local	13% - 97%
Overseas only	10%
Both local and overseas markets	35%
*Based on five (5) respondents. The three (3) other respondents, which cater to both local and overseas markets, could not provide estimates of their share of available supply to total demand	

Industry Client and percent share to total available/registered manpower for placement by the association	
Major Industry Division	**% Share to Total Registered Manpower***
Agriculture, forestry and fishing	0.4 - 30.0%
Mining and quarrying	0.5 - 10.0%
Manufacturing	2.0 - 70.0%
Electricity, gas, steam and air conditioning supply	0.3 - 6.9%
Construction	10.0 - 42.0%
Wholesale and retail trade; repair of motor vehicles and motorcycles	2.0 - 10.0%
Transportation and storage	4.0 - 13.8%
Accommodation and food service activities	3.0 - 20.7%
Information and communication	1.2 - 3.4%
Financial and insurance activities	1.2 - 3.4%
Administrative and support service activities	4.0 - 6.9%
Public administration and defence; compulsory social security	3.4%
Education	3.4 - 10.0%

Human health and social work activities	9.0%
Arts, entertainment and recreation	4.0%
Other service activities	5.0 - 26.0%
*Based on four(4) respondents.	

Recruitment method/ procedure that association members adopt	
Recruitment method/ procedure	**Rank**
Partnering with local educational institutions	3
Advertisements for vacancies posted in the web or internet	2
Attend job fairs conducted by NGOs, local and national government	3
Multi-media Ads (TV, print media and radio)	2
Tie-up with foreign recruiters/talent search agencies	4
Tie-up with local employers	1
Facilitate jobs fair	6
Local recruitment/direct recruitment in provinces	5
Local newspapers	6
Overseas recruitment activities	6

Recruitment of qualified and talented applicants	
Recruitment method/ procedure	**Rank**
Partnering with local educational institutions	
Advertisements for vacancies posted in the web or internet	3
Attend job fairs conducted by NGOs and/or local and national government	1
Multi-media Ads (TV, print media and radio)	2
Tie-up with foreign recruiters/talent search agencies	4
Tie-up with local employers	4
Facilitate jobs fair	4
Local recruitment/direct recruitment in provinces	3
Overseas recruitment activities	4
Local newspapers	

Type of manpower recruited locally who were placed easily in vacant positions in establishments
Administrative Staff

Type of manpower recruited locally who were difficult to place in vacant positions in establishments
1. Accountant/Accounting Jobs
2. Agriculturists
3. Feed processors and Fishery Technologists (Agribusiness)
4. Animators
5. Graphic Artist
6. HR Outsourcing Specialist
7. Cyberservices
8. Chemist
9. Geologist (Soil sampling)
10. Soil Engineer/Analyst

11. Electrical Engineer
12. Mining Engineer
13. Metallurgical Engineer
14. Service Engineer (Background in ATM Machines)
15. License Engineer (Experience in Property Management/Construction)
16. Micro Biologist
17. Civil/Design/Structural (Construction)
18. Computer Programmer
19. Database Architects
20. Facility Maintenance Supervisor
21. Fleet Supervisor (Knowledge in Vehicle Financing)
22. Highly Technical Jobs
23. Info System Analyst (IT)
24. Internal Auditor
25. Librarian
26. Management Planning Supervisor
27. Managers (Executive Jobs)
28. Call Center Agent (Graveyard Shift)
29. Multilingual/Bilingual Representative
30. Naval Draftsman
31. Nutritionist (Cooks for Private)
32. Cooks (International Cooking)
33. Physicians
34. Physical Therapists
35. Pharmacists
36. Radiologist
37. Scaffolder Supervisor
38. Skilled Workers
39. Sonographer (operates ultrasonic imaging devices)
40. Veterinarian

Average volume of applicants received in a month : Ranges from a low 80 to as high as 4,600.	
Average volume per month	**Number of respondents**
Less than 1,000	3
1,000 – 2,999	2
3,000 and over	3
Not stated	0

Average volume of applicants received in a month Percentage placed by type of market	
Percent Placed/Type of Market	**Number of Respondents**
in local industries	
Less than 10 %	1
10 - 24.9%	1
25 - 49.9%	5

50 - 74.9%	0
75 - 100%	1
Not stated	0
Foreign countries	
Less than 10 %	2
10 - 24.9%	2
25 - 49.9%	1
50 - 74.9%	0
75 - 100%	0
Not stated	3

Specific positions that have been stagnant in the manpower registry for at least two years
1. Agriculturists
2. Baby Sitters
3. Bagger
4. Call Center Agents
5. Cashier
6. Civil Engineer (trained to design & construction of public works)
7. Cooks (cook for families)
8. Domestic Helper/HouseholdHelpers (Local and abroad)
9. Drivers (family drivers)
10. Electricians
11. Encoder
12. Food Handler
13. Gardeners
14. Human Resource Management
15. Information Technology Staff
16. Laundry Attendant
17. Nurses (Health Professionals)
18. Plumber (works with pipes)
19. Production Operators
20. Promodizers
21. Receptionists
22. Riggers (works in oil rig)
23. Sales/Marketing Persons
24. Sewers
25. Packers
26. Teachers
27. Waiters/Waitresses
28. Warehouseman
29. Welders

Reason for Difficulty in Successful Job Placement
No relevant experience for the job or no experience at all
Training and experience not appropriate for the job

Overqualified/under-qualified for the available job
Inability to pass entrance qualifying examination
Stiff competition for available local jobs
Religious affiliation
Lack of proficiency in verbal communication in English/national language
Lack of workplace skills as collaboration, critical thinking and agility
Applicants cannot afford to pay recruitment fees and airfare in case of overseas employment
Stiff competition to illegal agencies
Height requirements

Incidence of "pirating" or "poaching" of talent in recruitment	
Position	**Location of Position**
Physicians	Philippines Hospitals
Nurses	USA, UK, Canada, Middle East, London, etc.
IT Specialist	Singapore, Middle East
Engineers	Middle East
Teachers	Oceana, Africa, USA
Accountants	Local
HR Manager	Local
Call center agents	Not stated
3D modelers	Not stated
3D Artists/Animators	Not stated
Flash Animators	Not stated

Future recruitment/talent search challenges experienced by respondents in the last five years in recruitment and/or talent search to meet industry demands	
Recruitment/Talent Search Challenges	**Number**
Difficulty in filling demand for talents required by industry/employers	6
There are many jobs available but most of the manpower available are not qualified	7
College graduates seeking employment have no experience to fill vacant positions	6
Very few skilled workers to fill requirements of industry	4
Retraining of existing personnel to avoid layoffs due to rapid change of technology	2
There is brain drain among executives and specialist/experts due to lower compensation	5
Curriculum offerings of local educational institutions not responsive to industry needs	7
Discrimination on age	1
High salary expected by skilled workers	1

Strategies that should be pursued to overcome recruitment challenges within the next 10 years taking into consideration the global changes in technology and economy	
Strategies to Resolve Recruitment Challenges	**Ave Rank***
Provide extra training to overcome difficulties in filling vacant positions	3.4
Administer IQ entrance examination to assess potential of applicants	5.0
Classify the applicants according to their employability	3.3

Strong linkage with non-degree training institutions to train trainable applicants	2.3
Partnership with employers for possible apprenticeship program	3.6
Provide interpersonal and communication skills training before placement	4.7
Continue providing intermediary services to industry requirements	5.7
Intensification of jobs to the provinces	
*Based on ranks of 7 respondents.	

Appendix 5
Thailand
Survey Results

Employment in Major Industry Division of Economic Activity (*Based from Survey*)		
Major Industry Division	**Total**	
	No. of Establishment	**Employment**
C. Manufacturing	44	250*
* Employment refers to Saeng Thai Rubber Co., Ltd. only as Association-respondent (AIC) did not provide number of employed.		

Main Products/Services and Principal Markets	
Industry and Main Products	**Principal Market**
1. Manufacturing	
Products: Automobiles	Local and abroad (Asia, Oceania, Europe, Africa, Middle East)
Rubber products	Local and abroad (Japan)

Total Employment of Employers by type of workers and Female participation rate	
Type of Workers	**Manufacturing***
Total	250
Managerial & Supervisory positions	7
Professionals	12
Associate Professionals/Technical staff	15
Production services and support staff	216
Total Female Employed	50
Percent share of female employees	20%
* Data refers to Saeng Thai Rubber Co., Ltd. only as Association-respondent (AIC) did not provide number of employed.	

Key industries that provided the highest employment growth in 2005 and 2010 (*Growth in employment per Key Industries identified in the survey*)				
Key industries	**Specific economic activities**	**No. of employees***		**% Change**
		2005	**2010**	**2010/2005**
Manufacturing	Automobiles			
Rubber industry	Research and Development	*1*	*4*	*400%*
* Data refers to Saeng Thai Rubber Co., Ltd. Only as Association-respondent (AIC) did not answer this item.				

Method of recruitment
Walk-in applicants
Announcement of vacant positions in the Internet
Avail of public employment intermediary service providers
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Through “head-hunters”

Skills and competencies requirements
Possess relevant experience for the position
Verbal and written communication skills
Possess skills, critical thinking and agility
Possess executive and managerial ability
Self discipline/work ethics
Creative problem solving skills
Technological proficiency
Global awareness
Ability to collaborate and innovate

Courses of action taken by respondents to satisfy their manpower requirements
Upskilling/Multi-skilling of existing personnel to meet the demands of technological innovations or advancement in work processes
Request from universities/colleges for applicants who possess the required qualification
Partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry
Multi-media advertisement for the hard-to-fill positions

Specific industries that employers think are the top key employment generators (KEGs) in 2010	
Specific industries of top KEGs	**Total Employment**
Automobiles manufacturing	Not stated

Method of recruitment (Where KEGs association members recruit their personnel requirements)
Walk-in applicants
Announcement of vacant positions in the Internet
Newspaper Ads
Placement services/units in universities, trade schools and other training institutions
Through “head-hunters”

Future industries likely to emerge or expand from 2011 to 2020	
Name of specific industry	**Expected increase in no. of employees (% change)**
Automotive industry	Not stated

Specific type of occupations likely to emerge	Specific Industry
Electro-mechanical Engineer	Automotive industry

Key occupations that contributed to the success of business operations by Key Industry of Respondent-stablishments	
Industry	**Positions that contributed to the success**
Automotive industry	a. Managers- Manufacturing, Marketing, Purchasing, HR
	b. Professionals- Computer engineer, Finance, Logistics
	c. Clerical Support - Secretary
	d. Service and sales workers- Marketing

Hard-to-fill Occupations Positions that have presented special recruitment problems to the industry	
Industry	**Hard-to-fill Occupations**
Automotive industry	a. Casting Technician
	b. Painting Technician (Color casting)

Hard-to-fill Occupations In-demand Positions observed to be in short supply in the industry	
Industry	**In-demand Occupations**
Automotive industry	a. Mechanical Engineer
	b. Electrical Engineer

Perceived Problems by the Business Community/Industry*	
Perceived problems	**Suggested remedies**
Lack of experience of technical personnel	Training
Limited number of highly skilled workers	Improved education-al system, job fair
School curriculum not responsive to industry needs	Coordinate with the government sector
Pay scale not competitive internationally	Benefit benchmarking
Weak linkage with educational institution.	Coordinate with the government sector
Many personnel in their present positions are either over-qualified or under-qualified (mismatch)	Assessment review
* Identified by one respondent only, the AIC.	

Recommended courses of action
Upgrading of curriculum of universities/colleges to be responsive to needs of industry
Companies to provide entry level skills training/ apprenticeship program
Companies to provide upskilling/multiskilling programs to their employees to meet the skills requirements of technological innovations adopted by the companies
Improving research and development initiatives
Encourage industry-academe linkages and collaboration
* Identified by one respondent only, the AIC.

Number of graduates in 2005 and 2010 by broad fields of education			
Fields of Education	**2005***	**2009***	**2010****
Total	2,908	10,245	13,365
Education, Humanities & Arts, Social Sciences, Business & Law	14	5,089	5,062
Science, Engineering, Manufacturing & Construction	2,894	3,521	6,856
Agriculture, including Forestry, Fishery & Veterinary Medicine		1,635	1,447
Health & Welfare and Services			
* Data is for one responding institution, **Data is the sum of two responding institutions.			

Whether any association member conducted non-degree courses as a result of special requests from private or government entities	
Whether offering non-degree courses	**Participants trained**
1. Name of Special Course: *Sustainable Agriculture*	100
Requesting Firm/Office: *International Organization*	
2. Name of Special Course: *Sufficient Economy*	200
Requesting Firm/Office: *International Organization*	
3. Name of Special Course: *Agri-business*	200
Requesting Firm/Office: *International Organization*	
4. Name of Special Course: *Constructionism- Chemical Engineering Practice School*	172
Requesting Firm/Office: *SCG Chemical*	
5. Name of Special Course: *Constructionism- Pulp and Paper Practice School*	350
Requesting Firm/Office : *SCG Paper*	

Access to Labor Market Information and whether used for curriculum planning	
Labor Market Information	**Used for Curriculum Planning**
Job vacancy statistics from administrative source	✓
Statistics on tertiary education graduates	✓
Statistics on graduates of technical/vocational education	✓
Professional registry	✓
Labor turnover statistics	✓
Statistics on overseas employment	
Courses offered by local universities	✓
Skills training institution in operation	✓
Salary and wage statistics	✓
Balance of Trade	✓
Unemployment statistics	✓
Local demand for technical/skilled labor	✓
Foreign demand for specific occupations	✓
Gross Domestic Product/Gross Domestic Investment	✓

Critical factors that educational institutions consider when they decide on courses to offer
Basic requirements of the Department/Ministry of Education
Availability of teachers to teach the course/s
Demand of clients who have tie up with association members
Government's intervention
Specific needs of local industries
Global developments in the field of research, education, and training
Provide strong career opportunities to keep up with fast changing technology
Create/Establish courses that offer apprenticeship for important industries to enhance the qualification of new graduates of the institutions

Special training conducted
Specific skills in requested areas (Note: Provided by one respondent)
Project Risk Management
Professional Project Management
Industrial Cost Production
Post Harvest Technology
Energy or Environment Technology

Whether there is formal agreement with local industries/employers association for the placement of member-institution's graduates	
Industry/Employer Association	**Courses or Occupations**
Food Processing	Degree from Agro-Industry
Engineering, Equipment, Technology and IT	Degree from the Faculty of Engineering & Science
Note: Provided by one (1) respondent only.	

Subject matter content of circulars. Memoranda, orders, rules, regulations, etc.
Publish an advisory on list of courses that should discourage enrolment
Issue prospective list of courses that will increase in importance in the next 10 years
Government imposes a quantitative quota on certain courses
Encourages formation of consortia with other foreign institutions to upgrade education
Government regulates curriculum content or syllabi of courses offered
Government issues accreditation on the classification of university or college status
Government initiates/conducts trade fairs and public fora on labor and employment

Membership by category of membership	
Category of Membership	**Number of Establishments***
Private recruitment agency	8
Online job websites	3
Others, *not stated*	1
*Two (2) respondents gave multiple responses, hence Total is more than 10.	

Number of Establishments by Type of Market (and percent share of available supply to total demand)	
Type of Market	**No. of establishments**
Local	7

Overseas only	0
Both local and overseas markets	3
Note: Percent share of available supply to total demand could not be determined since most respondents did not provide answers.	

Number of Employment Intermediary Service Providers and Percent Share to Total Registered Manpower by Major Industry Division		
Major Industry Division	**No. of Respondents**	**% Share to Total Registered Manpower***
A. Agriculture, forestry and fishing	Not stated	-
B. Mining and quarrying	0	-
C. Manufacturing	5	10 - 66%
D. Electricity, gas, steam and air conditioning supply	2	7.6 -14%
E. Water supply; sewerage, waste management and remediation activities	1	1%
F. Construction	3	1% - 10%
G. Wholesale and retail trade; repair of motor vehicles and motorcycles	3	3.8 - 20%
H. Transportation and storage	3	9.5 - 10%
I. Accommodation and food service activities	3	1% - 5%
J. Information and communication	4	1 - 28.6%
K. Financial and insurance activities	6	4.7 - 50%
L. Real estate activities	4	4.7% - 57.1%
M. Professional, scientific and technical activities	2	2 -35%
N. Administrative and support service activities	2	10% - 15%
O. Public administration and defence; compulsory social security	Not stated	-
P. Education	Not stated	-
Q. Human health and social work activities	1	10%
R. Arts, entertainment and recreation	Not stated	-
S. Other service activities	2	12 - 16%
T. Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1	23%
U. Activities of extraterritorial organizations and bodies	0	-
**Based on six (6) out of ten (10) respondents.*		

Recruitment methods/ procedures that association members adopt	
Recruitment method/procedure	**Rank**
Partnering with local educational institutions	3
Advertisements for vacancies posted in the web or internet	1
Attend job fairs conducted by NGOs and/or local and national government	3
Multi-media Ads (TV, print media and radio)	2
Tie-up with foreign recruiters/talent search agencies	2
Tie-up with local employers	2
Head hunters	3
Networking, Own IT Site, Research	4

Contact candidates by phone	4

Recruitment methods of qualified and talented applicants	
Recruitment method/procedure	**Rank**
Advertisements for vacancies posted in the web or internet	1
Tie-up with foreign recruiters/talent search agencies	2
Others: Networking, Own IT Site, Research	2

Placement methods of qualified and talented applicants	
Recruitment method/procedure	**Rank**
Advertisements for vacancies posted in the web or internet	1
Multi-media Ads (TV, print media and radio)	2
Head hunters	2

Type of manpower recruited locally who were place easily in vacant positions in establishments
Accounting manager/Accountant
Personal assistant
Programmer
Purchasing
Human resource manager/staff
Marketing staff/manager /PR
Supply chain
Logistics
Technical/manufacturing
Finance staff/manager
Administrative manager
Sales executives/manager
Country manager (tourism agency)
Logistics manager
Technical engineer (Proj. Mngr NGV)
Plant/factory manager

Type of manpower recruited locally who were difficult to place in vacant positions in establishments
R&D jobs
Positions requiring foreign languages(Koreans, Japanese, etc.)
Senior Marketing Manager
Engineers (based inland)
Sales Manager
Compensation & Benefits
Senior Plant Manager
Bank Assurance/Insurance
SAP Specialist (Insurance, Bank)
Administrative
Senior management
Receptionist
Data entry/Encoder
Customer service

Store staff
IT Specialist/staff
HR Consultant (HR Specialist - Commerce)
Project Manager (Microsoft AX)
Geologist Director (Oil & Gas)
Specialist Buyer (online commerce)
Mill/Factory Manager
Country Manager/F&B
Product Specialist
Project Director (Research/analysis)
MCS County Manager (Sales)
Operation Risk Manager -VP (Audit)
Fulfillment Manager (Engineer)
Legal counsel
Actuarial Supervisor/Actuary- AVP
CRA-Contract base

Average volume of applicants received in a month: Ranges from as low as 50 to as high as 1,000.	
Average volume per month	**Number of respondents**
Below 1,000	7
1,000 – 2,999	1
3,000 and over	0
Not stated	2

Percentage placed by type of market In local industries (range: 5%-100%)	
Percent Placed/Type of Market	**Number of Respondents**
Less than 10 %	1
10 - 24.9%	0
25 – 49.9%	2
50 – 74.9%	0
75 - 100%	5
Not stated/None	2

Percentage placed by type of market In foreign countries (range: 10%-100%)	
Percent Placed/Type of Market	**Number of Respondents**
Less than 10 %	0
10 - 24.9%	1
25 – 49.9%	1
50 – 74.9%	1
75 - 100%	0
Not stated/None	1

Specific positions that have been stagnant in the manpower registry for the past two years
Accountants/Accounting staff
Accounting/Financial Manager
Financial staff
HR Directors/Managers/staff
HR-Compensation & Benefits
Sales Managers/staff
Sales Engineer (support sales and marketing)
Design and Programming staff
Marketing Managers/staff
IT support staff
Customer service staff
Programmer
Administrative staff
Receptionist
Asst. to MD/CEO
Engineers
Logistics Staff
Store staff
Research Director
Actuarial – AVP
Business Managers
Operations

Reason for Difficulty in Successful Job Placement
No relevant experience for the job or no experience at all
Training and experience not appropriate for the job
Overqualified/under-qualified for the available job
Inability to pass entrance qualifying examination
Stiff competition for available local jobs
Lack of proficiency in verbal communication in English/national language
Lack of workplace skills as collaboration, critical thinking and agility.
Applicants cannot afford to pay recruitment fees and airfare in case of overseas employment
Others: Remuneration Package
Job hopping- frequent change of job
Contract basis

Incidence of "pirating" or "poaching" of talent in recruitment		
Specific Occupation	**Industry**	**Location of position being pirated/poached**
R&D jobs	Manufacturing, Agriculture, FMCG	-
Senior Marketing manager	Manufacturing, Agriculture, FMCG	-
Engineers (based in inland)	Manufacturing	-
Senior Sales	Manufacturing, Agriculture, FMCG	-
Compensation & Benefits	Manufacturing, Agriculture, FMCG	-
Senior Plant Manager	Manufacturing, Agriculture, FMCG	-
SAP Specialist	Insurance. Bank	-

IT specialist	Insurance, Bank	-
Bank Assurance	Insurance, Bank	-
Positions requiring foreign languages, e.g., Japanese	Not stated	-
Senior Management level	Not stated	-
Geologist	Oil and Gas	Thailand
Field Marketing	Marketing	Thailand
Head of Buyers (Buyer for website)	Internet shop	Thailand
Finance	Alcohol business	-
Actuary (Product Development)	Insurance	Bangkok

Special training of recruits Specific Field of Study
Negotiation
Convincing
Communication
Common Sense
PC & technical literacy
English and other languages skills
Attitude in work/Office interaction
Company selection
Labor regulations
Time Management
Conflict resolution
Human Resource Management
Human Resource Development/Training

Kind of Training Needed by the Majority of Applicants/Recruits	
Kind of Training	**Number of Respondents**
Skills training	7
Vocational in the field of electronics, arts and trade	3
On-the-job training in the manufacturing industry	6
Management training for top and middle positions	9
Clerical (filing, writing simple communications, etc.)	2
English and other language skills	3
Critical thinking skills	1
Development for Senior	1
Training for new graduates/with no experience	1

Future recruitment/talent search challenges experienced by respondents in the last five years in recruitment and/or talent search to meet industry demands	
Recruitment/Talent Search Challenges	**No. of Respondents**
Difficulty in filling demand for talents required by industry/employers	7
There are many jobs available but most of the manpower available not qualified	6
College graduates seeking employment have no experience to fill vacant positions	4
Very few skilled workers to fill requirements of industry	2
Retraining of existing personnel to avoid layoffs due to rapid change of technology	3
Brain drain among executives and specialist/experts due to lower compensation	5
Curriculum of local educational institutions not responsive to industry needs	4
People easily changing job (not stable)	2
English language skills	1
Companies accepting applicants with “less than good” resumes	1

Strategies that should be pursued to overcome recruitment challenges within the next 10 years taking into consideration the global changes in technology and economy	
Strategies	**Number of Respondents**
Provide extra training to overcome difficulties in filling vacant positions	6
Administer IQ entrance examination to assess potential of applicants	5
Classify the applicants according to their employability	6
Strong linkage with non-degree training institutions to train trainable applicants	4
Partnership with employers for possible apprenticeship program	6
Provide interpersonal and communication skills training before placement	7
Continue providing intermediary services to industry requirements	5
Strict in connection to frequent job changes	2
Note: Cannot average ranks; Eight (8) respondents did not provide ranking.	

Part II:
Forum Proceedings





SCHEDULE OF ACTIVITIES

Day 1 (25 July 2012)

Morning Session

8:00 AM - 9:30 AM Registration

9:30 AM - 10:15 AM ***Opening Ceremonies***

Introduction of Participants

Welcome Remarks
Hon. Rebecca J. Calzado
Assistant Secretary, Department of Labor and Employment
The Philippines

Keynote Speech
Hon. Danilo P. Cruz
Undersecretary, Department of Labor and Employment
The Philippines

Message
Dr. Young-Hwan Kim
Lead Shepherd
APEC Human Resources Development Working Group

10:15 AM - 10:45 AM Photo Session

10:45 AM - 11:00 AM Coffee Break

11:00 AM - 11:30 AM ***Workforce Trends and The 2012 Talent Shortage Survey***
Mr. David Arkless
President, Global Corporate and Government Affairs, ManpowerGroup
The United States of America

11:30 AM - 12:00 NN Open Forum

12:00 NN - 1:00 PM Lunch

Afternoon Session

1:00 PM - 1:20 PM ***Policies, Programs, and Good Practices on Managing Skills Demand and Supply in Thailand***
Ms. Uthaiwan Buakrun
Director of Planning and Information Division
Department of Employment, Thailand

1:20 PM - 1:40 PM ***Policies, Programs, and Good Practices on Managing Skills Demand and Supply in Peru***
Ms. Norma Puican
Minister Advisor
Ministry of Labor and Employment Promotion
Peru

1:40 PM - 2:10 PM Open Forum

2:10 PM - 2:30 PM Coffee Break

2:30 PM - 3:00 PM ***The Role of Private Recruitment Agencies in Facilitating Employment and Their Ethical Recruitment Strategies for the 21st Century***
Mr. David Arkless
Vice President, Ciett International Confederation of Private Employment Agencies

3:00 PM - 3:30 PM Open Forum

Master of Ceremonies
Mr. Miguel Roberto V. Borromeo

Day 2 (26 July 2012)

Morning Session

9:00 AM - 9:30 AM	Registration
9:30 AM - 9:40 AM	Recapitulation of Day 1
9:40 AM - 10:00AM	***Good Practices on Private Employment Service in Australia*** **Ms. Penelope Ireland** *Director, Labor Market Strategy Group,* *Department of Education, Employment and Workplace Relations, Australia*
10:00 AM - 10:20AM	***Good Practices on Private Employment Service in Malaysia*** **Mr. Rahmat Bin Ismail** *Director of Employment Services,* *Department of Labor Peninsular Malaysia* *Ministry of Human Resources* *Malaysia*
10:20 AM - 10:35AM	Coffee Break
10:35 AM - 10:55AM	***Good Practices on Private Employment Service in New Zealand*** **Dr. Dafydd H. Davies** *Director* *International, Ministry of Business, Innovation and Employment New Zealand*
10:55 AM - 11:30NN	Open Forum
11:30 NN - 1:00 PM	Lunch

Afternoon Session

1:00 PM - 1:30 PM	***Principles, Policies, and Standards of Public Employment Services*** *Representative from World Association of Public Employment Services (WAPES)*
1:30 PM - 2:00 PM	Open Forum

2:00 PM - 2:20 PM	***Good Practices on Public Employment Service in the Philippines*** **Ms. Lorna B. Hayag** *Regional Federation President, Public Employment Service Officers of the Philippines (PESOPhil, Inc.)*
2:20 PM - 2:40 PM	***Good Practices on Public Employment Service in Viet Nam*** **Mr. Lieu Xuan Ngo** *Deputy Head of Employment and Labor Market Division, Bureau of Employment, Ministry of Labor-Invalids and Social Affairs (MOLISA),Viet Nam*
2:40 PM - 3:10 PM	Open Forum
3:10 PM - 3:30 PM	Coffee Break
3:30 PM - 4:00 PM	***Presentation on Labor Market Signaling in APEC Economies: An Approach in Addressing Manpower Mismatch*** **Dr. Tereso S. Tullao, Jr.** *Labor Market Expert* *Director, De La Salle University - Angelo King Institute* *The Philippines*
6:30 PM - 8:30 PM	***Dinner*** *Hosted by Philippine Department of Labor and Employment*

Master of Ceremonies
Mr. Miguel Roberto V. Borromeo

Day 3 (27 July 2012)

Morning Session

8:30 AM - 9:00 AM	Registration
9:00 AM - 9:10 AM	Recapitulation of Day 2
9:10 AM - 9:55 AM	***Reactions/Responses to the Study on Labor Market Signaling in APEC Economies: An Approach in Addressing Manpower Mismatch*** **Dr. Young-Hwan Kim** *Lead Shepherd, APEC Human Resources Development Working Group* **Mr. Guillermo M. Luz** *Alternate Member, APEC Business Advisory Council and Private Sector Co-Chairman, National Competitiveness Council, The Philippines* **Dr. Erlinda M. Medalla** *Project Director, Philippine APEC Study Center Network (PASCN) and Senior Research Fellow, Philippine Institute for Development Studies, The Philippines*
9:55 AM - 10:15 AM	Open Forum
10:15 AM - 10:30 AM	Coffee Break
10:30 AM - 11:40 AM	***Plenary Discussion on Labor Market Signaling Indicators and System/s***
11:40 AM - 11:50 AM	***Chair's Summary*** **Hon. Rebecca J. Calzado** *Conference Chair* *Assistant Secretary, Department of Labor and Employment* *The Philippines*
11:50 AM - 12:00 NN	***Closing Remarks*** **Hon. Albert F. Del Rosario** *Secretary, Department of Foreign Affairs* *The Philippines*
12:00 NN - 1:00 PM	Lunch

Master of Ceremonies
Ms. Mariel Monica R. Sauler

Afternoon Session

2:00 PM - 5:30 PM City Tour *(Luneta Park, Intramuros, and Manila Bay)*

SUMMARY REPORT

I. Introduction

On 25-27 July 2012, the ***APEC Forum on Effective Labor Market Signaling***, hosted by the Republic of the Philippines was held at Sofitel Philippine Plaza Hotel. Representatives from 12 APEC Economies, together with 6 subject matter experts/speakers totaling approximately 70 participants attended the activity. The Forum aims to provide a venue for the presentation of the Project's Survey Results where APEC member-economies will be encouraged to provide valuable inputs and commit to advance collaboration and support in order to develop and implement an efficient labor market signaling system in the region.

II. Discussion

2.1. Outcomes

The Forum scope and structure provided opportunities for:

- Wider availability of information on policies, programs and good practices on public and private employment services
- Improved information exchange between economies that have established
- Plenary discussion on proposals and recommendations to improve domestic LMI systems in the region

2.2. Key Issues Discussed

The Forum specifically focused on the three areas of interest namely; *Policies, Programs, and Good Practices on Managing Skills Demand and Supply*; *Good Practices on Public and Private Employment Service; and the Presentation of the paper on Labor Market Signaling in APEC Economies: An Approach in Addressing Manpower Mismatch*. The forum featured speakers and experts from a wide range of APEC economies that provided participants with a broad view of the experiences and challenges faced by economies throughout the Asia-Pacific region. Sharing of perspectives from private sector discussants also added to the success of the Forum.

The key issues discussed were the following:

- Global risk areas such as demographics and international labor migration
- Information asymmetry
- Optimal mix or balance between public and private employment services
- Education and employment dichotomy
- Youth unemployment as global pandemic
- Promotion of technical and trade skills

- Establish standard surveys for collecting, analyzing, and disseminating LMI/ systematize data collection, analysis, and dissemination
- Streamlining coordination between various government offices and agencies
- Role of the government in providing assistance to job seekers with reference to private job services
- Resource and informational requirements needed by other APEC member-economies that seek to construct its own labor demand model

III. Recommendations

- Greater collaboration not only among governments of APEC member economies, but also other stakeholders such as academia, training centers, and other private partners
- Updated labor information, and synchronization of the member-economies' needs and supply of skills with an effective way of forecasting supply
- Possibility of outsourcing and privatizing the task of providing public employment services
- Use of labor demand models that forecast future occupational needs.
- Use of online job portals, the collection of data from job portals, the introduction of career guidance programs
- Utilization of localized employment service systems

PRESENTATION OF SPEAKERS

Workforce Trends and the 2012 Talent Shortage Survey

Mr. David Arkless
President
Global Corporate and Government Affairs
ManpowerGroup
The United States of America

The global economy suffers from dysfunctional labor markets that fail to address supply-demand imbalances. Such imbalances may explain why countries with substantial levels of unemployment have high levels of job vacancies as well. To address the global skills mismatch, countries must intensify efforts to promote technical and trade skills. Whilst university graduates are finding it difficult to obtain jobs that pay an average of just USD 37,000 per year, the growing demand for Technical Vocational Education and Training (TVET) graduates has made it very easy for them to find jobs that pay an average of USD 57,000 per year. The need to collect, analyze, and disseminate information regarding current and projected industry skills demand is made apparent by the case of Greater Shanghai. Initially, the huge deficit in SME growth in the region (16% target growth rate met with a disappointing 85 actual growth rate) perplexed government officials. It was discovered that the slow growth was caused by a shortage of young entrepreneurs and individuals trained in technical/vocational skills. As a solution to the problem, the government sought to identify what skills various industry clusters would need within 1-5 years by surveying a sample of more than 4900 businesses/firms. Results of the survey allowed a detailed forensic analysis of current and projected skills demand across different industry clusters. The project allowed users access to information on human resources requirements within any industry group, for any occupational group, and for any time period. Hypothetically, it could be said that “Within 2 years, the vehicle manufacturing sector will require an additional 176,000 automotive workers.”

Having obtained such information, the government built four different TVET institutions, each specializing on training graduates fit for employment in various industry clusters. In order to complement TVET institutions, an assessment mechanism designed to identify an individual inclination/capacity for entrepreneurship was implemented. Those with a low entrepreneurial-quotient were given advice on the alternative vocational tracks available to them. This provided each survey participant access to a highly sensitive and personalized job market

counseling service. Further, it must be noted that governments have the capacity not only to forecast the skills its labor market will need in the future but also encourage individuals to take career tracks that will meet that said needs. This can be done through the provision of incentives in the form of scholarships and job assurance.

The role of demographics was also emphasized in the keynote. A steady population growth will require families to have an average of 2.2 children. In Europe, this statistic has gone down to an average of 1.6 children per household – a figure that does not bode well for future labor supply. Though China's huge labor force has driven its massive growth in the interim, it will soon face the same problems. Meanwhile, India's booming population will soon drive its growth. We are leaving the Information Communications and Technology (ICT) age and entering the human age. This emphasizes investments on human resource development and skills. This also concerns an expansion of individual choices. Risk areas and challenges identified are the following: Cyber security, Demographics, Resource security/management, Reverse Globalization, Weapons of Mass Destruction, and Energy Production.

The Philippines possesses a huge pool of individuals with skills and talents but is not able to provide adequate training for the right skills. The number of migrant laborers will grow from 250 million to 500 million within a span of ten years. We need effective and protective systems that allow migrant workers dignified employment.

The discussion that ensued gave rise to the following insights.

1. APEC member economies have good knowledge of problems but are deficient in the formulation and execution of solutions. The region needs specific plans that are implementable and actionable.
2. Transferring labor from an economy/region experiencing a surplus to areas that are experiencing shortages can easily solve supply-demand imbalances. This highlights the need to formulate and implement good labor migration policies within and amongst economies.
3. Economies must begin to align their seemingly diverse interests.
4. Which is a bigger issue: international barriers to labor mobility or domestic skills mismatches? Which do we prioritize? The answer is it depends. China, for instance, faces internal issues of mobility (half a million people arriving in Shanghai from the rural areas). Europe, on the other hand, will soon rely on cross-border mobility.
5. APEC member economies and companies must begin formulating strategies that focus on the virtual workforce – the pool of workers who work outside a corporation's economy of origin/base of operations.
6. Government must correct the perception that TVET degrees are inferior to university degrees. To do so, the government must inform its citizens of the real opportunities that await TVET graduates. Likewise, government can opt to introduce incentives for young people and start calling different vocations an equivalent of a degree (same qualification).
   We've been excessively occupied with educational institutions. We should also consider the fact that employers have the responsibility to train its human

resources too. Companies no longer engage in FDI in order to save on labor costs. They now seek for talented workforces that can sustain their offshore operations.

Policies, Programs, and Good Practices on Managing Skills Demand and Supply in Thailand

Ms. Uthaiwan Buakrun
Director of Planning and Information Division,
Department of Employment
Thailand

Thailand is situated in Southeast Asia with population of 67 million, 54 million of which is 15 years old and over. Out of 54 million individuals part of the labor force, 38.92 million belong to the workforce. However, only 38.04 million people from the workforce are employed. The service sector has experienced the highest employment growth. This suggests a shift in the labor market structure, characterized by increased demand for semi-skilled workers that are seen to slowly replenish the ageing labor force. The residual of those included in the labor force are composed of domestic workers, students, etc.

Given the statistics regarding labor demand presented, there is a shortage in the supply of unskilled laborers. This shortage is clearly shown by the increase in demand of laborers who possess elementary schooling qualifications only. On the other hand, looking at the supply side it can be seen that majority of the entrants in the labor force are degree holders – a clear manifestation of labor market mismatches in Thailand.

Meanwhile, the demand for laborers with other qualifications also increased, albeit at a lower rate than that of unskilled labor. Likewise, the demand for labor has been shown to decrease as qualifications/educational attainment rises – a trend that is incompatible with the available supply of labor. It should be noted though that the demand analyzed is from the industrial sector. This phenomenon of mismatched labor in Thailand is attributed to the usual orientation of a populace that holding a degree is the key to success. However, one of the quantitative reasons is the demographic that Thailand has an ageing population. They are one of the economies that is moving towards an old age society. One other reason cited is the nation's economic growth that affects the demand labor directly.

Policies of Thailand to remedy the mismatch:

1. Section 84 (7) of the Constitution of Thailand
    a. This section of the Thailand constitution stresses the promotion of people of working age to obtain employment, protecting the youth and female labor, and that such labor will provide the base benefits to an acceptable working standard.
    b. This was put into action by the Policy Statement of the Council of Ministers that is designed to attract the workers of the Thailand labor force to join the formal sector by using the benefits as an incentive to do so.
    c. Strategies employed by the Thai government
        i. To provide public employment services to students, disabled persons, the elderly, discharged conscripts, hill tribe workers, victims of disasters, treated drug addicts, etc.
        ii. To promote overseas employment
        iii. To monitor and inspect the employment of foreign workers in Thailand
        iv. To provide career information and career aptitude tests for students, working-aged people and new labor force
        v. To prevent and protect job seekers from being deceived by agents or private recruitment agencies, and to enforce relevant laws to prevent deceits and punish wrongdoers
    d. In line with the movement to match skills to the right job, the inception of the “Committee for Solving Labor Shortage” which is tied up with the Ministry of Labor. Whose first two initiatives are:
        i. Increase labor participation
            1. This done through various channels to increase labor participation via the implementation of job fairs, mobile employment units and employment for vulnerable groups
            2. Another project under this initiative is to draw the older portion of the population to the unskilled labor market
        ii. Increase labor efficiency
            1. The Ministry of Labor, Department of Employment, the Department of Skill Development as well as private sectors coordinated to provide training for both unskilled and semi-skilled labor.
            2. The Department of Employment also launched the 3H program which means; Have money, Have work and Have additional diplomas.
        iii. The aforementioned projects were launched locally at first with favorable results providing the provinces with 159 recruitments in total and in doing so will most likely be implemented in more local governments and will be the impetus to the development of a more dynamic labor force.

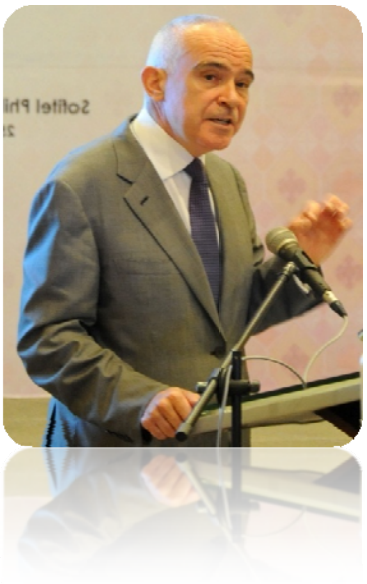
Policies, Programs, and Good Practices on Managing Skills Demand and Supply in Peru

Ms. Norma Puican
Minister Advisor
Ministry of Labor and Employment Promotion
Peru

Peru is an economy in western South America with a population of thirty million. Twenty two million of which are aged 14 years old and over. Out of the twenty million individuals who form part of the labor force, 15.95 million belong to the workforce and, 15.31 million people or 96% of the total workforce are employed.

Albeit the current and stable employment situation in Peru, there is still a need to focus on finding a market for individuals with secondary education. In line with this urgent need, the "soft skills" program in Peru will be implemented by 2013. This project will be headed by the Ministry of Labor of Peru. Naturally, individuals acquire soft skills in school. In order to measure individual's intellectual capacity, tests such as IQ test and EQ test are conducted. Presently, there is a need for the labor sector to supplement the actions taken by the education sector. Aside from the roles fulfilled by the education and labor sectors in improving soft skills, private households also play a significant role in developing its socio-emotional skills. Trainings and skills improvement should be the responsibility not only of the educational sector but also of the labor sector. Creation of new universities does not necessarily mean improving education. In order to control the sudden increase in the number of educational institutions, aggressive actions are undertaken by different labor and education ministries and agencies of different companies. Given this, there is a strong need for central coordination among different ministries, agencies, and levels of government office (national, regional, and local).

There is a need for a stronger link between education and labor groups. Small collaborative projects can lead to bigger and high impact based projects. It is important to eliminate one sided initiatives by labor, education and private sector, meaning it is better and more effective if initiatives and projects done by agencies and sector are in partnerships with concerned sectors. Communication is one of the key elements that will strengthen and increase the success probability of labor market enhancing projects. That is, in Peru, for their collection of labor data, the national survey on the demand side which shows enterprise variation and employability.



The Role of Private Recruitment Agencies in Facilitating Employment and their Ethical Recruitment Strategies for the 21st Century

Mr. David Arkless
Vice-President, Ciett Confederation of Private Employment Agencies

Founded in 1967 and originating from Europe, *Ciett* is a prime example of a private recruitment agency. It has expanded to 120,000 branches internationally, and has employed more than 8 million full-time employees on a daily average. These agencies (*Ciett* in particular) represent the full spectrum of human resource services ranging from temporary agency work, recruitment of all kinds (cross-border, temporary, permanent), interim management, executive search, outplacement, and training. *Ciett* aims to (1) protect and promote the interests of private employment service (PrES) agencies and enhance their sustainability, to create a suitable legal environment for PrES, (2) to improve their quality standards, and (3) to develop the understanding on PrES as positive contributors to a better-functioning labor market. Today, the PrES industry has succeeded in achieving legal recognition as they have been formally recognized by both the International Labor Organization in 1997 during Convention 181 and the EU Agency Work Directive of 2008. The industry has also successfully opened up the markets to establish national federations, provide capacity-building for developing national federations, and set up appropriate regulation on PrES. The industry has also succeeded in improving its image as a contributor to better-functioning labor markets through research and data.

*Ciett*believes that PrES agencies should value work as an essential part of the lives of people, and that the role of well-regulated facilitating intermediaries and agents are crucial in developing labor markets that give job seekers freedom of choice so as to meet work expectations and increase labor market participation. It also values the quality and inclusiveness of their service, and the freedom of workers they hire. They advocate respect for laws, the transparency of the terms of engagement, free services to jobseekers, diversity, safety in the workplace, and the rights of workers. *Ciett* envisions “A Job for Every Person and a Person for Every Job.” They direct the way to work as a labor market entry point. They offer a new way to work through their provision of contractual diversity. They give people a great way to work by delivering decent and quality jobs. They help people organize the way to work by matching skills and jobs. *Ciett* pledges to support 280 million people in their job life, help 75 million youths to enter the labor market, improve the skills of 65 million

people by giving them more work choices, facilitate the creation of 18 million more jobs, and serve 13 million companies with the right talents that they need.

Trends in labor demands have shifted with the ageing of populations and growing talent gaps in some countries. There is an increasing talent shortage in the northern hemisphere where 35 million extra workers are needed to fill the employment gap in Europe come 2050, 25 million extra workers are needed to sustain the economic growth of the US by 2030, and the elderly dependency rate in most G7 and BRIC is seen to double by 2050. There have been workforce surpluses in many Southern hemisphere countries. There are about 45 million new, young entrants into the global job market annually, mostly young, and originating from developing countries. However, employability continues to be a huge global program: only 25% of Indian and 20% of Russian professionals are considered employable by multinationals.

The PrES industry supports companies with the entire process of skills matching. Starting from identifying and assessing the needs of companies, they match these needs with the available labor in countries, contract them, coach them, train them to be job-ready and cater to the needs of the said companies. It provides quick responses to business demands, highly-flexible workers to address the variability in demand, and relatively low fixed costs of searching for talents, while potentially securing permanent positions for workers in companies. It also ensures job creation as companies do not consider hiring permanent workers as an alternative to workers provided through an agency. A significant proportion of companies choose internal flexibility instead of creating new permanent positions. It also contributes to the labor market participation and diversity, opening opportunities for students, first-time entrants, re-entrants, those looking for permanent jobs, flexible professionals and senior workers.

Companies availing of the services of PrES accelerate faster out of economic downturns as they gain the ability to react quickly, giving them higher revenue in growth. PrES provision of agency work have contributed in lowering the levels of illegal economic activity as there is a negative relationship between temporary agency work and illegal economic activity. The same may be said for informal sectors of the economy. Cooperation between public and private employment services should be promoted as a way to improve labor markets. This goes for the exchange of information in trying to pool data on the labor market. In the PrES' attempts of sourcing candidates, companies should share information on sharing candidates and job vacancies. Managing skills also entail the assessment and creation of skills through training. The provision of services entails that the outplacement services must facilitate reintegration of the long term unemployed.

Labor markets can benefit from the cooperation between public and private employment services because of the enhanced labor market transparency, improved matching of labor demand and supply, increased mobility and participation in the labor market, more effective and active policies, and tailor-made solutions for job-seekers. In order to tap private employment services' contribution to better function labor markets, there is a need to ensure that legal and regulatory frameworks for

private employment services sector are adequate; to recognize the legitimacy of the private employment services industry, granting it freedom of establishment, ability to negotiate with trade unions employment, and eliminating rogue traders and abusive employers; to allow PrES to advise the design and implementation of labor market policies, facilitating transitions in the labor market, increasing participation through the creation of jobs, reducing undeclared work, and developing further cooperation between public and private employment services.

Good Practices on Private Employment Service in Australia

Ms. Penelope Ireland
Director, Jobs and Training Linkages Section
Labor Market Strategy Group, Department of Education, Employment and Workplace Relations
Australia

Australia's employment services industry comprises:

- Government funded employment services - Businesses contracted by the Australian Government to deliver employment services to job seekers and assist them to obtain sustainable employment. These services are delivered through Job Services Australia (JSA), the Disability Employment Services (DES) and the Indigenous Employment Program (IEP).
- Private recruitment agencies - businesses engaged by employers to provide a range of recruitment and human resource services on an as-needed basis.

During periods of low unemployment there tends to be greater competition for highly skilled workers. During these times, competition to recruit quality staff is high and many businesses turn to private recruitment services agencies to fill their vacancies.

However, during periods of high unemployment, such as during the Global Financial Crisis, there was greater competition for jobs and businesses were able to fill their positions with greater ease. As a result, many businesses sought to manage their own recruitment internally in an attempt to cut costs.

In comparison, demand for the services of government funded employment services increased during this period as more job seekers entered the JSA program looking for work.

Government Funded Employment Services

The *Commonwealth Employment Service* was responsible for matching supply and demand in the labor market until 1998, when the Australian Government decided to outsource the delivery of employment services in order to deliver better quality assistance to job seekers and promote competition leading to greater efficiency and value for money.

Three hundred providers were initially contracted to deliver employment services under the new *Job Network*. The design of *Job Network* continuously evolved under each new tender period in 2001, 2003 and 2006.

After an extensive consultation and development phase, *Job Services Australia* (JSA) was launched in 2009. JSA focuses on flexible and tailored individual assistance to job seekers, particularly the most disadvantaged, and providers are paid through outcome and service fees which are weighted according a job seeker's level of disadvantage.

Under JSA, the government currently contracts approximately 100 private (both for-profit and not-for-profit) employment services providers to support job seekers who are classified into 1 of 4 streams based on their vocational and non-vocational barriers and level of job readiness.

JSA providers deal with a large cohort of disadvantaged job seekers. Job seekers in stream 1 are considered job ready, however job seekers in streams 2, 3 and 4 often face multiple vocational and non-vocational barriers to employment and require more intensive assistance and support. For example, a large proportion of the JSA caseload comprises job seekers who have low education and training levels and, as a result, JSA providers work with employers to source entry level positions and positions in lower-skilled occupations and industries.

JSA providers have access to the Employment Pathway Plan (EPP) and the Employment Pathway Fund (EPF) to facilitate the delivery of flexible and tailored assistance to job seekers.

An EPP is developed for each job seeker, with their provider, after discussion of their employment goals. The EPP assists to identify any training or services that the job seeker may need to support them into employment.

The EPF is a flexible pool of funding that providers can access to support job seekers overcome vocational and non-vocational barriers to employment. This could include expenditure for a training course, work clothing and safety related equipment or wage subsidies.

JSA providers do not select their caseload. Job seekers choose their JSA provider or are referred by Centrelink/ the Department of Human Services to a provider.

Private Recruitment Agencies

Private recruitment agencies are funded by public and private sector employers for their services which may include all aspects of the recruitment process including human resource advice and payroll and other administration services. While JSA providers generally work with employers to fill lower- and medium-skilled positions, these private recruitment agencies tend to work with employers to fill positions for qualified, professional and skilled staff.

Many of the larger recruitment agencies provide services to employers across a wide range of industries. However, there is also a range of smaller to medium size agencies. These agencies often tend to specialize in providing services to particular regions or particular industries.

For example, Australia's mining boom brought with it many opportunities for recruiters in this industry. Currently in Australia, there are more than 200 private recruitment agencies that provide services specifically to the mining industry.

Comparison JSA vs Private Recruitment Agencies

JSA providers are different from private recruitment agencies on the following grounds: (1) JSA is government funded while private recruitment agencies are funded by employers; (2) JSA has fixed fees which are stipulated by government contracts while private recruitment agencies' fees may fluctuate depending on the employer, economic environment, and demand for services; (3) JSAs predominantly work with unemployed and disadvantaged job seekers to fill lower skilled, entry level positions while private recruitment agencies generally work with qualified, professional candidates to fill skilled positions; (4) JSAs receive higher fees for assisting the most disadvantaged job seekers while private recruitment agencies receive higher fees for recruiting higher skilled candidates; and (5) the demand for JSA services increases in times of high unemployment as more job seekers enter government employment programs while private recruitment agencies demand for services by employers decreases in times of high unemployment as businesses manage their own recruitment.

Best Practice – JSA Providers

JSA providers vary greatly and there is no fixed formula of characteristics or practices that mark out high performing sites. Instead, a combination of many factors tends to contribute to good practice, depending on each provider's caseload, environment and business model.

High performing JSA providers are more likely than mid- and low-performers to use practices that are goal-oriented and lead to individually tailored services for job seekers. High performing sites are more likely than mid and low performing sites to (1) commence job seekers quickly and achieve more contacts with job seekers; (2) build rapport with job seekers, and maintain their engagement; (3) use a wide range of strategies to suit the individual needs of job seekers from diverse backgrounds and situations; (4) have procedures in place for transferring job seeker information when their employment consultant changes; and (5) encourage job seeker compliance using a wide variety of communication techniques, including, but not limited to, SMS messaging, email or physical visits where appropriate.

High performing sites are also more likely to make greater use of the Employment Pathway Plan (EPP), the Employment Pathway Fund (EPF), connect job seekers with training and work experience activities, effectively undertake reverse marketing

and employer engagement, use wage subsidies to encourage employers to take on job seekers and support job seekers after job placement.

Strategies that JSA providers use for dealing with employers vary. Some sites have dedicated staff focusing on employer relationships, while others allocate dedicated time for employment consultants to contact employers. Either strategy can be effective, provided there is a consistently applied plan at the site level.

The Australian Government identifies and encourages good practice by JSA providers through (1) the Charter of Contract Management; (2) the Code of Practice and Service Guarantee; (3) Star Ratings - used by job seekers to assess the comparative performance of providers in their local area. The Star Ratings measure the relative performance of providers against Efficiency, Effectiveness and Quality Key Performance Indicators; and (4) monitoring, formal performance assessment and reallocation of business based on a provider's assessed performance.

Looking Forward

Australia expects to see a continued shift to the internet as the main mode for advertising jobs. The number of recruitment agencies and employers with an online presence is constantly increasing. These businesses are linking into a range of social media to advertise jobs and attract candidates. For example, in 1999 the ratio of newspaper to internet job advertising was almost equal, whereas now the internet is used to advertise 96% of the average weekly job opportunities.

The Department conducts surveys of employer's recruitment experiences. Currently, 43% of employers used some kind of informal method to advertise vacancies including using word of mouth, signs or by approaching job seekers directly. Informal methods of recruitment provide challenges to labor market signaling as it affects the accuracy of job vacancies data and information on supply and demand.

Use of Labor Market Data for Signaling

The Department is also focused on building strong linkages between relevant stakeholders at a regional level. Better linkages lead to effective signaling of labor market demand which leads to effective labor market responses.

The rate of unemployment varies across Australia. There are areas of low unemployment and high demand for skilled workers such as in Western Australia and Queensland, which is being driven by the mining and resources sector boom.

The National Broadband Network (NBN) is a national project to deliver high-speed broadband to every Australian premise with a combination of fiber, fixed wireless and satellite and will provide an important upgrade to our telecommunications. The NBN is one of the largest public infrastructure projects ever attempted in Australia.

The NBN will cost approximately $36 billion, take almost a decade to complete and employ 16-18,000 people at the peak of the rollout. Collaboration is occurring at a federal, state and local level between stakeholders in order to identify the demand for labor and establish strategies and processes for addressing that demand.

Useful links

Good Practices in Job Services Australia, March 2012 – *http://www.deewr.gov.au/employment/researchstatistics/progeval/documents/goodpracticejsa.docx*

Skills Info website - *http://www.skillsinfo.gov.au/*

Labor Market Information Portal - *http://www.deewr.gov.au/lmip/*

Survey of Employers Recruitment Experiences - Regional Reports – *http://www.deewr.gov.au/Employment/LMI/RegionalReports/Pages/default.aspx*

Job Outlook website
- *http://www.deewr.gov.au/Employment/LMI/RegionalReports/Pages/default.aspx*

Good Practices on Private Employment Service in Malaysia

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The Malaysian government acknowledges the role of Private Employment Agencies in matching employers to employees and placing them to fulfill the demand of work force. It supports the activities done by the private employment services to enhance the job opportunities in the econmy. Moreover, the private employment agencies in Malaysia are regulated by the Private Employment Agencies Act 1981 (Act 246), where by any person or organization who acts as intermediaries between employers and jobseekers are required by the Act to (1) obtain license; (2) operate from premises accessible to the public; (3)submit the record of placements and maintain the records; (4) Private Employment Agencies shall not place any jobseekers in any injurious occupation or any immoral purposes; (5) Private Employment Agencies shall not charge any fee other than stated in the Act; (6) to publish license number in all the advertisements with correct information relating to the vacancies, qualifications, terms and conditions of the employment; (7) Private Employment Agencies must comply to place a security bond; and (8) to seek endorsements for overseas recruitment.

As per statistics, the number of private employment agencies in Malaysia as of June 2012 is 1,127 agencies. As per record placements done for the year 2010, it was reported at 8,228 candidates and the number increased to 23,767 candidates in 2011. Other than placements, Private Employment Agencies also plays a role in job postings, screening jobseekers profile; maintain the vacancies in the employer's job portal. Meanwhile, Private Employment Agencies also conduct their own research and development to enhance their roles in the job market, for instance the study on current market salary according to the positions.

Hence, it is noteworthy to enumerate the good practices of Private Employment Agencies in Malaysia:

Executive Search and Selection. This is an activity done by the private employment agencies when seeking talented candidates according to their specialization.

Permanent Placement. Recruitment of a long term employment of a suitable candidate according to the specialization and requirement of the employer.

Outsourcing. Employees employed based on contract of outsourcing are not under the direct payroll of an employer or organization. The outsourcing of manpower has become a common practice nowadays. There is always a requirement of professionally qualified and skilled staff in any organization. With the increasing demands of the industry, there is not enough time to get into the complexities of selecting a candidate. In cases where they have project-based needs or would like to see a candidate in action before making him/her a full-time hire, this option may be the right choice. There are two types of contracts namely *employment contract* and *service contract*. In order to meet only the qualified candidates with their real potential in the interviews, the hiring team should be efficient and experienced consultants and must take care of all aspects during the hiring process. The consultants must possess excellent communication skills, the ability to judge people, a good power of understanding and grasping.

Recruitment Process Outsourcing (RPO). It is a critical function in any organization which includes Job Postings, Sourcing, Screening, Interview Scheduling and Logistics, Offer Execution, System Compliance, Sometimes New-hire Administration, Orientation and HRIS (Human Resources Information Systems) Data Entry.

Payroll Administration. This activity is developed specifically for small to medium size businesses; Payroll Administration streamlines the payroll process, improves productivity and management reporting and simplifies administration year round.

Behavioral Assessment Techniques. In order to enhance the effectiveness and accuracy of the selection process for the benefit of the clients, some companies apply internationally recognized psychometric techniques. This allows them to reduce the risk of a poor recruitment and increases the possibility of recruiting individuals who are tailored to companies' business. This is also a systematic process for gathering information in order to determine the relationships between a person's problem behavior and aspects of their environment. Through Behavioral Assessment Techniques, it is possible to identify specific events that predict and maintain behavior and design a support plan that effectively addresses those variables. These methods can, and should, vary across circumstances, but typically include record reviews, interviews, and direct observation.

Human Resource Training and Corporate Events. This activity runs specifically to enhance the knowledge of on matters related to human resource management and Labor Laws. Private Employment Agencies in Malaysia also organize conference at national and international level to keep the employers abreast with the current issues on human capital. This kind of event also allows employers to (1) motivate their staff; (2) develop professional skills of employees; (3) increase personal loyalty; (4) develop interpersonal relations among employee; (4) build closer relationships by providing a dynamic platform for the HR specialists to meet and exchange ideas; (5)

applying new approaches to work process design, succession planning, career development and inter-organizational mobility; (6) increasing the innovation, creativity and flexibility necessary to enhance competitiveness; and (7) managing the implementation and integration of technology through improved staffing, training and communication with employees.

Contact Centre Outsourcing. This is the "face of the corporation" to customers, stockholders, vendors, and employees. It is often a mission -critical operation, responsible for sales, marketing, service, or general information requests. With global competition and ever rising customer demands, outsourcers face the challenge of building state of-the-art systems that are also cost-effective and easy to maintain. The goal is to win enterprise business by offering premier service at a compelling price point, and to achieve income, in part, by controlling costs in the outsourced center. In order to serve the best, service providers need to invest in networks and systems that provide base requirements: (1) availability; (2) manageability; (3) quality of service (QoS); (4) redundancy; (5) scalability; and (6) security.

Merger and Acquisition Advisor. This is the aspect of corporate strategy, corporate finance and management dealing with the buying, selling, dividing and combining of different companies and similar entities that can help an enterprise grow rapidly in its sector or location of origin, or a new field or new location, without creating a subsidiary, other child entity or using a joint venture. In this merger and acquisition situation, Private Employment Agencies in Malaysia will play a role to help companies make restructuring, particularly in staffing. PEA also plays a role in helping workers affected by retrenchment or voluntary separation scheme (VSS) to find new jobs.

Employability Program. This program helps jobseekers to increase their ability to seek suitable employment according to employer's requirement. The needs of this program are obvious among the university graduates. Private employment agencies involve in the selection process of trainees for employability programs such as Graduate Employability Management Scheme (GEMS), The Articulate Globalize Graduate (TAGG), 1Malaysia Training Scheme (SL1M) and Bridging the Gap.

There are three major players in Malaysia for enhancing the employability programs, public employment agencies which are through *JobsMalaysia*, the private employment agencies and, lastly the private companies. The government plays its role by funding the programs offering private companies double tax deduction if they could train and place the candidates in their own organization or other companies for jobs. Whereas, the private employment agencies will play their role to help companies and participants for job placement if there are no vacancies that can be offered by the private company involved.

In conclusion, recruitment agencies in Malaysia have played their functions more than they are expected to, whereby they play a very major and important role with the employers and the public recruitment agency. Looking at their commitment and

rate of success, the public employment agency also known as *JobsMalaysia*, under the Ministry of Human Resource has included these private employment agencies to work closely together to help jobseekers and the employers. Due to this collaboration of private employment agencies together with *JobsMalaysia*, a system was created as PEA Link Up to enhance the job opportunities and jobseekers. Many programs are conducted by *JobsMalaysia* together with private employment agencies such as career clinic, career fair, employability and other outreach programs.

Good Practices on Private Employment Service in New Zealand

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New Zealand has undergone a structural change - a shift from being an agricultural and a manufacturing economy towards being predominantly a service economy. In line with this change, there has been cyclical growth in some service industries such as construction.

Based on its labor statistics, the total working-age population is 3,477,000. A huge portion of the labor force is currently employed in the service industries, which are categorized into two: (1) public sector services which include education, health, government administration, social services and (2) private sector services which include finance, insurance, real estate, business, communications services, wholesale/retail, and hospitality. Labor market monitoring in New Zealand caters to three different audiences:

- ***Occupational labor markets.*** This is the core of most of our labor market analysis as occupations are the best indicator of the range of people who are available for any particular job. Our occupation groupings (which are the same as those used in Australian statistics) are driven by the skills required for the job.
- ***Regional labor markets.*** Many training providers and all local government agencies are regionally based. Workers in many regions (particularly in low-skilled jobs) may have limited ability to move between regions in response to changes in employment. Different regions often have very different economic structures and these have a strong effect on their labor market outcomes.
- ***Industry/sector labor markets.*** The economy has invested heavily in industry and firm-based training over the last seven years. There is a need to monitor the extent to which this has boosted the supply of skills in key industries and the growth in demand.

The government also wants to raise the participation and productivity of all groups in the labor market. Although New Zealand has high participation rates overall, some groups such as women caring for children and selected ethnic groups remain

underrepresented in the labor force. As the economy's population profile ages over the next 20 years, the continued maximization of old workers' inputs will be crucial.

In line with the *Canterbury Earthquakes*, the on-going recovery from the earthquakes in Christchurch and surrounding Canterbury provide an example of the importance of effective labor market signalling and the relationship between public and private services. As a result of the disaster, over 100,000 houses have been damaged requiring repair or rebuilding. It is likely that more than 5,000 properties will be abandoned due to serious land damage. Over 60% of the 5,000 businesses in the CBD and their 50,000 employees were displaced. One third of these are not able to operate, while another third operating in temporary accommodation. However, most of the manufacturing sector and Canterbury's substantial agricultural sector was largely unscathed. This is a tale of two cities where the congestion of the centre has forced the city to relocate to the west.

Additionally, there have been job losses due to the departure of some workers from the region and the decline in participation rates particularly among women and the youth. There is an urgent need to ensure swift reconstruction and to support the wider recovery through growth and prosperity. Hence, the *Canterbury Earthquake Recovery Act 2011* came into force on 19 April 2011 to provide coordinated leadership for the recovery of the region and wide ranging powers for the Minister and Canterbury Earthquake Recovery Authority (CERA).The Ministry was asked to provide a labor market recovery plan as a part of the Economic Recovery Plan. The labor market programme seeks to:

- Predict the labor market needs for the rebuild including construction needs and the flow on impacts on other sectors;
- Identify sources of labor, competition and skill levels needed, timing and policy implications; and
- Retain, develop, and attract appropriately skilled and experienced people are available for the greater Christchurch rebuild and economic growth.

Employment in the Canterbury region has decreased by a net total of 5,900 (or 2%) in the year to March 2012, compared to 1% growth nationally. The largest falls in Canterbury employment were in education and training, which is linked to declining rates of tertiary education participation. Damage to the CBD helped account for a drop in employment in accommodation and food services and retail trade significantly. On the other hand, construction industry employment has grown. Overall, Canterbury's unemployment rate has not yet been significantly impacted by the earthquakes. In the year to March 2012, the Canterbury unemployment rate decreased from 6.4% to 5.5%. This drop in Canterbury unemployment is linked to the decline in the region's working age population, with many unemployed people likely to have decided to leave the region, particularly youth and women. Moreover, women's participation in the region dropped sharply from 64% to 62% in the year to March 2012, while male participation grew.

The outflow of people from the region and continuing challenges to business and communities mean that the Canterbury labor market will remain under pressure, even into the period of major construction, when the challenges will shift from lower participation and job losses in some industries to demand exceeding local supply. Meeting forecast demand will require utilising existing workers in the Canterbury region, bringing in workers from wider New Zealand, training additional workers and when necessary, increased use of migrant workers. Industry specific workforce plans will need to build on forecast supply and demand information and propose how best to meet the demand needs of the recovery. The Government's Labor Market Recovery Programme will respond to these challenges so the workforce can drive the recovery, growth and prosperity of greater Christchurch.

As part of framing the discussion around what the size of demand might be for Canterbury, a labor demand model is being used. The model was jointly developed by CDC (the Canterbury Development Corporation), Market Economics, and the Ministry of Business, Innovation and Employment. The model is used to obtain estimates on the number of workers needed for reconstruction efforts. However, the following constraints were faced:

- Conflicting sources of information and number of models (rent seeking behaviour by lobbyists organisations) over what the future labor needs would be
- Lack of clarity and time lagged information
- Model developed in order to provide Ministers with advice

The model provides labor demand estimates. However, it does not take into account future sources of labor supply, does not predict future labor need, and will be built out to link to broader the economy's labor market. To augment this, assumptions that have been made cover timelines (over what time period the rebuild will occur), the number of houses that will be rebuilt (not expected that everyone will rebuild as some people will leave region, some will rent, some will purchase existing homes), the cost, and the amount of spare capacity in the sector and the number of people that will move into the region from the rest of the economy's geography.

Rebuilding efforts is not the only source of increased labour demand as other industries that have expanded rapidly in the region has also cased increased demand for certain types of workers. It must be noted that rebuild activities may constrain wealth-creating sectors in the productive areas of the Canterbury economy (e.g. agriculture and knowledge intensive manufacturing), should the former attract workers away from the later (and thus exacerbate skills and labor shortages)

If demand for skills for the rebuild outstrips the likely supply, this may drive up costs and slow progress. In addition, employers have to make decisions under the context of the unprecedented scale of the rebuild, the uncertain duration of the rebuild, the presence of incomplete information on the demand and supply of skills; and delays in getting land decisions, insurance pay-outs, and recovery ground remediation solutions.

Reinforcing the labor market, the government provided a response through skills package which includes (1) a USD 42 million skills for Canterbury package to fund extra trade training places; (2) USD 5 million extra supports through work and income for supporting people into work; and (3) a combined skills shortage list has been developed for Canterbury currently focused on skilled occupations. However, there is a risk that there will be over-investment in training (provision of places, training courses undertaken) for the rebuild- particularly in the building and construction sector.

Though the labor ministry of New Zealand is aware that the labor market will likely adjust, it realizes that the process may not occur quickly enough. The speed of adjustment will certainly depend on the manner by which the rebuild is phased. Decisions regarding the time period of the rebuild have yet to be made.

Canterbury Employment and Skills Board (CESB) bring labor demand and supply sides together. It is composed of representatives from businesses, unions, tertiary training providers and government agencies. They are tasked to shape the immediate labor market recovery, the rebuild, and the long term recovery plan for the Canterbury economy. In addition, businesses and industries will also be granted leadership, advisory, and implementation roles. This will include leadership and presence on the CESB. Industries will also lead the sector workforce planning process and the implementation (in conjunction with agencies as relevant) of actions stipulated in the workforce plans.

Likewise, businesses and industries will directly contribute to actions expected to be included in the workforce plans. This may include existing supports for workers to receive on-the-job and off-the-job training, or coordinating with education and training providers to ensure industry needs are clearly signalled. Industries will also be closely involved in recruitment activities outside of Canterbury (including overseas recruitment) and is also likely to provide direct and indirect funding to support the recruitment and retention of the workforce it needs.

The Labor Market Recovery Programme is a key component of the Economic Recovery Programme that in turn is an integral part of the Recovery Strategy for greater Christchurch. The Labor Market Recovery Programme sets a clear direction to support the recovery from the 2010 and 2011 earthquakes. It is built on a strong partnership between government agencies, local bodies, TeRūnanga o NgāiTahu and the private sector and has been prepared by CERA with the close involvement of local and central government agencies and our stakeholder partners. Key ideas and directions have been tested with thought leaders from the private sector.

Principles, Policies and Standards of Public Employment Services

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Public Employment Services (PES) complement private employment services. Employment services primarily include job search facility that meets supply with demand for skills; employers' modality to locate the right skills; and an LMI delivery system that provides jobseekers with labor market information and access to work opportunities. Its objectives include the following: to address the skills mismatch; to assist the labor market in its adjustments to the needs of the enterprises; to reduces crisis in labor market via job search assistance, retooling, or engage in self-employment; and to increase employability through up-skilling and capacity-building.

Since the Philippines ratified the 1948 ILO Convention in December 1953, it is mandated to maintain a free public employment service. This includes organizing the employment market as part of the national development program. This is in line with the objectives of economies to achieve full employment. The national system of employment offices must have local and regional offices and should be sufficient enough to service the geographical areas and under the directives of a national organization. The purpose of establishing a public employment service office is as follows:

- Assist workers to find jobs, and for employers to find the right workers;
- Take measure to facilitate occupational mobility to meet temporary local maladjustments;
- Collect and analyze LMI and make it available to the public;
- Administer unemployment insurance and assistance; and
- Provide assistance in social and economic planning.

Meanwhile, the challenges faced by PES are both on the supply side and demand side. For the supply side, problems include the lack of infrastructure, lack of resources (both human and financial), and PES that are subject to political pressures. For the demand side, problems include low levels of job creation and weak economic sectors, low levels of utilization of PES by industries, and lack of private sector involvement.

Similar to *Ciett,* the World Association of Public Employment Services (WAPES) is an international organization wherein the Philippines is a member, with a network of 89 worldwide offices. Founded in 1989, it is supported by the ILO where its roles include encouraging the exchange of good practices in the labor markets and employment actors including both private and public. Its mission is to unite the expertise of countries regarding labor market management and good practices. WAPES membership is open to the national public or governmental bodies involved in labor market and labor policies. In addition, its advantages include: (1) exchange of good/best practices; (2) highlight the achievements of the organization; and (3) promote functions and practices of PES in the international era.

Further, WAPES has the following initiatives:

- Cooperation Fund
  - Aims to facilitate bilateral and multilateral cooperation between members through study visits, expert missions and training seminars
- Regional Workshops
  - Members organize workshop for PES to exchange experiences with international partners on issues relating to their evolution and challenges
- Survey
  - Organized every 3 years for its members to follow the evolution of structure, organization, mission, activities, services and recent developments
- World Congress
  - Members meet every 3 years at the General Assembly, the highest decision making body of WAPES
  - In 2012 World Congress of WAPES, organized with the Korean Employment Information Service (KEIS), offers an opportunity to present best practices in change management and debate

Good Practices on Public Employment Services in the Philippines - Experiences from the Ground: PESO as a Conduit in the Effective Delivery of Employment Services at the Grassroots Level

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The Public Employment Service Office (PESO) is an institution aimed at establishing and enhancing efforts and initiatives in the area of employment service. PESO works towards institutionalizing mechanisms that efficiently manage unemployment and talent mismatches. As of 2012, there are 1,780 established PESOs, 1,125 operational PESOs, and 97 institutionalized PESOs. It may serve as the primary implementing arm of the Department of Labor and Employment (DOLE) because of their inclusive nature. They are often tapped to implement various programs, projects and activities of DOLE. Currently, PESOs are responsible for implementing the following DOLE Programs:

- Information Technology-Related Innovations
  - Phil-JobNet(PJN) System
    - Official web-based job matching facility is purposed to fast-track jobseekers' search for employment. This aids PESOs in the process of facilitation and referral of employment within their localities. This is anchored on Information Technology-related innovations
  - Skills Registry System (SRS) Project
    - Project aimed at generating data to provide information for the analysis of talent mismatch. This is anchored on Information Technology-related innovations
- Full employability of the youth and the new entrants to labor force
  - Career Guidance and Employment Coaching (CGEC) Program
    - Aims to provide students and new labor force entrants information that will prepare them for work life and lead them to decent work opportunities.
  - Special Program for the Employment of Students (SPES)
    - Aims to provide poor students (Aged 15 to 25) with employment to provide them income in order to pursue their education. 60% of the student's salary is paid by employer,

and 40% comes from the SPES fund of DOLE. In 2011, 119 thousand student beneficiaries assisted.

- Youth Entrepreneurship Support (YES)
  - Seeks to encourage college and Tech-Voc graduates and graduating students to be entrepreneurs. It also provides them seminars and trainings for values, leadership formation and social preparation, as well as capacity building and capital assistance
- Other client-specific programs
  - *Tulong Alalay saTaong May Kapansanan (TULAY)* (aid for handicapped persons)
    - Translated as "aid for persons with disabilities (PWD)". This aims to assist PWDs' integration into society by providing them access to training and employment opportunities in both the formal and informal sectors.
  - Community-Based Employment Program (CBEP)
    - These are infrastructure and non-infrastructure undertakings of the government that provides temporary employment for skilled, semi-skilled and low-skilled workers in specific communities

PESOs engage in client-specific initiatives that provide avenues toward fulfilling the inclusive growth agenda of the government.

- *Obra Negosyo Eskwela* Countryside Enterprise Business Upliftment (ONE CEBU) Project – RO7
  - This project seeks to establish youth micro enterprises. Private partners teach in-school youth gaps how to develop and manage micro enterprises.
- Lilo-an Unemployment Assistance Program (LUAP) – (RO 7)
  - This project aims to provide immediate assistance to qualified displaced workers. It also serves to bridge jobseekers with employment opportunities in order to allow for the provision of their dependents' basic needs.

PESOs also engage in networking initiatives between and among PESOs, DOLE, and other stakeholders and partners. In building the capacity of PESO managers and staff, PESO Academies (RO 9) have been instituted to professionalize the ranks of PESO Managers and Staff as well as to continuously harness the talents of individuals involved in the delivery of employment related services. In the same light as the PESO Academies, the annual "Best PESO Awards" have been created by the DOLE to generate incentives for PESOs to promote good practices in their delivery of employment services. Through the aid of the PJN System, PESOs nationwide have been able to achieve significant milestones in their delivery of employment services. As of 2012, these milestones include having solicited nearly 1,308,566 job vacancies; registered 728,881 job seekers; referred 602,690 job seekers for placement; assessed 35,425 job seekers and referred to skills training, re-tooling and upgrading; and placed 458, 156 job seekers in wage employment.

In order to maximize the Public Employment Service (PES), there is a need to:

1. Strengthen exiting IT-based facilities through enhancing advocacy and networking initiatives for the PJN system
2. Foster stronger linkages between PJN and SRS in order to enhance the employment facilitation of PESOs
3. Explore, assess, and evaluate the availability of introducing additional livelihood programs (complete with sustainability and exit plans)

Good Practices on Public Employment Service in Viet Nam

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Viet Nam started programs on Vocational training during the 1980s, concentrating their efforts in Ha Noi and Ho Chi Minh City. During the period of implementation, the vocational training centers were able to build 143 employment promotion centers from 1990 to 1994 to complement the drive to increase their vocationally trained laborers. Given the continuous development of employment centers, Viet Nam (as of 01 July 2011) has become a full member of WAPES.

To promote participation in the PES, the Department of Labor of Viet Nam has an overall mandate to match the jobseekers to the demand of the enterprises in need of labor. The core functions of the government agency concerned with labor are the following: (1) to provide consultation and placement services; (2) to supply and recruit labors at the employer's demand; (3) to collect, analyze and disseminate LMI; (4) to implement the unemployment insurance schemes; and (5) to organize vocational training and other LM programs and regulatory services.

The prevailing method of job seeking in Viet Nam is mostly through the use of social connections either through family or friends. Despite their abundance, employment service centers have not become the primary means of job searching and matching for Vietnamese laborers. Nonetheless, the government is actively assisting the labor force through the facilitation of job fairs and increased involvement with the local government units. Alongside the other activities Viet Nam is also concerned with consolidating linkages via the employment portal. The economy also has a center for data integration on a national level called the LMFIC. The data integration center is responsible for the processing of information from enterprises and employment service centers along with other facets of the labor force and produce data that aid the policy-making units of the government towards supplying the necessary skills to laborers to meet the needs of enterprises.

Viet Nam is also focusing on strengthening the private employment services by providing unemployment insurance, providing employment exchange services and employment information. Given their goals to develop their labor market, there also

needs to hurdle the following challenges: (1) lack of funds and other budget constraints; (2) lack of capacity of the PES staff; (3) lack of labor market information; (4) ICT infrastructure; (5) improving the PES system and its functions; (6) lack of clearly defined standard occupational descriptions; and (7) organizing services for specific members of the labor market.

To address the needs of the Viet Nam's labor market, a proposed restructuring of the organizational chart of the MOLISA has been undertaken. The objective of the said restructuring is to improve the performance of the PES nationwide. The shift towards a more decentralized structure will enable MOLISA to extend the reach of the PES into the regional and provincial areas of Viet Nam. The dissemination of information through the new structure will also ensure the increased involvement of the labor force through the employment offices already in place (established since the start of the drive of Viet Nam to supply vocational training in the 1980s).

Labor Market Signaling in APEC Economies: An Approach in Addressing Manpower Mismatch

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Abstract

Asymmetric information has been seen as the more dominant explanation for the persistence of talent mismatch in contemporary literature. As such, we documented a number of measures, programs and mechanisms on how the APEC economies are narrowing the gap in information asymmetry between the suppliers and consumers of labor services. Survey and secondary data results have shown that there is a need to localize information when transmitted to end-users, and emphasize on the increasing role and use of information technology in job-matching, the privatization of the provision and transmission of some of the key components of this important public role in addressing information asymmetry in the labor market. More importantly, mitigating information gap can materialize when full information is disclosed at the work place where job seekers learn about the difficulties of the job and the employers learn about the skills and work aptitude of the worker on the job. Finally, the most that mechanisms on market signaling can do is to minimize the cost of skills and talent mismatch for both the job seekers and employers.

Keywords: *APEC, career mobility educational institutions, human capital theory, labor market signaling, labor mismatches*

I. Introduction

For the past decades, the economies in the Asia-Pacific region have been experiencing a pattern of increased national income and standards of living ascribed to an increasing investment in education, skills development, and technology adoption (Shamounki & Orme, 2003; Pande, 2003). Likewise, Pande (2003) has emphasized that several economies in the region engaged in technology-oriented curriculum as a measure in its trade-led development strategy providing demand

signals for the skills required for enhancing competitiveness. As such, the role of education in human resource development (HRD) in the Asia-Pacific region is characterized by a sturdy linkage between the yield of the educational sector and the manpower requirements of an expanding macro-economy. This has been made possible through the implementation of flexible education policies that respond to changes in the domestic and global markets in the midst of globalization. Consequently, these economies have experienced brisk growth.

However, such growth pattern may not be realized in the future by the economies in the region if there are bottlenecks in the process of human resource development as well as imbalances in the labor market. One such bottleneck is the problem of the unemployment and talent mismatch. In this light, we will tackle on how the economies in the region are addressing the labor and talent mismatch through the provision of information specifically market signaling. Although mismatch of talents is rooted on many reasons, information gaps have been cited as a major culprit in the labor disconnect. Since information asymmetry is a market imperfection, the role of government is crucial particularly in the provision of information. Under normal circumstances there are no incentives for firms and educational institutions to provide the optimal information that will narrow the information gap between suppliers and consumers of labor services. We will examine the various ways, mechanisms and programs the various stakeholders pursue to narrow the information imbalances.

The study is organized with a review of literature on the causes and consequences of labor and talent mismatches as starting point of discussion. Subsequently, we highlight the different ways economies are addressing labor and talent mismatch through multi-stakeholder initiatives. Lastly, a discussion on the results of the survey conducted by the Department of Labor and Employment of the Philippines on market signaling by identifying core labor market signals in key industries. Aside from comparing similarities and differences in the economies' approaches, we will emphasize some of the best practices that can be implemented in other economies in addressing talent mismatch and structural unemployment.

II. Labor Market Signaling: A Literature Review

2.1. Diagnosing the Persistence of Labor Market Mismatches

2.1.1. The Inadequacies of Human Capital Theory

The human capital theory generally views education as a form of investment where individuals compare the direct, indirect, psychic, and opportunity costs of education to the future benefits of education (Todaro & Smith, 2008). This was derived from Adam Smith's idea that investment in education and skill formation is a significant factor in economic growth comparable with investments in gross fixed capital formation. According to Schultz (1961), individuals continue to invest in education until the marginal benefits are equal with the marginal costs. Moreover, Schultz (1961) deemed that human resources can be treated as a form of capital. Meanwhile,

Becker (1964) supposed that investment in knowledge, skills, and health will not only benefit the individual for it can also increase the economy's human capital resource pool and potential productivity. As such, the accumulation of human capital is made possible by investments made on a person's skills and well-being. Investments range from those that yield long-run returns such as education, job training, healthcare, or migration to those that yield immediate returns such as basic sustenance.

Additionally, Becker (1962, 1964) and Mincer (1958, 1962, and 1974) emphasized on how the procurement of greater levels of schooling increased an individual's productivity. The returns associated with this increased level of productivity come in the form of higher compensation levels and wages. According to Linsley (2005), this suggested that earnings are primarily determined by supply-side (worker) characteristics, especially in the absence of exogenous shocks that induce demand-side changes. Empirical studies supporting the human capital theory have emphasized the presence wage differentials between individuals that possess high levels of education, job training, and experience and those with relatively little.

Under these assumptions, firms are said to adjust their production processes in order to fully utilize the skills possessed by the pool of laborers available to them. Thus, firms will pay its workers wages equal to their marginal productivities under competitive assumptions (Auerbach & Kotlikoff, 1987). The implications of the theory are clear: if there were to be mismatches in the labor market, it will manifest in the short-run when firms are still embroiled in the process of adjusting their production processes in order to fully utilize the human capital of their workforce. In the long-run, a state of equilibrium is achieved when the adjustment process is completed and mismatches are completely eliminated (Desjardins & Rubenson, 2011).

Meanwhile, Linsley (2005) claimed that under this framework, an initial tendency for individuals in pursuit of higher wages to overeducate themselves might exist. When the labor force becomes increasingly more educated, the relative wages of high-skilled laborers are likely to fall. As the wage differential between low-skilled and high-skilled workers narrow, firms begin to substitute low-skilled workers for high-skilled ones in order to increase effective output. This reduces the foreseen benefits of procuring higher levels of education and thus lesser investment in human capital. As such, the problem of over-education becomes but a temporary phenomenon that dissipates after market adjustments occur.

Despite its intuitive nature, the human capital theory has been criticized for assuming labor-market clearance and equilibrium conditions. The presence of frictions in the labor market in the form of asymmetric information, mobility costs, and principal-agent problems has been well documented. Such imperfections in the market inhibit the unbridled market adjustments that efficient labor markets require. Hartog (1985) cast some doubts on the human capital theory's ability to explain labor market mismatches by showing how the theory focuses too much on the long-run supply side of the labor market but remains mute on demand-side characteristics such as the nature of occupation and specific job tasks. The claim that marginal productivity

is the primary determinant of wages implicitly suggests that the nature of a person's job has nothing to do with earnings and is thus assumed to be homogenous.

Given such glaring deficiencies of the human capital theory, it will be insightful to explore other theories that seek to explain the presence of disequilibria in the labor market.

2.1.2 Technological Change Theory

As economies in the Asia-Pacific region converge toward technological advancement, so does the requirements for human resource development that compels delicate attention on specialized education in order to preserve the technological environment. Technological change is usually illustrated using the Linear Model of Innovation as mentioned by Rogers (2003). However, this model has been largely rescinded and has been replaced with a model of technological change that involves innovation at all stages of research, development, diffusion, and use (Rogers, 2003). As such, modeling technological change is a process of continuous improvement oftentimes represented by a curve illustrating decreasing costs over time. Moreover, technical change was conventionally thought to have exhibited factor-neutrality. Despite causing a shift of the production function (i.e. more output for a given set of inputs), the marginal rate of transformation (MRT) of factor inputs was expected to remain the same as per the study of Violante (2008). Assuming that these conditions hold, technological improvements would provide proportional productivity gains to all factors of production.

Contrary to conventional thought, technical change theory posited that recent advancements in production technologies have been biased towards skilled workers. Progress in the field of information technology and computers seem to have increased the relative productivity of skilled-workers relative to their less skilled counterparts. Evidence to this claim comes from the fact that between 1965 and 1995, college-wage premiums have risen from 1.45 to 1.7 despite the sharp increase in the relative supply of college graduates (Violante, 2008; Galor & Moav, 2000). This widened productivity disparity between the skilled and unskilled has significantly increased the relative demand, and consequently, the relative wages, of the former. This has already been implied by the study of Martin (1998) wherein results revealed that research and development enhanced productivity of human capital. It also enhanced productivity of the rest of the economy especially for firms that finance a good portion of technological research that created spillover effects that enhanced the supply of human capital, particularly graduate students with specialization in science and technology (Martin, 1998).

The plausibility and economic foundations of the technological change theory can be presented through three alternative formulations. For instance, Griliches (1967, 1969) supported the claim that skilled labor seemed to exhibit a higher degree of complementarity with physical capital than did unskilled labor. Indeed, the efficient operation and full utilization of increasingly sophisticated but complex technologies (e.g. computer software, information systems) required users to possess more

advanced skill-sets and in some instances, specialized knowledge. As these equipment and technologies became cheaper over time, more firms began shifting to more capital-intensive production methods. These changes gave rise to an increase in the relative demand for skilled laborers who were capable of operating the newly-acquired equipment and technologies.

Meanwhile, Nelson & Phelps (1966) veered away from studies that merely relate the role of education towards repetitive jobs. They contended that higher levels of schooling are crucial to jobs that require individuals to keep abreast with constant technological innovations. On the most basic level, a more experienced worker is better equipped to adapt to technological changes since it is less costly and time-consuming to acquire the additional knowledge required by a new technology. On a managerial level, a skilled individual is more capable of choosing which among alternative technologies will be the most appropriate to introduce and integrate. Likewise, the ability to modify and tailor-fit a new technology in such a way that it can be applied to current production methods certainly requires a substantial amount of technical proficiency. The studies penned by Greenwood & Yorukoglu (1997), Caselli (1999), and Galor & Moav (2000) have confirmed that recent technological progress has indeed been skill-biased as more educated people find it less difficult to adapt to these changes.

The last explanation is made by the proposition of Milgrom & Roberts (1990) wherein technological progress in several aspects of firm activity have induced firms to reorganize into “flatter” entities with fewer hierarchies. For firms to be able to maximize technological progress in various fields such as product design, engineering, and information, and marketing, it must be able to exploit and coordinate the operations of these distinct but highly complementary functions. Milgrom & Roberts (1990) cite the growing popularity of “design for manufacturability” in several firms in the United States of America. Given how computers have made it extremely easy to modify initial product designs, compare the merits of alternative product designs, and evaluate pecuniary implications associated to using a particular design, the process of product design now involves greater levels of synergy between process engineers, designers, and manufacturing managers. All in all, workers are now expected to be able to perform multiple tasks and take on a diverse set of responsibilities. These changes in firm organization have thus endowed skilled workers with yet another competitive advantage over their unskilled cohorts.

Desjardins & Rubenson (2011) provided three reasons that attempt to explain how skill-biased technological change may give rise to labor market mismatches. First, skill underutilization may occur if firms are unable to adopt new technologies or reorganize production methods due to reasons such as costs and other barriers to the seamless transfer of technology. In this particular instance, the skills gained by laborers that enable them to make full use of new innovations are rendered unused. Second, firms are said to have every incentive to hire overqualified workers in anticipation of future technological changes that may require increased capacities to learn and adapt. Firms usually employ this hedging strategy in order to protect themselves from unforeseen changes in the economic landscape. Last, the rapid

technical progress may create an illusion that those currently employed are actually undereducated without considering the skills obtained from experience and on-the-job training.

2.1.3 Career Mobility Theory

The career mobility theory, according to Sicherman & Galor (1990), states that the returns to education comprise not only of higher income streams but also higher probabilities of occupational upgrading, either through intra-firm career mobility (promotion) or inter-firm mobility. It claims that wage penalties for over-educated laborers are remunerated by much better promotion prospects (Buchel & Mertens, 2001). Though wage differentials between more educated and less educated individuals may initially be narrow, much of the returns to education are actually reaped during the later stages of one's career. This means that analyzing the motivations behind an individual's decisions procure higher levels of schooling must be done under the presumption that he/she foresees long-term benefits in the form of increased career mobility and promotion possibilities. Hence, an individual may choose low-paying entry level jobs if the effect of schooling on the probability of promotion is higher within the firm he chooses to work for. The choice of accepting a job that has a lower job requirement that what one possesses may well be a rational and strategic decision on the part of the applicant (Garcia-Serrano &Malo, 2002).

Likewise, according to Buchel & Mertens (2001), results have shown that overeducated workers have markedly lower relative wage growth rates than correctly allocated workers, while undereducated workers enjoy higher rates of relative wage growth. Moreover, the results of Buchel & Mertens (2001) have supported the finding that "overeducated workers have less access to formal and informal on-the-job training, while undereducated workers are more likely to be admitted to such programs."

In addition, the results of the study of McGuinness & Wooden (2007) suggested that over-skilled workers have higher probabilities of quitting their current job and they have relatively low confidence in finding an improved job match. Furthermore, McGuinness & Wooden (2007) argued that "some of the greater mobility observed among over-skilled workers is due to involuntary job separations, and even in instances where job separations are voluntary, the majority of moves do not result in improved skills matches."

This hypothesis may explain why over-education – where a worker's qualifications exceed that of his/her job requirements – is quite prevalent in the labor market (Buchel & Mertens, 2004). This situation is termed by Todaro & Smith (2008) as underemployment by skill. More interestingly, the theory of Sicherman & Galor (1990) implied that overeducation is a transient phenomenon that slowly corrects itself during later stages of a working career. As an individual spends more time working for a firm, his/her true productivity is slowly revealed. This provides a clear basis for wage increases that compensate the individual for investing in human capital and a promotion that aligns qualifications with job tasks.

However, career mobility theory is criticized by Buchel & Mertens (2004) for its inability to explain the prevalence of under-education within the labor market.

2.1.4 Job Search Theory

The job search theory attempts to explain labor-market mismatches by pointing to the presence of imperfect information and job-search costs (Fitzgerald, 1998; McCall, 1970; Stigler, 1962). While in the process of looking for jobs, aspirants do not possess prefect information about the nature and characteristics of the jobs (or more precisely, production processes) that they are applying for. Likewise, most young applicants have limited networks and job-search experience, both of which lessen the probability of finding the right job. Combined with the pressure to accept a job due to mounting costs associated with a prolonged search, these factors increase the likelihood that a worker will accept a job with tasks not necessarily commensurate to his/her credentials and actual capabilities.

Based on the study of Addison, Centeno & Portugal (2004), the net effect of an increase in the probability of an offer on duration is generally negative. This implies that its effect on the asking price outweighs the effect of more offers. This is consistent with the study of Lancaster & Chesher (1983) that exploited the informational value of the job search theory by computing the key reservation wage and duration elasticities using data from a dataset containing information on individuals' reservation wages, unemployment benefits, and accepted wages.

The consequences of imperfect information are borne not only by prospective employees but also by individuals who are in the process making decisions regarding the level of schooling and the type of degree they will procure. The absence of complete information on present and predicted labor market outcomes may mislead individuals into specializing in a degree that will no longer be of huge demand come graduation. Likewise, the absence of information also disables educational institutions from being able to develop degree programs and short courses that meet rapidly change industry demands for human resources that possess specific skillsets.

2.1.5. Signaling and Screening Hypothesis

Traditional human capital theory states that an individual's wages is incumbent upon productivity, which in turn is accumulated largely through education and experience in the labor market (Mincer, 1974). Such a proposition thus considers education as a form of investment, the return of which may come in the form of higher wages in the future. However, Spence (1973) introduced an alternative relationship between education, among other personal characteristics, and wages. It is said that an individual's productivity cannot be known instantaneously at the point of hiring. Hence, the hiring process effectively becomes a form of investment under uncertainty. Although the employer seeks to maximize the returns of hiring a particular individual, very little information about the actual productivity of an applicant is known. Nonetheless, it is posited that there exists other observable

characteristics that may facilitate an employer's assessment of an applicant's marginal product to the organization (Spence, 1973). These substitutes to the unobservable productivity come in the form of education, previous work experience, race, age, sex, and other personal records. In the absence of better alternatives, employers, then, are left with no choice but to rely on such indices and signals to determine employability and offered wages.

The identified characteristics are within the applicant's control while others are inherent, and thus, are beyond alternation. Of greater concern are the characteristics that can be subject to manipulation by the individual. Spence (1973) termed these as signals. Specifically, educational attainment is seen as one of the more potent characteristics that can signal the presence of higher productivity and distinguishing talents (Spence, 1974; Riley, 1979). However, concomitant to the procurement of such signals are costs. For instance, the signaling costs to education are comprised of both direct costs such as tuition fees and daily expenses, and opportunity costs of forgone employment for the duration of study. Hence, Spence (1973) argued that the aim of the applicant is to maximize the difference between signaling costs and offered wages.

As such, education still remains to be a form of investment. However, the difference between the screening hypothesis and traditional human capital theory lies in the instrumentation of education not as a tool to increase productivity, but as a signaling apparatus. These claims by Spence (1973) of education as merely a signaling mechanism still fall in line with the empirical proofs of Psacharopoulus & Woodhall (1995) that education does improve productivity.

The screening hypothesis constitutes a powerful explanation as to why job applicants have the tendency to overeducate themselves. Prospective employees tend to exploit the inability of employers to accurately measure an individual's productivity during the hiring stage. Indeed, firms are left with no choice but to select those who are able to signal higher levels of skill. Likewise, the screening hypothesis also warns of the possibility of over-skilled workers taking over jobs that conventionally employ less skilled workers (crowding-out effect).

In addition, Desjardins & Rubenson (2011) showed how the process of signaling creates a cycle that induces workers to progressively overeducate themselves. The desirability of procuring higher levels of education increases the number of individuals who do so. As the number of individuals that possess a certain level of qualification increases, the signaling power of the said qualification begins to diminish. This prompts workers to seek even higher qualifications in order to distinguish themselves from the rest.

2.1.6 Job Competition Theory

Thurow (1975) posited that wages are largely determined by job-specific characteristics (or requirements) and less by individual ones. Simply put, earnings are influenced by demand-side factors alone while educational attainment exhibits

little to no direct impact on earnings (Linsley, 2005). The model assumes that workers compete for high paying job s in the labor market. This process creates a job queue that ranks jobs based on earnings and a labor queue that ranks workers based on their predicted training costs. Since workers with higher levels of education will require less training, the labor queue is reduced to workers being ranked based on their educational attainment (Leuven & Osterbeek, 2011). After the ranking process, highly educated workers are then matched to higher paying jobs.

An increase in the average level of schooling of the relevant population may thus induce overeducation. Though the job queue remains unchanged, the labor queue's distribution shifts. This causes lower-skilled laborers to move down the labor queue and consequently face lower-paying jobs or worse, to be bumped-out of the labor market and face unemployment. As workers struggle to maintain their position in the labor queue, obtaining education in excess of what jobs require becomes an attractive choice for workers.

According to Linsley (2005), "the job competition model predicts that overeducation persists, and that it creates economic costs in the form of suboptimal investments in education, allocative inefficiencies, and increased income inequalities."

2.1.7 Labor Market Segmentation Theory

The Segmented Labor Market Theory was developed from the findings of Reich, Gordon & Edwards (1973) arguing that political and economic forces within American capitalism gave rise to segmented labor markets, and that the sources of segmented markets are not exogenous to the economic system. Moreover, Reich, Gordon & Edwards (1973) defined labor market segmentation as the historical process wherein political and economic forces encourage the division of the labor market into separate submarkets or segments which are distinguished by different labor market characteristics and behavioral rules. They have noted and observed four different types of labor market segmentation. The first is segmentation into primary and secondary markets, wherein primary jobs requires skill, wages are relatively high and job ladders or promotions are offered while secondary jobs offer low wages, turnover is high and are mostly offered to minority workers which are the women and youth. The second is segmentation within the primary sector ("subordinate" vs. "independent"), Subordinate primary jobs are known to be those factory and office jobs while Independent primary jobs are those that have professional standards for work. The third is segmentation by race wherein there are certain jobs that are fueled by prejudice and labor market institutions. Last is segmentation by sex wherein there are jobs that are restricted only to men and the wages of women are relatively low and the women are known to do "serving" jobs for the male.

On the other hand, Dickens & Lang (1988) described the dual labor market model to be consisted by two sectors, the primary and secondary sectors. The primary sector that gives high wages provides a good working environment, and high returns to human capital variables such as education and experience. The secondary sector,

which offers low wage, does not provide favorable workplace. The placement of an individual in the labor market sector influences taste and preference, behavioral patterns, and cognitive abilities.

2.1.8 Assignment Theory

Assignment theory can be substituted between human capital theory and job search theory. Though it does recognize the capacity of education to raise an individual's productivity, it contends that actual productivity usually falls short of what can theoretically be achieved due to job mismatches. Sattinger (1993) contended that an individual's productivity and earnings is not solely determined by job performance alone but also by the nature of job an individual happens to be assigned to. The extremely diverse nature of jobs simply imply that they vary in terms of tasks, responsibilities, and expected output; the combination of skillsets a typical worker must possess; and technologies employed and resources combined with labor. Due to this, a set of equally educated individuals will inevitably have varying degrees of performance when made to accomplish the same task. Thus, job characteristics constitute an intermediate step between individuals' characteristics and their actual earnings.

Under this framework, labor market mismatches arise when workers choose jobs whose characteristics are not congruent with their own qualities. This allocation problem is partly caused by information asymmetries that prevent workers from having knowledge on both the full range of jobs available to them and attributes or characteristics of each occupation. Likewise, employers' inability to adjust their technologies in ways that will better complement the current pool of workers has also led to persistent skill mismatches.

This model also prescribes a more efficient matching process that increases the probability that prospective workers are able to invest in the most appropriate form of human capital and find a job in which they have a comparative advantage. According to Desjardins & Rubenson (2011), the next best alternative to a highly infeasible approach of allocating workers top-down based on their skills would be to rely on developing better labor market signaling systems.

2.1.9. Towards a Synthesis: Labor Mismatch and Adjustments Costs

Given the above discussion on the various theories explaining the phenomenon of mismatch in the labor market it is interesting to revisit the concepts of mismatch and its causes before we can recommend appropriate policy prescriptions on how to address this pervasive problem in the APEC region. Disconnect between the human talents and skills, on the one hand, and the job requirements of the workplace, on the other hand, emanates from the various views on the concepts and causes of mismatch. This divergence can arise from the inappropriate responses of firms arising from the over-education of graduates and the under-education of graduates. Similarly, the mismatch can be viewed as a consequence of the incompatible responses of individuals to changes in the workplace. Lastly, the gap between

demand for and supply of talents can surface from information asymmetry among actors in the labor market.

The decision of individuals to invest too much in education or training, although inefficient from the social point of view, has rational basis on a personal level as elucidated in the previous section. Human capital theory posits higher productivity and wages with more education. On the other hand, job completion model asserts that more education can serve as an insurance to bump a less educated individual in a queue for jobs in a tight market. Even if education has weak links with productivity as signaling and screening hypothesis assumes, more education can serve as a signal for productivity in the absence of a direct and tangible measure for productivity. In addition, the more educated individual is ably prepared to handle changes brought about by innovations and technological progress. More education can also serve as an avenue for greater likelihood for career mobility in the future. From the labor segmentation model, enhanced education demand is based on the desire of the individual to enter the primary internal labor market where the working conditions and career path educated and skilled workers are encouraging. Given these decisions of the individuals firms or the workplace does not adjust appropriately thus creating a mismatch.

Under-investment in education, on the other hand, can be attributed to the lack of financial resources of the individuals and the presence of an imperfect credit market to provide the necessary funds to finance the cost of acquiring more education. But beyond financial constraints, the concept of under-investment in education can be viewed as a result of inadequate preparation graduates of educational and training institutions. Mismatch again emerges because firms are reluctant to provide training to those who have under-invested in education or to graduates who are entering the labor market with inadequate skills preparation. Given this latter perspective on under-investment in education, talent mismatch can likewise occur because educational and other training institutions are slow, if not reluctant, to adjust to the changing demands of the workplace brought about by intense competition, globalization and technological innovations.

It may very well be that the problem of mismatch is based on the economics of adjustments. In a situation where there is an over-educated workforce, the mismatch can be addressed by firms having to adjust in terms of changing their production processes to accommodate an ever increasing skilled workforce. This may be costly as it implies huge investments in state of the art equipment and modern production processes.

On the other hand, in the case of under-investment, the burden of adjustment can be done either by educational institutions or by the firms themselves. Any sector that will adjust will have to shoulder the cost of adjustment. But because of the huge costs, both educational institutions and firms may have apprehensions to adjust to address the incongruence.

If educational institutions will adjust, training institutes will have to re-align their academic programs and curriculum to the demands of the workplace. Although this adjustment may be appropriate and can be feasibly implemented in technical and vocational schools, this avenue may find problems of implementation in higher educational institutions. Although universities are contributing to manpower training these institutions of higher learning also have other objectives including expansion of the frontiers of knowledge through research and development and to be of service to the community. Thus, aligning the curricular programs of universities to suit the demands of the workplace may create rigidities in skills of graduates of academic institutions and may be counterproductive in the light of the dynamism in the workplace. The rigidities may arise as higher education institutions stress the technical and professional component of the curriculum that may be out of date by the time the graduates exit the universities. To mitigate these rigidities an appropriate curriculum can be crafted so that schools can produce graduates that are trainable and flexible to the changes in technology and the varying demands of the workplace.

If firms will have to adjust, they have to provide training to graduates with inadequate preparation that are entering the workforce. The cost of training may be too costly for the individuals to take. For firms to finance the training there is an assumption that the labor market is tight or there are difficulties if not the prohibition in hiring qualified trained foreign workers. Aside from the cost, the reluctance of firms to undertake these training programs stem from the fact that these training programs may differ from on-the-job training and may be considered as general training which is not specific to the job requirements. It may be argued that as general training it should be financed by the workers and can be done in educational and training institutions.

If both educational institutions and firms do adjust, there will be less adjustment cost on both sides. For educational and training institutions crafting a curriculum geared towards trainable and flexible critical thinkers who are good communicators and disciples of education for life, these graduates can adapt easily to the demand of the workplace. Given these type of graduates, it will be very easy for firms to conduct specific training programs to these trainable and flexible graduates.

But beyond inappropriate responses to over-education and under-investment in education and to the dynamic changes in the workplace, labor and talent mismatch is rooted in the information asymmetry as articulated in the signaling and screening hypothesis, job search theory and assignment theory. Since information asymmetry is a market failure, it is interesting to examine the crucial role of government in providing measures to address this market failure since there may be no incentive for the actors in the labor market to provide information that mitigate if not address the problem of mismatch of talents and labor services..

The rest of the paper will discuss on the mechanisms, programs and institutions that various stakeholders in providing information and market signal to address information gaps.

2.2. Best Practices and Proposed Solutions

According to Gary, et al. (1996), the provision of labor market information used to rely on what is known as the "manpower requirements approach." This method uses statistical tools and economic data for the purpose of estimating the present and predicting the future supply of manpower in the labor market. Results are then used to determine the presence of disequilibria in various industries. For instance, a shortage (surplus) for a particular occupation may prompt need to reduce (increase) educational and training investments in the relevant subject or degree.

A number crunching exercise, manpower forecasting was thought to have the capacity to accurately predict occupational requirements within a particular location (Gary, et al., 1996). Unsurprisingly, several government agencies made use of approach as a basis for policy-making and budgetary allocations within the educational and labor markets (Clark, 1986). However, the 1970s and 1980s marked a gradual departure from the method as economists began to realize the approach was neither accurate nor reliable. First, manpower forecasting failed to accommodate and make use of organizations' own feedback systems that were capable of identifying the presence of disequilibria. Second, it also suffers from the inability of labor force data to determine and expose industry-specific problems due to excessively aggregated data. Last, the method has also been criticized for its blatant disregard for the presence of internal labor markets within firms that provide training for unskilled workers.

The evident failure of the manpower requirements approach led economists to search for better indicators that could better capture the true state of the labor market. According to Middleton, Ziderman & Van Adams (1993), the ideal approach must be one that captures information on a wide-range of issues such as social benefits, educational investment, as well as training costs; and remains dynamic to the ever-changing economic landscape.

Gary, et al. (1996) indicated that a sound labor signaling system must provide data that is able to accomplish the following:

Aid in the decision-making of private individuals as to how much and which type of educational training investment to make. This implies the availability of information on wage fluctuations and trends, job vacancy rates, graduate placements, and enrollment data (to estimate future distributions of skills/specialization). This facilitates an individual's assessment of the costs and benefits associated to procuring a higher level of education and choosing a particular specialization.

Aid in the management of training systems. This requires the use of reverse tracer studies which are designed to identify levels and combinations skill acquisition that lead to certain occupations and the provision of accompanying data on costs associated to acquiring each qualification set. Other pertinent information includes rates of return associated with various skill acquisition choices, measurement of cost effectives, new industry trends, and productivity rates.

Improve labor market efficiency. Doing so will require information that effectively reduces labor market frictions that inhibit those searching for a job from finding one that is most appropriate to their individual characteristics. For instance, information on wage differentials and job characteristics better equip workers to assess compensation-risk trade-offs. Meanwhile, information on the internal labor markets or the presence of public subsidies for training within a particular industry not only allows workers to assess non-wage considerations that may affect their job choices but also disables firms from engaging in monopolistically competitive activities within the local labor market. Information on labor codes, evidence of low labor mobility, and obstacles to wage flexibility may also aid government policy-making

Serve as a framework for government planning on public investments in training. This will require information on present and future (1) industry demand for specific professions and workers and (2) distribution of labor supply by skill level and specialization. Such information will include private training capacity, programs offered by educational institutions, skills supply and demand imbalances, market imperfections, and continuing structural changes.

III. Experiences of APEC Economies on Labor Market Signaling

3.1. Australia

Although the Australian economy had a pale growth performance in 2009 with a 1.29% record, it has registered higher growth rates in the past decade reaching up to 4.14% in 2004. Per capita GDP remains high at USD 42,279 in 2009 current prices. Agriculture constitutes only 2.5% of the total GDP and has shown declining trend during while the share of industrial sector has been increasing reaching 29% in 2009. The share of services sector remains high and stable.

Population has been increasing and was estimated at 21.9 million in 2009 from 19.1 million recorded in 2000. This increase is attributed to an accelerating population growth rate reaching 2.04% in 2009. More than two-thirds of the population is in the 15-64 age cohort.

Labor participation reached 65.3% in 2009 with consistently higher participation rates for men recorded at 72.5% in 2009. However, the trend of unemployment rates has been declining in the past decade from 6.8% in 2000 down to 4.2% in 2009. The share of agriculture to total employment has been declining and reached 3.4% in 2007 while the share of the services sector is increasing accounting for 75.1 % of the total. The share of the industrial sector remains stable at 21% over these years. Because of the substantial share of the services in the GDP and the expanding share of the sector in total employment job opportunities in the services sector are bright in the medium term.

In terms of the quality of human resources, education expectancy for an ordinary Australian child remains high at 20.6 years in 2008. Net enrollment ratio in secondary school is likewise high at 88%. This means that almost 9 out 10 children

in the secondary age cohort are attending secondary schools. Gross enrollment ration for tertiary education is also relative high at 77% recorded in 2008. With these positive indicators the quality of human talents in the Australian economy is encouraging in the future.

The recruitment firm Manpower releases regular Manpower Employment Outlook survey that shows information on the Net Employment Outlook (NEO) for Australia. The survey presents periodic hiring intentions from the views of employers. The results of these NEO reinforce the changing structure of the Australian economy and its implications on employment where some sectors exhibit contraction while others expand. In the light of these structural changes particularly on labor shortages employers adjust by reassessing their job requirements and look for trainable applicants while job seekers adjust by their willingness to learn new skills and adapt to different work environment.

According to Dowling (2012), various government agencies provide information related to labor market signaling including projections of the performance of the economy; labor force trends including skills shortages, vacancies and unemployment rates at the local level; labor market trends and future demands in various states and territories, industries and occupations published in the annual *Australian Jobs* report by the Department of Education, Employment and Workplace Relations, national-level and industry level labor and skills needs; and information on local labor market conditions. In addition, employers also secure labor market information on the labor market from the following sources: industry associations, publications of academic research institutions, recruitment agencies, and from their own experiences. Local Employment Coordinators (who are provided by the Australian Government) also work with employers, employment service and training providers, government agencies, and other stakeholders in regions which are experiencing particularly high levels of labor market disadvantage to develop solutions to each region's labor market needs (Dowling, 2012).

For the suppliers of labor services, the education and training institutions get information on employers' requirements and expected student demand from various sources including the Graduate Careers Australia and National Centre for Vocational Education Research (NCVER) on survey results measuring graduates employment outcomes; government institutions on the number of student places that the government will finance in the vocational education sector and the postgraduate component of the higher education sector(including information on incentives for specific courses in fields that are experiencing skills shortages); local employers in industries related to the courses offered by training institutions; Industry Skills Councils on the labor and skill needs of companies; and from their own information on enrollment trends and based on the institution's experience. (Dowling, 2012)

Moreover, Australia has vibrant employment services industry that consists of government-contracted employment services and the general employment services sector. The publicly-funded employment services were established to give employment assistance to unemployed job seekers under certain eligibility criteria,

with additional services available to the more disadvantaged job seekers who are receiving income support from government. Companies operating in the general employment services sector serve as intermediary between employers and job seekers. The services these companies offer include advertising vacant positions, receiving applications, screening applicants and other recruitment issues. The growth of this industry was made possible through the decision of many Australian companies to outsource their recruitment processes.

The Australian Government has outsourced its employment services for unemployed job seekers to a network of for-profit and not-for profit providers since 1998. This network has been called Job Services Australia (JSA) since 2009. The services JSA providers provide to job seekers includes advice on employment opportunities, training on effective methods for job seeking, resources needed to apply for jobs, and training in skills relevant to the local workforce.

3.2. Brunei Darussalam

The Department of Economic Planning and Development (DEPD) of Brunei Darussalam disseminates labor market data through regular issues of the Brunei Darussalam Key Indicators (BDKI) and the Brunei Darussalam Statistical Yearbook (BDKI). The BDKI contains basic labor market indicators such as labor force size and employment/unemployment rates. Out of the 198,800 individuals part of the labor force in 2010 (the latest issue), 193,500 were employed while the remaining 5,300 were unemployed. During the same year, the labor force participation rate was at 68 percent, with males' participation (76.4 percent) being significantly higher than that of females (58 percent). Unemployment rate, on the other hand, was pegged at 2.7 percent at the time (BDKI, 2011).

The BDSY contains more detailed information on how the workforce is distributed across industries and occupations. In addition, it also presents parentage changes in the number of people employed within occupation and industry classifications – a useful tool to assess changes in labor demand and supply. In 2009, the share of individuals working as "Service Workers, Shop, Market, Agricultural, Fishery, Production Craftsmen, Plant and Machine Operators and Assemblers & Related Workers" or "Cleaners, Laborers and Related Workers" was the highest. The number of "Professional and Related Workers" experienced the largest increase of 11.5 percent during the same year. In terms of major industry groups, "Construction", "Other Mining, Quarrying and Manufacturing", and "Wholesale and Retail Trade" were employing the largest number of people in the workforce. In 2009, however, the number of workers registered under "Other Mining, Quarrying and Manufacturing" dropped substantially by 24.2 percent.

One last feature of the BDSY is its inclusion of a cross-sectional table that shows the occupational-composition of each industry. The means that users can identify which occupations each industry is most reliant on. Using the same information, users can also derive insights regarding the industry-composition of each occupational group.

3.2.1. Education and Training Institutions

The government manages three universities (Universiti Brunei Darussalam, Universiti Islam Sultan Sharif Ali, and Institut Teknologi Brunei), one college (Kolej Universiti Perguruan Ugama Seri Bagawan), and nine technical vocational schools/colleges (Sultan SaifulRijal Technical College, Jefri Bolkiah Engineering College, Mechanical Training Centre, Business School, Nakhoda Ragam Vocational School, Sultan Bolkiah Vocational School, Wasan Vocational School, Arts and Handicrafts Training Centre and Youth Development Centre) (BDSY, 2011). Alongside government-run institutions, one private university and 4 TVET institutions are also in operation.

As of 2010, 3,546 students were enrolled in various TVET institutions. TVET programs usually require one year to two-and-a-half years to complete. An industrial attachment component has been integrated within TVET curricula for the purpose of striking a balance between time spent in classroom-based instruction and world-of-work exposure. Students enrolled in technician level programs spend six months in an on-the-job training program while those enrolled in trade level programs spend three to six months. To ascertain the success of the industrial attachment program, TVET institutions have partnered with various public and private organizations. Each apprenticeship program is designed in such a way that students are exposed to pre-selected tasks that are both relevant to their program (as opposed to menial and unproductive tasks) and contributory to the firm/organization's operations. This way, both students and employers stand to gain from the arrangement due to the alignment of interests.

The TVET system also features a general education component – common subjects all students must pass before obtaining any certification or diploma. Integrated within all programs' requirements are classes on Developing Personal Performance, Working with Others, Communicating, Managing Tasks and Problems, and Applying Numeracy, Design and Information Technology Skills and Computer Literacy (Rahman, 2008). This recognizes the fact that certain skills are universally applicable to any form of work an individual is engaged in.

Another notable feature of Brunei Darussalam's TVET system is the establishment of strategic partnerships between firms and schools. The partnership is concerned with the development of courses specifically designed to meet a company's demand for workers that possess specific skills and expertise integral to their production processes. For instance, TVET institutions have been supplying the Royal Brunei Air Force (RBAirF) and the Royal Brunei Airlines (RBA) with graduates trained in avionics, aircraft/helicopter maintenance, and engineering. In fact, two specialty courses (Airframe/Engine Technician and Avionics Technician) were offered for this purpose.

3.2.2. Job Matching Facilities and Labor Market Information

Besides basic labor statistics, the BDSY also contains information on enrollment rates of various fields of study. This information allows policy-makers to derive insights on potential labor supply issues once the current pool of students graduate after three to four years. However, information presented is presented in raw form and without accompanying forecasts or analyses that may be useful to various stakeholders.

As for job-matching facilities, the economy relies on an abundant supply of third-party employment portals that match job-seekers with employees. These websites include BruneiJobs, GigaJob-Brunei, and BruDirect among others.

3.3. Canada

3.3.1. The Canadian Economy

GDP growth remained modest in the first quarter of 2012, standing at 1.9% (annual rate) for a second consecutive quarter. GDP has now grown by 7.9% since the trough of the recession in the second quarter of 2009. As a result, in the last quarter of 2011, Canada's GDP stood 3.7% above its pre-recession peak.

Nearly three-and-a-half years since the trough of the recession, employment has increased by 699,300. The Canadian economy has recovered all the jobs lost during the economic downturn and now stands 304,200 (+1.8%) above the peak of October 2008. Unemployment, however, has been slower to recover, currently hovering at 7.3% above where it stood in 2007 (under 6%). This is principally due to a significant increase in labor market entrants during this period.

The employment situation can vary quite significantly within and across regions in Canada. For example, most of Canada's western and Prairie Provinces have experienced strong job growth, while those in Central Canada and on the east coast have seen either minimal increases or, in some cases, declines. To this point in the year, strongest gains have come from Saskatchewan (+1.8%), Quebec (+1.3%) and Alberta (+0.8%). The national average is +0.7%.

3.3.2. Demographic Trends

As of July 1, 2011, the median age of Canada's population was estimated at 39.9 years, up 0.2 years from the same date a year earlier. The number of people aged 65 years or older was estimated at 4,973,400 or 14.4% of Canada's population, up 0.3 percentage points from the same date a year earlier. The proportion of seniors will grow more rapidly in the coming years as the first generation of baby boomers are now reaching the age of 65. On the other hand, the proportion of children under the age of 15 has decreased, representing 16.4% of the total population or 5,644,800. The most recent data (April 2012) has Canada's population at 34,755,634.

The Canadian population is both well-educated and skilled, ranking highly in OECD PISA[1] scores (a measure of educational quality) and has the highest rate of post-secondary education (college, university, etc.) completion in the world.

3.3.3. Labour Market Information Tools

Statistics Canada is the chief source for the collection and dissemination of socio-economic statistics in Canada. Human Resources and Skills Development is responsible for providing employment services and labor market information tools through in-person contact at Service Canada Centres and via the internet through the Working in Canada website.

"Working in Canada" is the Government of Canada's leading source for jobs and labour market information. It offers users free occupational and career information such as job opportunities, educational requirements, main duties, wage rates and salaries, current employment trends, and outlooks. The site can help people search for work, make career decisions, see what jobs will be in demand, and much more. Employers can also advertise jobs for free.

The Working in Canada Web site was launched in 2007 as part of a joint project by Human Resources and Skills Development Canada (HRSDC), Citizenship and Immigration Canada (CIC), and Canada's provinces and territories. Its development was based on the premise that users need simplified and customized information, not just more information.

The site integrated 7 sources of information in 1 convenient location (mash-up) to help workers make informed decisions. As of 2010, the site had expanded to include 23 sources of learning and labor market information for Canadians and newcomers alike. Today, visitors can explore the job market and search 60,000 listings daily from Job Bank and external sources, all on WorkinginCanada.gc.ca.

3.4. Chile

The Chilean economy has posted the highest growth rate in the previous decade estimated at more than 6% in 2004. However the performance of the Chilean economy took a dive with decelerating growth ending with a negative growth rate of 1.5% in 2009. Although the real per capita GDP in 2009 (USD 6083) has declined from the previous year this figure has increased from USD 4878 recorded in 2000 measured in 2000 prices. The agricultural sector contributes only 3.8% of the total GDP in 2008 down from the 6.1% share in 2000. The proportion of the industrial sector, however, has increased to 43.4% in 2009 from 38.4% estimated in 2000.

[1] PISA is an international study that was launched by the OECD in 1997. It aims to evaluate education systems worldwide every three years by assessing 15-year-olds' competencies in the key subjects: reading, mathematics and science. To date over 70 countries and economies have participated in PISA.

Although the services sector remains the dominant sector its share has declined from 55.55 in 2000 to 52.7 in 2008.

The population has been increasing reaching almost 17 million in 2009 but population growth rate has been declining in the last decade. Age cohort 15-64 is expanding reaching 68.3% in 2009 while the share of the 0-14 age group has been declining.

Male labor participation stood at 73.4% in 2009 while total labor participation rate is only at 57.6% mainly because of a very low female labor participation rate estimated at 42.3%. Unemployment rate has remained high registering at 9.7% in 2009 with higher rates registered among women workers. Although the share of agriculture in total employment is still quite high it has been declining reaching 12.3% in 2007 from 14.4% in 2000. The services sector meanwhile has experienced increase in its share of total employment at 64.3% in 2007 while the share of industrial sector has remained stable. Thus, despite the increasing share of the industrial sector in total output and the decline in the share of services the employment prospects are more encouraging in the services sector.

Chilean children have an expected school life of 14.7 years estimated in 2008. Included as an index of its human resources the net enrollment ration for secondary education is at 84.8% estimated in 2008 while it is 54.8% tertiary education. This means that one out of two Chileans in age cohort for post-secondary education are in programs for tertiary education.

Information on the labor market including unemployment rates in various economic sectors are released by the National Statistics Institute. In December 2012, it was estimated that employment rose by 3.8% with construction and industry showing rapid increases while unemployment where also high in construction, commerce and industry.

In terms of recruitment, a list of skills and competencies that employers are looking for job seekers including educational qualifications, excellent communication skills in English and Spanish, flexibility in work attitude, comprehensive understanding of general and specific aspects of work, ability to apply advanced technologies in the workplace, creativity and resourcefulness, ability to analyze and resolve complex cross-functional issues, and working knowledge in data collection, analysis and evaluation

For supervisory and managerial positions, the skills and competencies being sought by employers are experience in recruitment and staffing, proficiency in supervising and motivating subordinates, strong organizational problem solving analytical skills, ability to manage priorities and workflow, ability to work independently and as member of various teams, computer literacy, leadership and business acumen skills, ability to handle multiple projects and meet deadlines, strong interpersonal skills, ability to deal effectively with a diversity of individuals at all organizational levels,

creative, flexible and innovative team players, commitment to excellence and high standards.

Chile has three types of institutions for post-secondary education: universities, professional learning institutes and technical training centers. Universities provide the highest degree of learning, combining teaching, research and outreach activities. Professional learning institutes, on the other hand, are in charge of granting professional degrees other than those awarded by universities, and they are also authorized to grant higher education technical degrees. Technical training centers are intended to train higher level technicians equipped with the competencies and skills needed to respond to the needs of industry in the public and private sectors. The current higher education system consists of 229 institutions: 64 universities (38 licensed, autonomous universities), 48 professional learning institutes (11 of which area autonomous) and 117 technical training centers (6 of which are autonomous). The growth of higher education in the past decade shows an increasing trend in access to post-secondary education.

3.5. People's Republic of China

The People's Republic of China (PRC) has grown significantly in the last decade with an average annual growth rate exceeding 10%, the highest registered at 14.2% in 2007. As a consequence the per capita GDP has almost quadrupled in real terms at the initial decade of the 21st century from USD 949.2 in 2000 to USD 3,743 in 2009. Because of the substantial increases of the economy's output and the decelerating population growth rate per capita GDP exhibited almost 10% average growth rate during the decade-an envy of developing as well as industrial countries. The economy of PRC has transformed during the last decade with a drastic reduction in the share of agriculture to GDP from 15.1% in 2000 to 10.3 % in 2009. While the share of the industrial sector has remained stable over the decade the share of services has grown to 43.4% in 2009 up from 39% in 2000.

The PRC is the most populous economy in the world with more than 1.33 billion people estimated in 2009 up from 1.26 billion in 2000. Although the absolute number has been increasing the population growth rate is low and declining substantially over time from 0.78% in 2000 to 0.51% in 2009. Accompanying these demographic features are significant changes in the age structure of the Chinese population. Age cohort 0-14 has declined from 25.7% in 2000 to 20.2% in 2009. Similarly the share of the working age population has declined to 67.5% in 2009 down from 71.7% registered in 2000. On the other hand, the age cohort 65 and above has been increasing from 6.8% in 2000 to 8.1% in 2009. These changes in the age structure and other demographic characteristics have implications on the labor force of the economy in the medium and longer term.

Labor participation rates have been very high during the last decade but have declined over the years from a high 77.5% in 2000 to 73.5% in 2010. Although declining the labor participation rate of women in the Chinese economy is very high. Unemployment remained at a low 4 registered in 2007. The share of agriculture in

employment is still quite substantial with 44.1% in 2002 when agricultural output accounts for only 13.7% of GDP. Industrial employment has remained stable while significant increases are shown in the share of services employment.

In terms of the quality of human resources, school life expectancy was estimated at 11.6 years almost equivalent to junior high school. Gross secondary enrollment ration was estimated at 78.19% in 2009 up from 61% in 2000. A similar increase is shown in the college attendance with 24.5% (2009) gross enrollment ratio which is substantially higher than the 7.8 registered in 2000. From these indicators we can infer that future labor force of China is becoming more educated with more students attending secondary schools and tertiary education institutions compared with previous years. This will have positive implications on the quality of human resources in the medium and longer term.

Information on trends in employment and hiring are usually indicated by the Net Employment Outlook (NEO). For the second quarter of 2011, Net Employment Outlook was forecasted at +29% based on the views of Chinese employers. Spatially, all regions have recorded positive hiring intentions with Xiamen and Hangzhou with the highest net employment outlook at +51% during the same period. Similarly positive net employment outlook was reported in six major industry sectors with the high hiring plans in manufacturing (+35%), finance, insurance & real estate (+32%) and services sector (+32%). For the second quarter of 2012, the Manpower Group survey reported that service industry sector has the highest forecast of staffing intentions.

To respond to these changes in the economy, the structure of employment as well as the employment prospects the government of PRC promote various types of training for the future human resources of the growing economy. For example, the government has promoted vocational education and training (VET) since its foundation in 1949. There are now 1,184 tertiary level VET institutions with 9 million enrolments while another 20.6 million enrolled in 14,767 secondary VET schools. The value attached to vocation education and training has been attributed to its employment enhancing effect. In addition, other factors that contribute to the increasing role of VET in China's labor market are the critical shortages of qualified technicians and skilled workers, rising unemployment due to economic fluctuations, and the high probability of employment of VET graduates.

3.6. Hong Kong, China

The Hong Kong, China economy has performed quite well during the initial years but subsequently had a fluctuating economic performance with a 2.4 % growth record in 2009. GDP per capita is likewise increasing but shown a modest growth of 1.6 % in 2009 significantly down from the 7% registered in 2000. Despite this, the real GDP per capita in 2000 prices has increased from USD 25,374 in 2000 to USD 34,587 in 2009. For many years now Hong Kong has been a services economy with services sector accounting for 86.5% of the economy's total output in 2000. This has

increased to 92.2% in 2007. Agriculture is insignificant and the manufacturing sector has declined to 7.7% of GDP in 2007.
Hong Kong, China has a population on over 7 million estimated in 2009. This is not substantially higher than the 6.7 million registered in 2000 this is because the growth rate has been low and declining over the years from 0.88% in 2000 to 0.37% in 2009. Accompanying this decelerating growth is changes in its age structure. There has been a decline in the 0-14 age cohort from 16.8% in 2000 to 12% in 2009. However, there are increases in the share of the 15-64 group and 65 and above. This implies that the working population is still increasing and can still manage the economic prosperity in the long-run. However, the population is likewise aging.Labor force participation rate has remained stable at around 60% over the decade and unemployment rate hovering at around 5% during the decade. The services sector accounts for 85% of total employment in 2009 up from 79.4% in 2000. Although the industrial sector contributes less than 10% of total economy's output, its share of total employment stood at 14.2% in 2007.

Children in Hong Kong, China are expected to have a school life of 15.7 estimated in 2009. Net enrolment rate in secondary school has remained stable at almost 74% while gross enrolment ration in tertiary schools has substantially increased from 30.7% in 2003 to 56.6% in 2009.

In terms of employment outlook the Manpower Group Survey reported that for Quarter 2 of 2012 employers are cautious on hiring plans with a modest Net Employment Outlook at +9%. The perception of many employers is that the employment outlook will be unchanged mainly due to weak global market. The sector that reported optimistic hiring plans is the Mining & Construction sector while the employers in the manufacturing sector had the pessimistic hiring outlook.

In preparing the manpower needs of the economy Hong Kong, China has 13 degree-granting institutions of higher learning with eight of these publicly funded universities, one publicly funded institution for performing arts and 4 privately funded colleges and universities. In addition Hong Kong, China has several institutions providing vocational and technical training services. The government is assisted by the Vocational Training Council (VTC) on the system of vocation education and technical training appropriate to the manpower needs of Hong Kong, China. Moreover, the training needs of the private sector and public organizations are provided for by local and international training organizations with more than 3,000 training organizations registered in the region.

3.7. Indonesia

The Indonesian economy made a significant stride in the last decade with increasing GDP growth rate reaching 6.3% in 2007 but declining thereafter and settling at 4.5% in 2009. With this growth, the GDP per capita followed the trajectory of growth of nation's GDP and registered a growth rate of 3.35% in 2009. Although the economy has grown substantially with per capita GDP at USD 2,349 in 2009 up from USD 804 in 2000 the structure of the economy has not been altered significantly. The share of

agriculture has not significantly changed from 15.6% estimated in 2000. Similarly, the share of industrial sector has remained stable hovering around 46% to 47% in the last decade. The services sector has been unchanged at 39% for many years.

Indonesia has the largest population in the ASEAN registering at 230 million in 2009 up from 205 million in 2000. Although the population has been increasing the population growth rate has been declining over time settling at 1.14% in 2009. In terms of age structure, there is an increase in the working age population as well in those in the 65 and above age cohort. However, because of the decline in population growth in the past, the 0-14 age group has declined from 30.3% in 2000 to 2.7% in 2009.

Labor participation rates have consistently been stable with 69% in 2009 which is not significant from 68% recorded in 2000. Unemployment rates have been high in the past decade but have exhibited a declining trend reaching the lowest at 7.8% in 2008. Similar to the structure of production the structure of employment has not changed drastically. Agriculture account for 41.1% of total employment down from the 45.3% registered in 2000. Industrial employment share has increased minimally to 18.8% in 2009 while share of services has settled at almost 40%, a three percentage point increase from the share in 2000.

In terms of the quality of human resources, school life expectancy was estimated at 13.2 years almost equivalent to junior high school. Net secondary enrollment ration was estimated at 68.9% in 2009 up from 49.7% in 2001. A similar increase is shown in the college attendance with 23.5% (2009) gross enrollment ratio which is substantially higher than the14.8%registered in 2001.

Sustaining the growth of the Indonesian economy requires not only increases in the quantity of human resources but also the quality of human talents. However, in the light of a tight labor market some of companies have experienced difficulties in recruiting skilled management personnel. To respond to the tight market and the shortages in highly skilled managers some companies have resorted to importing foreign talents to staff their companies, which often times is very expensive. Another option being pursued by many foreign companies is the development of local talents through in-house training programs and through on-the-job training. Since general training is usually provided in most of these cases there are risks involved since some of the trained personnel may transfer to other companies. The third option used by firms is to recruit Indonesians who have studied overseas. The Home Country Placement at Northeastern University in Boston is an example of talent recruitment program where the needs of Indonesian firms and the profiles of Indonesian graduates of the university are matched.

Over the years the government has also emphasized the value of human resources development in its five-year development plan. Aside from increasing the capabilities of Indonesian citizens the specific objectives of human resource development is to develop knowledge and skills, increase adherence to a productive work ethic,

develop leadership and entrepreneurial skills among others through education and various training programs.

3.8. Japan

The past few years the economic performance of Japan has not been encouraging with declining growth rates that posted a -5.24% in 2009. As a consequence the per capita GDP estimated at USD 38,182 in 2009 was substantially lower than the USD 40,717 estimated in two years earlier. The services sector continues to account for almost two thirds of GDP during the decade while agricultural has declined from 1.8% to 1.4% in 2009. Although the industrial sector is still significant it has declined to 27.9% in 2007 down from 31.2% recorded in 2000.

Accompanying the decline in the growth in income is the low and declining population growth rate. From an already low 0.17% in 2000 the population growth rate was estimated at -0.11% in 2009. The current population of Japan at 127.6 million shows an increase of approximately 800 thousand in the last 10 years. In addition, the number of people has been declining since 2007. Together with declining population in recent years is the decline in the younger generation as well in the working age population. Those in age cohort 15-64 account for 64.7% of the total population in 2009 down from 68.2% in 2000. What is alarming is the growing and significant aging population from 17.2 % in 2000 to almost 22% in 2009.

Labor force participation rate has been steadily declining reaching 59.1% in 2010 down from 62.4% in 2000. Female labor participation was registered at 47.8% in 2010. Meanwhile, the share of services sector to total employment has been increasing to 66.75% in 2007 up from 63.1% estimated in 2000. Although the agricultural sector has contributed less than 1.5% of GDP employment in agriculture accounts for 4.2% of total employment. The industrial sector employs almost 28% of total employment in 2007 down from 31.2% in 2000.

In terms of quality of human resources, an ordinary Japanese child is expected to have 15 years of schooling in 2008 up from 14.5 years in 2000. Net participation rate in secondary schools is almost universal with 98.3% attendance in 2008. Gross enrollment rate in tertiary education is also high at 58 % of the age cohort. This implies that the future labor force of Japan will be highly educated with a minimum secondary educational attainment.

On the hiring plans of employers, the Manpower Group released the Net Employment Outlook for Quarter 2 of 2012 at +11% which is considered the most optimistic hiring perception in the last three and the half years. Geographically, employers in Nagoya posted the most optimistic hiring outlook with a +11% (NEO). This was followed by Tokyo (+10%) and Osaka (+9%). In terms of sector, employers in the Mining & Construction noted the strongest employment plans at +19% due mainly to the reconstruction of earthquake devastated areas. The Finance, Insurance & Real Estate sector has a 2% age point increase of its NEO from the

previous quarter. Although the manufacturing sector has a +135 NEO this figure has not changed from the previous quarter.

3.9. Republic of Korea

Labor market data and information is collected and disseminated by the Ministry of Employment and Labor (MOEL). Users have easy access to a wide-range of major statistics among which include participation rates, employment rates, minimum wages (alongside year-on-year increases), working hours for both regular and temporary employees, working-related injuries, and work insurance/benefits. As of April 2012, the economy registered a labor force participation rate of 61.9 percent and an unemployment rate of close to zero percent. Decomposing the employment rate by gender, a male-dominated workforce is made apparent by the fact that 71 percent of all economically active males were employed while females only registered 48.9 percent (MOEL, 2012).

3.9.1. Educational and Training Institutions

As of 2009, more than 177 universities and 146 junior colleges were in operation in Korea. *1,984,043* students were enrolled four-year undergraduate courses while 760,929 students were enrolled in two to three year courses. Alongside conventional colleges/universities, 12 industrial universities and 35 polytechnic universities offered vocational tertiary education.

Upon completion of middle school, students spend the next three years in either a general high school or a vocational high school. The type of high school to which an individual is assigned will depend on academic performance. Today, only a quarter of students enroll in vocational high schools – a steep decline from 1995 levels where almost half students enrolled. Vocational high schools offer programs in five fields, namely agriculture, technology/engineering, commerce/business, maritime/fishery, and home economics.

VET students are usually those who come from lower socio-economic classes and are also those who perform comparatively poorly in academics (Kuczera and Kis, 2009). Due to this, the perception that VET high schools provide second-rate education has become prevalent within Korean society. As such, the government has opted to rename what was once known as ‘vocational high schools’ to ‘professional high schools’. Likewise, efforts to increase professional high school graduates’ access to colleges and universities have also been undertaken.

Out of all professional high school graduates, 43 percent proceed to junior colleges and 25 percent proceed to university. One can procure VET in the tertiary level by enrolling in a junior college or a polytechnic college (two to three year programs). Upon completion of such programs, a student is awarded an Industrial Associate Degree. Polytechnic colleges also offer one-year programs for craftsmen and master craftsmen and short programs for employed workers.
In order to improve labor market efficient, VET institutions and firms rely on the use

of labor market signals. On the supply-side, signals come in the form of qualifications that assure employers of the skill level and technical expertise of graduates. Korea's vocational qualification system consists of three parts: the National Qualifications, the National Technical Qualifications, and the Private Qualification. Meanwhile, labor demand signals are obtained through the Sector Human Resource Development Council (SHRDC). The SHRDC is a body tasked to collect and disseminate the skill needs of employers. Information collected is then shared to post-secondary VET providers.

The government has undertaken steps to implement the 2+1 system where students spend two years in a classroom setting and another year in the workplace (via internships and on-the-job training). Likewise, career guidance systems have also been put in place to ensure that vocational programs meet labor market needs. These programs provide students with (1) information on various specificities of different careers and occupations (allowing sound decision making on the type of work one selects) as well as (2) one-to-one basis career advice.

Despite advancements in education and training institutions, skill mismatches still plague the Korean labor market due to (1) an overemphasis on college/university education and (2) poor linkages between TVET institutions and the private sector.

3.9.2. Job Matching Facilities and Labor Market Information

Of greater importance is the publication of data on labor demand and supply within various industries and for different occupations. For this purpose, the MOEL administers a labor demand survey that covers more than 32,990 workplaces with 5 or more permanent employees. The survey provides information employment levels, number of vacancies, number of employees hired, number of job openings, and number of filed job openings. The distribution of these figures by industry, occupation, and establishment size are also provided.

Since comprehensive data is published on a regular basis, decision-makers are able to quickly adjust to labor demand and supply fluctuations. Given the availability of historical trends, users are also able to identify industries that may require more or less of a specific occupation

3.10. Malaysia

The Malaysian economy experienced a bumpy performance in the last decade. In 2000, it posted a very high 8.9% growth rate only to experience a drastic deceleration the following year. Afterwards the economy maintained a steady growth but posted a -1.7% in 2009. The growth trajectory of the GDP per capita followed a similar pattern that led to a reduction of GDP per capita estimated at USD 4,974 in 2009, from the USD 5,146 estimated in 2008. In terms of the structure of production, the share of agriculture is low but still significant at 8.7% of GDP while industrial sector accounts for the largest share at 55.4% of the national output. The services sector accounts from 35.9% of GDP in 2009.

The population of Malaysia has been steadily increasing from 23.3 million in 2000 and reached the 27.5 million mark in 2009. The population growth rate was high at the initial year of the decade and followed by marked decline in succeeding years reaching 1.7% in 2009. In terms of population structure, there is a significant decrease in the 0-14 age bracket reaching 29.5% in 2009 from 33.6% in 2000. The working age cohort meanwhile is increasing and currently accounts for almost two thirds of the total population. Although there is an increasing trend in the aging population its share of total population is still small.

Labor participation rates have consistently been stable during the decade with 62% of the economically active population in the labor force in 2009. This figure is just a percentage decline from the figure estimated in 2000. Unemployment rate is low and stable but inched a bit at 3.7% in 2009. The structure of employment reflects the economic transformation of Malaysia economy. Agriculture accounts for almost 15% of the labor force in 2007 while the industrial sector absorbs 28.5% and the services sector accounts for the highest share with at 56.7% of the total employment. Interestingly the industrial sector accounts for the biggest share in total GDP.

In terms of the quality of human resources, school life expectancy was estimated at 12.6 years almost equivalent to junior high school. Net secondary enrollment ratio was estimated at 68.4% in 2008 up from 64.8% in 2001. A similar increase is shown in the college attendance with 36.5% (2009), gross enrollment ratio which is substantially higher than the 25.9%registered in 2001.

The Department of Statistics publishes monthly information on macroeconomic data that concern the labor market. The economy registered an unemployment rate of 2.8% in the March of 2012 (Department of Statistics, 2012). Its labor force participation rate was pegged at 65.3% during the same period. In 2011, the services sector accounted for 53.1% of total employment, while the manufacturing sector employed 28.9% and the agricultural sector employed 11.4%.

3.10.1. Educational and Training Institutions

The drastic shift towards more technologically advanced methods of production has created a demand for a new breed of workers. Firms now seek for employees that possess specific skillsets but at the same time, are willing and able to engage in a continuous process of learning and retooling.

In order to keep pace with the growing demand for a wider variety of skills, the government has begun establishing more centers of continuous learning in various public institutions of higher education. This increases workers' access to post-graduate diplomas and certificate courses (both of which are less time consuming than procuring advanced degrees). In addition, the Ministry of Education has also mandated schools to increase collaboration and communication with the private sector. Additional insight gained from this form of synergy can be used to design and update curricula that respond to the ever-changing human resource requirements of different industries. Last, universities have also increased efforts to institutionalize

on-the-job-training and internship programs in order to provide students a means to acquire workplace skills and acclimatize to the workplace environment even before they begin formal employment (MHLW, 2006).

Various government agencies also offer technical and vocational training to individuals who seek to upgrade and tailor-fit their skillsets such that industry demands are met. To ensure the quality of such programs, a certification system was established. The Malaysia Skill Certificate (MSC) is awarded to an individual who has completed a program offered by an accredited institution, earned the necessary credit requirements for certification, or earned recognition for exemplary work performance. The MSC is also segmented into five levels, namely, L1 (semiskilled level), L2 (skilled level), L3 (advanced skill level), L4 (advanced skill/supervisor level), and L5 (advanced skill/manager level).

3.10.2. Job-Matching Facilities and Labor Market Information

The Malaysian government launched the Electronic Labor Exchange (ELX) in 2002. Designed to be a one-stop center for labor market information, the system serves as an online job-matching facility that allows both job seekers and employers to communicate with each other via a single platform. The ELX is comprises of three modules, namely, Job Clearing System, Labor Market Database (LMD), and Office Productivity Support System (OPSS) (UNPAN, n.d.).

The JCS enables employers to publicize and disseminate job vacancy notices that convey information on the nature and skill requirement associated to the position. Meanwhile, job seekers are granted the ability to register and apply for available jobs. The system also provides a means for employees to submit their credentials and resumes into a database that employers have access to. Hirers may then search through the said database for job-seeker profiles that may be appropriate to their human resource needs. All in all, the JCS creates a more systematic and efficient job-matching process by managing labor supply and demand electronically.

Besides its job-matching potential, the ELX system (through the LMD) is also an effective tool used to collect information on the state of the economy's labor market. First and foremost, data on the number of vacancies in various industries and occupations is made available to the public (MOHR, 2012). In March of 2012, the system registered 674 vacancies, 293 of which came from the manufacturing sector. Meanwhile, occupations with the highest number of vacancies during the same time period included managers, service and sales workers, skilled agricultural, fisheries, and forestry workers, as well as unskilled labors. More importantly, the MOHR also provides a geographical distribution of such vacancies. This allows prospective employees to identify and select areas that best strikes a balance between job-availability and proximity. Out of the 293 vacancies in the manufacturing sector, 131 are actually located in the state of Johor. On the other hand, employers also gain access to information on the characteristics of the current pool of active registrants. Besides the total number of active and new registrants, distributions of job seekers based on age, gender, educational attainment, and work experience are also present.

Not only does this aid the hiring process by providing employers with more specific information on their prospective employees but also serves as a means of monitoring labor market trends. For instance, the distribution of registrants based on educational attainment distinguishes individuals with no formal education from those who possess skill certificates (technical skill certificate, Malaysia skill certificate, and other skill certificates), diplomas, and more advanced degrees.

Last, the OPSS offers services that facilitate the job-matching process, among which include e-mailing, scheduling, collaboration, document management, and a feedback system (that handles complaints aired by employees and employers).

The ELX system is indeed an innovative way of improving the job-matching process as it overcomes geographical, cost, and informational barriers associated to the hiring process (for employers) and the job-search process (for employees). Beyond that, the system also provides a means to collect data from the information members/registrants actually provide. However, it must be noted that data collected from the system may be unrepresentative of the economy's labor market as only a small fraction of all job seekers and employers actually utilize the system.

The private sector is also active in job matching with the implementation of the Private Employment Agencies Act of 1981. The law allowed private employment services providers to operate with the aim of placing job seekers in safe and decent working environment through talent search, recruitment process outsourcing, contract outsourcing, and employability programs.

3.11. Mexico

The Mexican economy had a mixed performance in the past decade. It started with a robust growth rate of 6.6% in 2000 but contracted the following year. In subsequent years it recovered and sustained positive growth rates until it posted a substantial contraction with a -6.54% in 2009. As a consequence GDP per capita that reached USD 6,592 in 2008 declined substantially to USD 6,099 the following year. The structure of the economy shows a growing industrial sector that accounts for 37.5% of total output in 2009- up from the 28% share in 2000. The share of agriculture is small and has remained the same in the past decade while services continue to be the largest sector although its share has declined to 59.9% in 2209.

Over the past decade Mexico has maintained a stable low population growth rate with a typical 1.01% that was registered in 2009. Although the population growth rate is stable, the population has grown to 107.4 million in 2009 an increase of over 9 million from the recorded figure in on 2000. Another consequence of this demographic stability is the decline in the share of the young population from 33.1% in 2000 to 28.5% in 2009. The working age cohort has increased and accounts for almost two thirds of the population while the share of those above 65 are increasing but still relatively small.

Labor force participation rate has registered marginal changes observed over the years that reached 61.5% in 2010. Female labor force participation is still low although increasing steadily. Unemployment rate at 5.2% in 2009 was the highest registered in the last decade. In terms of employment structure, the share of the industrial sector has marginally declined although the share of industry in GDP has increased significantly over the years. Employment in the services sector has increased and accounts for almost three-fifth of total employment.

In terms of quality of human resources, an ordinary Mexican child is expected to have 13.7 years of schooling in 2008 up from 12.1 years in 2000. Net participation rate in secondary schools has increased to 72.5% in 2008 from 57.4% in 2000. Gross enrollment rate in tertiary education was estimated at 27.25% in 2008 an increase from almost 20.5% in 2000.

Although the Mexican economy experienced a recession in recent years, employers did not undertake considerable reduction in their work force. Another route of employment adjustment is the shift from formal to informal employment. According to international recruitment organizations, Mexico tied with the US in terms of active recruitment for managers and professionals. Job creation in 2011 has been quite substantial which has slowed down the official unemployment rate. The economic recovery is predicted to hasten increases in recruitment and hiring of workers. Manpower, Inc., a global human resources firm, forecasts a continuation of positive hiring trend in the near future. In addition, Manpower's Employment Outlook Survey predicts an enthusiastic hiring intention among employers particularly in the manufacturing sector as well in the construction sector.

3.12. New Zealand

The quality and comprehensiveness of labor market data in New Zealand is quite apparent. The Ministry of Business, Innovation, and Employment (MBIE) makes available to the public a Key Information Toolkit (KIT). KIT contains headline labor market statistics as wells as links to more in-depth reports. Concise information obtained from the Household Labor Force Survey (HLFS) reports data on labor force size, labor force participation rates, and employment rates. An important feature of the KIT is that it provides time-series data for every variable present in the list of key indicators.

As of March 2012, New Zealand registered an unemployment rate of 6.7 percent and a labor force participation of 68.8 percent (MBIEa, 2012). Other information contained in the KIT are migration statistics, working age/unemployment benefits, work-related injuries and facilities, as well as wage statistics.

Besides timely release, labor market data in New Zealand is presented in various forms that cater to a wide range of users. The *Labor Market Factsheets* provides quick facts about key interest groups in the economy's labor market, namely, Māori, Pacific peoples, females, youth and older people. Indicators such as labor force participation, employment, and unemployment are outlined for each demographic.

The Quarterly Labor Market Scorecard makes use of 'scorecard dials' to verify the labor market's state, progress, and its contribution to economic growth. For instance, the labor demand dial makes use of employment growth; the labor market matching, unemployment rates; the labor quality dial, workforce qualification levels; the labor supply dial, participation rates; and workplace performance, wage fluctuations. Each 'dial' is then accompanied by a more elaborate discussion. Published monthly, the *Labor Market Update* also serves as concise briefer on the present and predicted state of the labor market. For instance, the June 2012 issue discussed trends in economic growth, household savings, labor market recovery, and wage growth (MBIEb, 2012).

3.12.1. Education and Training Institutions

The quality of New Zealand's workforce has enjoyed a steady rise over the years. As of 2006, 21.9 percent of the workforce possessed a college/university degree, 29.1 percent possessed a vocational diplomas, 30.30 percent possessed school qualifications, while only 19.6 percent had no qualifications at all. By 2013, it is predicted that the number of individuals with university degrees and vocational diplomas would rise to 24 percent and 34.2 percent respectively (MBIE, 2010). This implies two things: (1) degree and vocational qualifications are on the rise and (2) vocational education plays an integral role in the supply of labor to the economy's industries. Data on the number of people employed in different occupations (classified by skill-level requirement) are also presented. Highly skilled occupations include legislators, administrators, managers, and professional occupations; skilled occupations include technicians and associate professionals, trade workers; semi-skilled occupations include clerks, service and sales workers, agriculture and forestry workers; elementary occupations include plant and machinery operators and assemblers, and general laborers.

Higher education in New Zealand can be obtained in three ways. Those who opt for research-led and generally academic programs procure degree-level education in universities. Those who prefer more career-focused and applied programs may enter polytechnics and private education institutions (PTE) to obtain vocational degrees. Currently, there are eight universities and 23 polytechnics in New Zealand. (StudyNewZealand.eu, 2011).

It also utilizes the New Zealand Quality Framework (NZQF), which contains a comprehensive list of all quality-assured qualifications. Should a qualification (1) meet the minimum requirement of 40 credits and (2) successfully undergo an appraisal by a quality assurance body, it becomes eligible for addition into the NZQF. The NZQF distinguishes qualifications based on the complexity of learning required to obtain a particular certificate, diploma, or degree.

Lastly, New Zealand also makes use of 'Industry Training Organizations' (ITO) – government and industry funded bodies tasked to develop and maintain national unit (skill) standards and qualifications for their sector. Likewise, ITOs also provide on-the-job training and contract-training services.

3.12.2. Job Matching Facilities and Labor Market Information

The two primary employment portals in New Zealand are Trade Me Jobs and SEEK Jobs. Both websites allow employers to post jobs and search through users' credentials. Likewise, job-seekers can use the facility to look for vacancies across different industries and locations.

An innovation introduced by the MBIE is the compilation and analysis of data obtained from both portals. The *Jobs Online Monthly Report* tracks the growth in online job vacancies across industries and occupations. For instance, the June 2012 release notes that skilled job vacancies increased in all industry and occupation groups in the past month. Vacancies in "Sales, retail, marketing, and advertising" and "Accounting, HR, legal, and administration" increased by 19.2 percent and 13.4 percent respectively. Over the year (May 2011 to May 2012), vacancy growth in "Construction and engineering" was the highest while vacancies in the "Education and training" as well as "Information technology" categories decreased.

Meanwhile, the MBIE's Skill Insight Tool (SIT) provides quantitative evidence about the supply and demand for labor within the economy. Supply indicators include growth in post-school completions, number of work permits issued, occupations with skills shortage, industry-weighted turnover, mean hours worked, and migration information while demand indicators include estimated employment levels, net replacement demand, and employment changes due to industry demand and occupational shifts. Besides supply-demand indicators, SIT also contains information on the demographic characteristics and industry compositions of all 96 occupation groups.

A specific case in the analysis of labor market supply and demand is the estimation of the demand for labor using the reconstruction of Canterbury from the aftermath of the earthquake in 2011 as a case. The recovery and reconstruction of the city will require manpower with varied skills. Given these estimates, training institutions and overseas labor recruitment agencies respond by matching these manpower needs in the medium term.

3.13. Papua New Guinea

Financial constraints and institutional deficiencies have prevented the economy of Papua New Guinea from collecting timely and comprehensive labor market data. Currently, the only source of this information is the outdated 2000 Population Census of the National Statistical Office of Papua New Guinea (NSO-PNG). The survey registered an unemployment rate of 2.8 percent – a substantial improvement from a rate of 7.7 percent recorded in 1990 (NSO, 2012). Decomposing between genders, male unemployment rate was at 4.3 percent while female unemployment rate was at 1.3 percent. Of those employed, only 10.4 percent are engaged in wage-paying jobs while more than 67.4 percent are engaged in subsistence employment. This apparent prevalence of informal job arrangements has indeed made it extremely difficult to collect accurate and high-quality information. During the same year, Papua

New Guinea registered a labor force participation rate of 67.5 percent, with the distribution between males and females being relatively equal. The unusually high levels of female participation suggest that most women have access to agricultural land in which food for the household is planted and harvested (Booth, 2009).

The 2000 Population Census also provides a distribution of employed urban citizens by occupation. 21.3 percent of those employed were engaged in jobs classified under the "Agriculture, Animal, and Fishery" category, 19.6 percent for "Elementary Occupations", 11.8 percent in "Craft and Building Trade", and 11.6 percent in "Service, Shop, and Market Sales". Only 4.3 percent were classified under "Legislators, Senior Officials, and Managers" and 6.0 percent under "Professionals" (NSO, 2012).

3.13.1. Educational and Training Institutions

Out of all citizens aged 15 and over who are no longer attending school, only 147,328 possessed post-secondary qualifications. This comprised of only 5.3 percent of the total population (7.1 per cent of the male population and 3.4 per cent of women). Significantly more men possessed qualifications for vocational, technical, and trade skills compared to women while women outnumbered men in qualifications concerned with health, business, and secretarial practice. Less than 2 percent of the population possessed vocational, technical, trade, college, and university qualifications (Booth, 2009). In addition, more than 45 percent of those above the age of 15 did not possess any qualification while 6.7 percent possessed only Grade 10-12 education.

All in all, the numbers reflect severe deficiencies in human resource training and development within the economy. The shortage of sufficiently skilled workers has served as a hindrance to economic growth due since prospective firms are unable to fill key positions that may require higher skill levels.

TVET in Papua New Guinea is administered and managed by National Department of Education. The TVET Division is comprised of five branches: Curriculum, Inspections, Operations, Vocational and Community Education. It provides coordinating services and logistical support for more than seven technical and business colleges and 141 vocational centers located in more than 21 provinces. Technical and business colleges offer diplomas and certificates in various fields among which include trades, industries, commerce, and public service while vocational centers offer community-based short-courses. In order to ensure sufficient supply of needed workers, the government coordinates with other organizations such as the Australia Pacific Technical College (APTC), the Exxon Mobil Training Centre, and the EU Project on Human Resource Development and Community Colleges Pilot Project.
Majority of students are funded or sponsored by private firms and the government while some receive financial support from church organizations. To guarantee quality graduates, the TVET system (1) is modularized, (2) utilizes the Competency Based

Training and Assessment (CBT&A) methodology, and (3) is subject to a six-level National Qualification Framework.

Although a TVET system is in place, a huge shortage of training institutions and qualified instructors still exists. Only 49 officers working in TVET Division Head Office and 1075 teachers working in TVET institutions service the entire population. This is unsurprising since TVET remains to be a second priority of the government given the more pressing need to enhance access and quality of basic education (Banda, 2009).

3.13.2. Labor Market Information and Job Matching Facilities

Papua New Guinea suffers from a severe lack of statistics on the labor market. As mentioned above, the only source of information is the population census conducted more than a decade ago. Though the Central Bank of Papua New Guinea releases data on a regular basis, the numbers released are usually too limited for analysts to arrive at meaningful conclusions or insights. Such deficiencies have prevented the government from formulating and implementing necessary labor market policies.

Attempts to centralize and further disseminate labor market data have been made. In 2007, the Department of Labor and Industrial Relations (DLIR) established a labor market information system in the form of a digital database that collects data on job applications and registered unemployment. However, the application and usage of this system has been limited at best (ILO, 2008).

3.14. Peru

Information on the labor market must cover three primary components: employment structure, labor supply, and labor demand. According to Zito (2011), the Peruvian government does provide labor market data on employment structure and labor supply but is only able to disseminate very little information on labor demand. Note that labor demand information concerns human resource needs as expressed by a rapidly changing economic landscape.

The agencies in charge of the production of labor market information in Papua New Guinea are: (1) INEI – Instituto Nacional de Estadística e Informática (National Statistics and Information Institute); (2) MTPE - Ministerio de Trabajo y Promoción del Empleo (Ministry of labor and employment promotion); (3) OSEL Lima Norte - Observatorio Socio Económico Laboral (Socio-economic and employment observatory of Northern Lima); and ODT – Observatorio para el Desarrollo Territorial (Observatory for territorial development)

Information on employment structure is obtained from four different surveys, namely, the Economic Census, the National Survey on Employment Changes, the National Survey on Employment in the Construction Sector, and the Directory of Economic Units in Establishments.

Conducted by the INEI, the Economic Census disseminates macroeconomic and basic labor market data on the national and provincial level. This provides general information on the state of the economy's economic development. The National Survey on Employment Changes contains information on labor demand as reported by firms within various industries. Alongside numerical data on the human resource needs of firms, reasons for increases and decreases in the demand for a particular occupation are also collected from respondents. From this, additional insights regarding the state and trajectory of the economy and the labor market can be derived. In addition, users can also obtain statistics on type of work, production value, production capacity, and machinery and equipment. The National Survey on Employment in the Construction Sector contains similar information (Zito, 2011).

Information on the labor supply pool can be found in various surveys the INEI. The National Survey on Households generates monthly indicators on the well-being and living conditions of households. This is achieved through the use of conventional measures of poverty and the efficacy of social programs. The Permanent Employment Survey specializes on indicators on employment and income indicators as well as the development of anticipatory indictors for future trends in employment. Targeted surveys such as the Survey on Youth, Employment, and Migration focuses on the young population's socio-demographic characteristics, attitudes towards employment, and attitudes towards entrepreneurship. Information on the flow of international migration is available as well (Zito, 2011).

Meanwhile, surveys conducted by the MTPE and the OSEL LN focus on labor force structure and trends through collecting data on employment/unemployment levels, occupational groups, migration, workforce qualifications and other indicators associated with human resource supply and demand.

Finally, to respond to the job matching problems, the government has responded through the promotion of the National Employment Services and the Unique Employment Counter. The National Employment Services facilitates the inclusion of workers in the formal labor market and the generation of information relevant to the key stakeholders in the labor market. The Unique Employment Counter, on the other hand, provides services for employment searchers (from job listings to competency certification), young students (vocational guidance and occupational information), enterprises, entrepreneurs (training for entrepreneurship), and migrants (assistance to migrants).

3.15. The Philippines

The National Statistical Coordination Board (NSCB) and the Bureau of Labor and Employment Statistics (BLES) publish labor market and employment data. Information on monthly labor force participation rates, employment/unemployment rates, and underemployment rates are made available to the public. As of January 2012, the labor force participation rate was 64.3 percent. During the same time period, employment rate was at 92.8 percent while unemployment rate was at 7.2

percent (NSCB, 2012). Besides present data on the labor market, users can also access monthly time-series data for analysis' purposes.

Statistics regarding those employed includes a reasonably detailed industrial distribution (with major classifications being agriculture, industry, and services). As of the October 2010, the services sector employed the largest number of individuals. In terms of subgroups, "Wholesale and Retail Trade, Repair of Motor Vehicles, Motorcycles and Personal and Household Goods", "Transport, Storage, and Communication", "Public Administration and Defense, Compulsory Social Security", "Manufacturing", "Construction", and "Agriculture, Hunting, and Forestry" registered substantial employment shares. Likewise, a table that presents data on the occupational distribution of those employed is also present. During the same time period, occupations under "Laborers and Unskilled Workers", Farmers, Forestry Workers, and Fishermen", as well as "Officials of Government and Special Interest Organizations, Corporate Executives, Managers, Managing Proprietors, and Supervisors" accounted for the largest employment shares.

Given how a substantial proportion of the Philippine's workforce is deployed overseas, the NSBC also releases data on the geographical distribution of migrant workers. As of 2010, a total of 1,123,676 Overseas Filipino Workers (OFW) were registered. More than 60 percent of OFWs were deployed in the Middle Easter region while more than a quarter are working in Asian countries.

The National Statistics Office (NSO) also conducts the Labor Force Survey (LFS) on a regular basis. Information found on NSCB releases are usually derived from the more detailed LFS which contains information on the characteristics (age, gender, highest educational attainment distributions) of the employed, unemployed, and underemployed. Moreover, information on occupational groups, industrial groups, labor productivity, and mean wages are also available. Time series data on the LFS are usually presented in a quarterly or a monthly basis, depending on the type of information being obtained.

3.15.1. Education and Training Institutions

As of January 2011, 39.6 percent of those employed possessed a secondary qualification while only 14.9 percent possessed a college/university qualification. Besides low completion rates, the economy's educational system is also criticized for producing low-quality graduates. The current administration has endeavored to remedy such a problem by establishing a K-12 system where students spend an a total of 12 years in basic education – six years in primary school, four years in junior high school and 2 years in senior high school. After completing senior high school, students who seek to procure higher levels of education may choose between post-secondary TVET programs or college/university programs.

The management of TVET systems is handled by the Technical Education and Skills Development Authority (TESDA). As of 2005, out of 4,150 TVET, 62 percent were public institutions and 38 percent were privately-run (Syjuco, n.d.). Public TVET

providers included 121 TESDA Technology Institutions composed of 57 schools, 15 Regional Training Centers, 45 Provincial Training Centers and 4 Specialized Training Centers. Other public TVET institutions include State Universities and Colleges (SUC) and Local Government Colleges that offer certificate or non-degree programs, schools supervised by the Department of Education, as well as other government agencies.

TVET education in the Philippines is delivered through varying modes. Programs classified under *institution-based* delivery are completed primarily through attending classroom-based instruction in schools (TESDA-administered schools, SUCs, government agencies) or TESDA training centers. Programs offered by schools often require one to three years to complete while those offered in TESDA training centers can be completed in three to six months) (Péano et al., 2008). Given the need for training in actual workplace skills, TVET programs can also be offered through *company-based* delivery. In recognition of the need for companies' involvement in training the Philippines' future workforce, partners may participate in three different company-based training programs (TESDA, n.d.):

- Apprenticeship Program – A training and employment program involving a contract between an apprentice and an employer on an approved apprenticeable occupation.
- Learnership Program – An on-the-job training program for approved learnable occupations that last for a period that does not exceed three months.
- Dual Training System – Programs where learning takes place in schools and in a company in order to balance theoretical and applied knowledge.

Last, community-based programs that target poor underprivileged individuals (i.e. out-of-school youth, unemployed adults), marginalized sectors (i.e. subsistence farm workers, fisher folks) and economic groups (i.e. informal sector) are also conducted on a regular basis. These types of programs simply focus on basic skills and thus last for only one week to three months.

The economy's TVET system follows the Philippine National Qualifications Framework that awards graduates of TVET programs certificates of varying levels based on the type and mastery of knowledge/skill obtained.

3.15.2. Job Matching Facilities and Labor Market Information

The Bureau of Local Employment (BLE) disseminates labor market information through their primary publications: (1) The Labor Market Monitor, (2) The Job Vacancy Bulletin (last issue was 4th Quarter of 2009) and (3) The Labor Market Updates.

The Labor Market Monitor obtains information on manpower demand from an online employment portal (Phil-JobNet) as well as from both the Philippine Overseas Employment Administration (POEA) and Philippine Overseas Labor Offices (POLO). The former provides information on the number and occupational distribution of

online job vacancies while the later provides information on foreign demand (job orders) for both land-based and sea-based Filipino workers. Data on foreign labor demand is quite comprehensive as it distinguishes demand not only across occupational/industry groups but also across geographical locations. Labor supply data is also present in the form of (1) the number of PRC registered professionals (with a distribution across professions), (2) the number of Phil-JobNet applications (with a distribution across occupational groups, (3) the number of TVET graduates (with a distribution across programs completed and the completion rate/certification rate of each), and (4) graduates of the Overseas Workers Welfare Administration (OWWA) (with a distribution across programs completed).

On the other hand, the Labor Market Updates present more comprehensive statistics on Phil-JobNet activity. Besides information already present in the Labor Market Monitor, it contains additional information regarding the industrial, occupational, gender, and age distributions of job applications. Moreover, it offers an in-depth analysis on the efficacy of the online portal's matching systems by showing statistics on the number of job vacancies filled across different occupational and industry groups. Whilst the Labor Market Updates relied on data gathered from online employment portals, the Job Vacancy Bulletin summarizes job vacancy information obtained from job boards.

As with other economies, employment portals also operate within the Philippine labor market. The most widely-used websites are (1) Phil-JobNet and (2) Jobstreet.com.

The Public Employment Service Offices (PESOs) spread all over the Philippines have also contributed to the process of job matching particularly for those with special needs. Aside from implementing the core labor matching programs (Phil-JobNet System and Skills Registry System) of the Department of Labor and Employment (DOLE), the PESOs also provide career guidance and employment coaching, act as conduit to the applicants of the Special Program for Employment of Students (SPES) and the DOLE Regional Offices, mobilizing graduates and graduating students to become entrepreneurs, assists the integration of persons with disabilities into society through the provision of employment opportunities, link low to semi-skilled workers in the community to government infrastructure projects for temporary employment and other related programs intended to provide employment opportunities to the marginalized sectors of society.

3.16. Russia

The Russian Federation's Federal State Statistics Service (FSSS) is the government agency that manages the publication and dissemination of basic labor market indicators. First and foremost, users have access to data on the number of economically active people (divided into those who are employed are those who are not) across different years. As of 2010, Russia had more than 77,448,000 economically active individuals, out of which 69,803,000 (92.5 percent) were employed and (7.5 percent) were unemployed. More detailed tables that provide more information on the characteristics of those employed and unemployed are also

available. For instance, one can obtain the distribution (number and percentage) of those employed across sexes, occupation-groups, age brackets, and educational qualifications. Cross tabulations also reveal gender-biases across different occupations and educational qualifications. For instance, it can be identified that 64.5 percent of all employed women possessed either a secondary vocational degree while only 47.7 percent of males did. Excluding occupational-groupings, the same distributions can be found for the population of those unemployed.

3.16.1. Educational and Training Institutions

After completing pre-school education, four years of primary general education, and five years of basic general education, Russian students proceed to a two-year secondary general education. Those who complete secondary education can proceed to tertiary education at the university level and choose between a bachelor's degree (which can lead to a master's or doctorate degree) or a specialist degree (which may lead to a doctorate degree). Those who choose not to complete secondary education may choose between initial vocational technical education (ITVET) or secondary vocational technical education (STVET). ITVET programs are offered by vocational lyceums and vocational schools while STVET programs are offered by colleges and technicums. Since all ITVET and STVET programs run parallel with secondary education, graduates earn both vocational and secondary qualifications.

As of 2008, more than 3,325 vocational education institutions accommodated more than 434,000 students (NIC ARM, 2012). As of 2010, 19.7 percent of those employed possessed an IVET qualification while 27.1 percent possessed an SVET qualification (FSSS, 2012).

Based on a UNEVOC (2011) report, among the on-going reforms to enhance the efficacy of Russia's TVET system include:

- Increasing employers' associations' involvement in the assessment of TVET programs and graduates.
- Introduction of applied Bachelor programs (designed in such a way that it meets industry needs for academic rigor and applied knowledge).
- Establishment of strategic partnerships and linkages that promote cooperation between educational institutions and private stakeholders (in terms of internships, curriculum design, and program offerings).

3.16.2. Job Matching Facilities and Labor Market Information

The FSSS also publishes information on the average annual number of employed in the economy across different organizational ownership types (state, municipal, private, public and religious organizations, mixed Russian, foreign, and join Russian and foreign). According to available data, public and municipal organizations employed the largest number of individuals during the year 1992. This has since been reversed as private employment's share continued to increase over time. In

addition, the tables contain data on the average annual number of employed distributed across different types of economic activities is also present. As of 2010, a substantial portion of those employed was engaged in jobs classified under "Wholesale trade and commission trade; repair of motor vehicles, motorcycles; personal and household goods" and "Manufacturing."

The government manages more than 400 public employment service offices – a number that may have significantly increased already – that cater to Russia's 89 regions (Watts and Zabrodin, 2003). These offices are tasked to (1) collect information on job vacancies, the state of the labor market, and enrollment/graduate trends, (2) offer job-placement and job-search services, and (3) offer career information and guidance services. According to the FSSS (2012), out of the 3,984,000 job applicants in 2010, more than 707,100 (17.7 percent) received gainful employment.

Unfortunately, most job-seekers have no awareness and little understanding of such job placement services. As opposed to open market dissemination, information on career opportunities and job vacancies are often made available only through personal networks.

3.17. Singapore

Singapore's Ministry of Manpower (MOM) publishes key labor market indicators on a regular basis. This includes time-series information on labor force characteristics (including educational composition, participation rate, and median age), employment/unemployment figures as an aggregate and across industries, job vacancy data, labor turnover, and income among others. As of mid-2011, 3,237,100 individuals comprised of the economy's labor force, with 2,080,100 being part of the resident labor force (Singapore citizens and permanent residents) and the rest being migrant workers. During the same year, the labor force participation rate was at 66.1 percent (MOMa, 2012).

Meanwhile, employment statistics indicate that around 3,228,500 individuals were employed by yearend of 2011. 70.6 percent of those employed were in the services sector, 16.2 in the manufacturing sector, and 12.5 in the construction sector. Key indicators also include a breakdown of changes in employment levels for each quarter of the year. In the fourth quarter of 2011, the employment level grew by 37,600 – the largest increase during the year.

Unemployment statistics disseminated by the MOM are quite comprehensive as well. Unemployment rates are broken down into overall rates and resident rates in order to distinguish between the state of the market for domestic workers and foreign workers. The annual average overall unemployment rate in 2011 was pegged at 2.0 percent while the annual average resident unemployment rate during the same time period was pegged at 2.9 percent. Noticeably, the resident labor force experienced a much higher incidence of unemployment than the migrant labor force (though not much is said about the nature and type of jobs individuals are likely to be engaged

in). The MOM also publishes seasonally adjusted figures to account for seasonal influences in the data series. Likewise, figures on resident long-term unemployment (persons aged fifteen years and over who have been unemployed for 25 weeks or more) are also available.

To obtain more detailed information, the annually published Labor Market Report can also be accessed. It contains information on the distribution of unemployed residents by age, gender, and educational attainment. Such information may be vital in deriving insights about the workforce qualifications and characteristics. As of 2011, individuals with a diploma, professional qualification, or degree registered the lowest unemployment rates (though the difference with other qualification-groups is rather marginal) (MOMb, 2012).

3.17.1. Educational and Training Institutions

Published data seems to suggest a highly-qualified and well-educated Singaporean resident workforce. 28.3 percent of the resident labor force possess a degree, 18.2 percent possess a diploma/professional qualification, 11.8 percent possess a post-secondary but non-tertiary qualification, 20.2 percent possess a secondary qualification, while 21.5 percent possess qualifications below secondary schooling or none at all (MOMa, 2012).

Singapore's higher education system is comprised of three major parts. It has three public universities (the National University of Singapore, the Nanyang Technological University and the Singapore Management University), five polytechnics(Singapore Polytechnic, Ngee Ann Polytechnic, Temasek Polytechnic, Nanyang Polytechnic and Republic Polytechnic), and an Institute of Technical Education (ITE) system. The ITE is composed of the ITE Headquarters and three regional campuses (College Central, College East, and College West).

The ITE system provides an avenue for school-leavers who have completed secondary education to enter full-time ITE Education and Traineeship courses. The ITE offers full-time courses and over 30 traineeship programs. After being awarded a National Institute of Technical Education Certificate (Nitec) or a Higher Nitec, graduates may choose to pursue higher qualifications in a polytechnic or a university. In addition, part-time programs that lead to Nitec, Higher Nitec, and short-course certificates are also available for adult-learners who seek to upgrade their skills and knowledge. This allows them to keep up-to-date with changing skill requirements in the new economy and remain employable. Another notable feature of the ITE system is its Train the Trainer (TTT) program. Those who enroll in the TTT program are taught how to guide, assess and counsel staff under their supervision (ITE, 2012).

The Singapore Workforce Development Agency (WDA) is the government body mandated to ensure the development of a skilled workforce to support the human resource needs of various industries.

The WDA implements the Workforce Skills Qualification System (WSQ) – a national certification system that trains, develops, assesses, and recognizes adult workers' competencies. Assessment criteria and methods are jointly developed by the WDA and its industry partners. Since the WSQ's entry criteria are not based on formal academic qualifications, it accommodates individuals who may not have completed formal schooling but do possess the necessary workplace skills. In addition, workers with past experience may choose to obtain a WSQ certification through the Recognition of Prior Learning program (Seng, 2008).

With the objective of increasing the quality and range of TVET programs, the WDA has also established partnerships with various agencies and industry partners. It works closely with government agencies, Post Secondary Educational Institutes (PSEIs), Community Development Centers (CDC), and industry players (Seng, 2008). Such partnerships are not limited to curriculum development and on-the-job training arrangements as it includes those which allow partners to grant certificates/diplomas as well. Such an arrangement capitalizes on partners' expertise, specialized equipment, and training resources. Likewise, training partners are also able to develop a pool of workers who possess skills and exposure enough for employment within the industry. Below are examples of such collaborations:

- Diploma in Precision Engineering WSQ & Diploma in Mechanical & Systems offered by Siemens Mechatronic System Certified Course
- Diploma in Precision Engineering WSQ (Professional) & Singapore Polytechnic
- Specialist Diploma in Precision Engineering WSQ offered by Singapore Institute of Manufacturing Technology
- Aerospace WSQ Cert & Specialist Diploma in Aircraft Maintenance & Engineering (SAME) offered by Air Transport Technical College Singapore
- Aerospace WSQ Higher Cert & Kingston University Foundation Degree in Aircraft Engineering

3.17.2. Job Matching Facilities and Labor Market Information

Aside from basic labor market data, MOM's Labor Market Report also features detailed information on job vacancies across industry groups (based on SSIC 2010 classification) and occupational groups. Alongside absolute figures are percentage changes in job vacancies across very specific classifications of industries and occupations. The same set of data is available for those who seek information on retrenchment, labor turnover, and redundancy. Besides data on the present state of the labor market, the report also includes companies' quarterly employment forecasts (MOMb, 2012).

The presence of such information will invariably aid decision-makers (students, prospective employees, employers, and policy-makers alike) in assessing labor market demand and supply fluctuations.

The Singaporean government operates its own employment portal to facilitate the recruitment of employees needed by various state agencies. Several third-party job portals (e.g. Monster.com.sg, JobsDB.com, Singapore Jobs) also provide Singaporeans with a means to search for employment online.

3.18. Chinese Taipei

The government of Chinese Taipei, through the Council for Economic Planning and Development (CEPD), releases manpower indicators that provide pertinent information on the state of the labor market. Data on labor market outcomes among which include employment rates, average compensation levels, labor force participation rates, and labor turnover rates.

Between 2000 and 2012, unemployment rates have fluctuated between a little below 4 % and a little above 5 % (CEPD, 2011). As of April 2012, the economy registered a relatively low unemployment rate of 4.10 % (CLA, 2012). Meanwhile, the labor force participation rate has experienced a modest increase, rising from 57.2 % in 2000 to 58.1 % in 2010. The proportion of women participating in the labor force also increased substantially from a little above 46 % in 2000 to around 50 % in 2010. Adding specificity to the published data, information on labor force participation rates by age and educational attainment is also available. Noticeably, the proportion of individuals with higher levels of education (e.g. vocational school, junior college, university and graduate school) participating in the labor force has been steadily increasing. This suggests an increasing premium given to individuals who can signal higher levels of thinking and more specialized skillsets or expertise. Such information may signal the current pool of students to reassess their decisions on how much and what type of education to procure. Also noteworthy is the distribution of those employed based on industry. As of 2010, the largest industries in terms of employment share include Manufacturing (27.3%), Wholesale and Retail Trade (16.6%), and Accommodation and Food Services (6.9%). In terms of occupation, Production-related Workers (30.7%), Technical Associate Professionals (20.9%), and Service and Sales Workers (18.8%) accounted for around 70 % of all those employed. The observation of trends in employment share by industry and occupation, labor turnover rates, as well as average monthly earnings will certainly aid prospective employees in assessing the merits of choosing one job over another.

Complementary to information on the labor market, data collected from educational and training institutions are also disseminated. Information on the number of students enrolled in various levels of education show an increasing number of students procuring higher levels of education (undergraduate, master's, and doctorate degrees). Statistics on the expected number of graduates (per level of education) for each school year is also present. Last, information on the number of individuals trained by public vocational training institutes also allow for insight on government provision of skills training and the types of vocational skills most in demand. According to CEPD (2011), the top four vocational programs that students enroll in include metal fabrication and machinery, construction and cabinet-making, clerical and related courses, and service industry and related courses. It must also

be noted that the number of enrollees have declined significantly from 40,410 in 2002 to just 21,464 in 2010.

Information on labor demand and supply is also made available through the publication of data on the number of applicants, openings, job-seekers employed, and vacancies filled during a particular year. In 2010, CEPD (2011) reported that there were more than 1,182,588 applicants, 1,494,711 openings, 590,695 job seekers employed, and 839,809 vacancies filled.

Despite the presence of the abovementioned information, there still exists room for progress given the generality of most data. Being that most statistics remain to be aggregates, conclusions derived from their use may be less efficacious and precise. This is especially true for those who require information on specific industry characteristics, more comprehensive skill requirements for certain occupations, and future labor market trends. Moreover, end-users are left to make their own conclusions as the data published is accompanied by very little analysis and data-interpretation.

In terms of predicted labor market trends, CEPD (2005) warns of annual shortfalls of high-level professional, technical, and managerial manpower as well as unskilled/basic-level manpower. Alongside these shortfalls, CEPD (2005) warns, will be an oversupply of mid-level manpower. In response to such trends, the government has begun promoting the automation and mechanization of several industries in order to reduce reliance on unskilled laborers for basic tasks. With regards to the surplus of mid-level workers and the shortage of high-level workers, the government has begun encouraging mid-level workers to update into high-level workers via the procurement of additional education as well as the accumulation of work experience and professional knowledge. Efforts to bolter vocational training have also been made in order to respond to the ever-changing needs of the industrial sector. Likewise, the government of Chinese Taipei has also initiated the establishment of models of cooperation between industries, schools, and training institutions. Doing so will allow for the development of educational/training programs specifically designed to cater to industry demand for workers who possess specific skill-sets and qualities.

3.19. Thailand

The National Statistics Office (NSO) of Thailand publishes labor market statistics on a quarterly basis. A comprehensive breakdown of the statuses of individuals who part of the labor force is made available. The total labor force is divided into those currently active and those who are seasonally inactive. Those who are currently active are the then classified into those who are employed (at work or with job but not at work) and those who are unemployed (looking for work/available but not looking for work). Information on persons not in the labor force, coupled with the reasons for such, is also present. As of the fourth quarter of 2011, Thailand posted an unemployment rate of 0.6% - a rather low figure compared to its neighboring countries (NSO, 2012). Apart from general labor force data, the NSO also

disseminates information about how the employed are distributed across industry and occupation. This gives users a general picture of labor market trends since they are able to identify which among alternative industries and occupations are experiencing increasing (or declining) demand for workers. While the employment share of the manufacturing sector has been gradually shrinking over time, the number of those employed in the wholesale and retail trade industry has experienced significant increases in the past decade. In terms of occupation, service workers, market sales workers, and skilled agricultural and fishery workers constitute the largest share of those employed. Meanwhile, there seems to be a significant increase in the number of professionals employed – a trend that perhaps signals a shift towards a more highly educated workforce. Last, data on the distribution of those employed based on educational attainment is also available.

It must be noted that though such information may be useful in the general sense, it remains to be rather deficient in its capacity to aid various decision-makers in the job-matching process.

3.19.1. Educational and Training Institutions

As of 2010, 415 public and 427 private TVET institutions were registered and accredited in Thailand. Vocational education in Thailand is made available to individuals who have completed lower secondary schooling (Grade 9) (UNVOC, 2009). Students are given the option to continue academic education (and proceed to Grade 10) or to instead enroll in a three-year vocational course. Those who complete this program earn a Vocational Certificate and become skilled workers in the labor market. After completing the program, majority continue to their vocational studies for two more years in order to obtain a higher vocational (technician) diploma. Having been awarded a technician diploma, students may then choose to obtain a bachelor's degree at the Rajamangala University of Technology (RUT) or a bachelor's, master, and doctorate degree from the King Mongkut's Institute of Technology North Bangkok (KMITNB).

The government has also pursued efforts to ensure quality graduates from TVET institutions. The Thai Vocational Qualification (TVQ) as a means to label the progression of competency of a graduate, ranging from the ability to perform simple tasks to the possession of specialized knowledge to accomplish more complex processes. The qualification is designed to conform to occupation standards of competence.

Due to financial constraints, students are usually confronted by the difficult choice of entering the workforce an earlier age or pursuing higher levels of education. Thailand's TVET system expands the range alternatives students may choose from by providing several paths of human capital accumulation. For instance, the option of obtaining a vocational certificate allows an individual to enter the workforce with a skill level sufficient to merit wages above those who only possessed a secondary education diploma despite the absence of a college degree (which is rather costly and time-consuming to procure).

Besides the provision and administration of technical and vocational education, the government also encourages enterprises to participate in the skills-upgrading process. Under the Skills Development Promotion Act of 2002, businesses that (1) provide or support skills training for their own employees and (2) employ workers with national skills standards certification become eligible for tax exemptions.

3.19.2. Job Matching Facilities and Labor Market Information

The Department of Employment (DOE) operates a nationwide unemployment registration system and a labor market information network that connects public and private employment services, job-seekers, and employers. The system is also a means to gather labor market data more efficiently, thus granting policy-makers a more comprehensive and timely source of information. The same agency has also set-up an improved labor market indicator system that serves as an early warning system that may signal trends in supply and demand for selected occupations, worker productivity, and other labor market issues.

Cooperative education (co-op) programs have also been integrated in the curricula of several higher education institutions (Rupavijetra, 2011). Co-op education in Thailand is very similar to internships or OJT programs found in other countries. Students spend one to three months working for an organization/business of choice in order to acquire occupational skills and familiarize themselves with the workplace environment. A distinct feature of the co-op program is its emphasis on a student's ability to apply and integrate their newly acquired skills in the classroom setting once they recommence normal classes.

The government has pursued two major strategies in addressing the imbalances in the labor market, increase in labor participation rate and improve labor efficiency. Increasing labor participation is done primarily through the provision of employment services and the assistance of migrant workers while improvement in labor efficiency is implemented through various skills training programs.

3.20. The United States of America

The primary source of basic labor market data is the Current Population Survey (CPS) – a monthly survey conducted commissioned by the United States Bureau of Labor Statistics (BLS). Comprehensive information on the labor force, employment, unemployment, persons not in the labor force, hour of work, earnings, and other demographic and labor force characteristics are disseminated through a final report. The range of time-series data is quite extensive, with some tables going as far back as 1940.

As of 2011, the US registered an unemployment rate of 8.9 percent. 58.4 percent of the population was employed, with 2,254,000 engaged in agricultural activities and 135,615,000 engaged in non-agricultural activities (BLS, 2012). Besides aggregate data, the CPS also contains information on the employment status of the civilian non-institutional population by age, sex, and race (White, Black/African American,

Asian, Latin/Hispanic). For instance, it can be identified the Black/African American population suffer from the highest unemployment levels (15.8 percent) while the Asian population enjoys a relative low rate (7.0 percent) (United States BLSa, 2012).

Basic labor statistics are also accompanied by information on the characteristics of the employed and unemployed. Employed/unemployed persons are distributed occupation, industry, and status (full-time/part-time). In fact, a cross-sectional table that shows users the number of people from each occupation that an industry employs is present. This provides insight on which occupations each industry type is most in-demand of.

State-specific information on employment and unemployment are also available through the Local Area Unemployment Statistics (LAUS) program. In 2011, the states of California, Nevada, and Rhode Island registered unemployment rates well above the 10 percent level. Information on the characteristics of those employed/unemployed (similar to those found in national tables) in each state supplements basic data (United States BLSb, 2012).

3.20.1. Educational and Training Institutions

According the United States of America's Census Bureau (2012), as of 2010, 10.5 percent of the population possessed an advanced degree; 19.4, a bachelor's degree; 9.1, an associate's degree; 48 percent, at least a high school diploma; and 12.9 percent, without any qualification. Though there is certainly much room for improvement, the educational attainment of the economy's labor force seems relatively high (United States CB, 2012).

The higher education system of the United States allows high school graduates (who choose to procure higher levels of education) to select from three alternative paths: technical or vocational education, two-year community or junior college programs, or four-year college or university programs. Professional schools that require relevant work experience are also present within several universities to accommodate adult-learners who seek to upgrade their current skillset.

Career and Technical Education (CTE) in the United States is offered in both secondary and, as mentioned earlier, post-secondary levels.

At the high school level, it is offered through one of three main settings: comprehensive high schools, full-time CTE high schools, and area or regional CTE schools serving multiple high schools. Comprehensive high schools are academic in focus but also offer CTE education on or off site. Full-time CTE high schools specialize in CTA education but also offer academic units for students. Meanwhile, are or regional CTE schools provide CTE education to students who are enrolled in high schools that do not. Out of the 18,000 public high schools in 2002, only 5 percent were full-time CTE high schools, 46 percent were comprehensive high schools served by area/regional CTE schools, and 49 percent were high schools not served by area/regional CTE schools (NCES, 2008). Programs most commonly

offered by schools include computer technology, business, mechanics and repair, precision production, childcare and education, as well as healthcare.

In the post-secondary level, more than 5,700 institutions offered CTE programs as of 2005 (NCES, 2008). Students enrolled receive postsecondary certificates, associate's degrees, and bachelor's degrees in career fields, depending on their chosen program. The most common programs offered include: health care, business and marketing, personal and consumer services, and engineering and architectural services.

In order to enhance skills-development and actual learning, integrated within CTE curricula are the following (NCES, 2008):

- Career plans - Written plans of study based on the student's selected career of interest.
- Work-based learning in the form of job-shadowing (where a student follows the schedule of a person who hold that job), community service, cooperative education, school-based enterprises, and internships. This suggests that exposure to the world-of-work need not be limited to on-the-job training programs.
- Career academies - Multiyear high school programs in which the curriculum integrates academic and CTE courses, organized around one or more broad career themes.

3.20.2. Job Matching Facilities and Labor Market Information

The United States of America's Bureau of Labor Statistics (BLS) disseminates publications regarding employment projects on a regular basis. It includes information on future labor force characteristics (size, distribution across age and race) given current trends in population growth and migration. The report also outlines projected employment changes (job creation/contraction) within various industries. According to the latest release, non-agriculture wage and salary employment (which accounts for 9 out of 10 jobs) will expand to 150.2 million by 2020 – a substantial increase from 130.4 million in 2010 (United States BLSc, 2012). The healthcare and social assistance, construction, and professional and business services sectors are foreseen to experience the highest employment expansion. The same type of information is present for occupational groups. Users of the report are given information on which occupations are likely to experience increased (or contracted) demand during the next ten years. It can be identified from the report that the fastest growing occupations are those concerned with health care (registered nurses, retail salespersons, home health aides, and personal care aides) and construction while occupations that concern production and administrative support are likely to experience a decline in demand.
Besides the changes in labor demand across industries and occupations, the report also outlines projected changes in skills demand. For instance, occupations that require a master's degree will grow by 21.7 percent and those that will require a doctorate or professional degree will grow by 19.9 percent. It also relates that certain

occupations will begin to require some form of apprenticeship/internship before formal employment. Last and more importantly, it also discusses the predicted educational requirements of occupations and industries that will experience large employment expansion.

Overall, the presence of information on labor demand and supply across industries will aid individuals who are currently deciding on which career to specialize in. Likewise, it will also shorten the job search process due to increased information on educational demands and industrial/occupational vacancies.

3.21. Viet Nam

Labor market information in Viet Nam can be obtained from various sources, among which include the Population and Housing Census, the Labor Force Survey (released by MOLISA and the GSO), and the Agriculture Census (for data on the rural labor market).

Annual publications released by various agencies present basic labor market indicators, such as unemployment rate, employment figures across industries and occupations, labor force participation rates (alongside its distribution by age, gender, and educational attainment). This provides readers/users insight on the quality and nature of the Vietnamese workforce as well as fluctuations and trends in labor supply and demand for specific occupations. One notable innovation introduced by the General Statistics Office of Vietnam is the inclusion of information on informal labor markets in its publications. Surveys often inquire job status, job characteristics (terms of contract, social security, benefits), and enterprise characteristics (nature of business, employees hired) in order to provide additional insight on informal sector employment and production (Phan, 2009).

Out of more than 65.7 million people aged 15 and above, 77.4 % participated in the labor force as of the year 2010 (GSO, 2011). Participation rates have been much higher for males (82 %) than they are for women (73 %), with the disparity being much larger in rural areas than in urban areas. In 2011, Viet Nam registered a relatively low unemployment rate of 2.77 %.

As of 2010, a dominant proportion of those with jobs (39.1 %) were employed in unskilled occupations with little to no technical or professional qualifications. Other occupations with high levels of employment occupations include those which were classified under “agriculture, forestry, and fishery” (15.5 %), “personal services, protection, and sales” (14.6 %), and “skilled manual workers and other related workers” (12.6 %). Industry-wise, “agriculture, forestry, and fishing” accounted for 48.7 % of total employment while “manufacturing” and “wholesale and retail trade; repair of motor vehicles and motorcycles” accounted for 14.3 % and 11.5 % respectively.

Despite the numerous sources of information, published data are usually insufficient in scope and poor in quality (Phan, 2009). Resulting from the absence of a

coordinating body, sources of data also remain to be disaggregated and disorganized. This suggests a need to improved data collection methods and expands the types of information made available to the public. Likewise, the establishment of a central data collection agency will aid in the publication of comprehensive, accurate, and consistent information.

3.21.1. Educational and Training Institutions

The quality of Viet Nam's workforce remains poorly equipped to face the increasingly skills-reliant labor market. According to the 2010 release of the Labor Force Survey, more than 85.3 % of its labor force did not possess any qualification while a meager 7.4 % possessed college/university degrees. The Manpower Group (2012) indicates that out of 1.2 million who complete secondary school, only 300,000 opt to procure a higher level of education. Meanwhile, 3.5 % underwent vocational school and 3.8 % took up short-term training programs (GSO, 2011). The numbers alone already demonstrate a clear deficiency in skilled and professional workers capable of filling in vacancies for jobs that may require specialized knowledge on certain fields or technical proficiency in others. Producing this new breed of graduates is especially critical at a time when the economy is experiencing inter-industry shifts, higher levels of capital accumulation, and skill-biased technical change (World Bank, 2008). Nonetheless, it must be noted that the proportion of individuals obtaining higher levels of education have been increasing over time.

In response to these concerns, the government has endeavored to expand access to quality TVET education in the economy. Individuals, depending on their level of education, may choose to enter a wide array of TVET programs that differ in level of difficulty, duration, and entry qualification. The lowest qualification level of the TVET system is the elementary level. This level, which spans for a duration of less than a year, does not require any entry qualification. Students who have completed Grade 9-11 may choose to take the secondary level TVET program while those who have completed Grade 12 or a secondary TVET program may choose to obtain a college level vocational diploma, both of which span take one to three years to complete (TVET Program Vietnam, 2008). This system accommodates the diverse circumstances of students who may require a TVET program at various stages in their educational cycles and life. Likewise, the progression of levels also allows an alternate path to skills upgrading besides that of formal education.

Despite the hundreds of vocational colleges, schools, and training centers, Dernbach (2010) cited the absence of systemic industry involvement in TVET programs. With education and training being purely school-based, curriculum design may not be responsive to ever-changing industry demands. This party explains the persistence of labor shortages in the economy despite the abundance of TVET institutions. In addition, the management of TVET systems and institutions suffers from the lack of a single administrative body due to the presence of multiple ministries with redundant roles. Last, being centrally-planned, schools possess little autonomy to modify systems in accordance to the contexts under which they operate.

Higher education (colleges and universities) also suffers from a lack of industry involvement in curriculum design and student on-the-job programs. Dzung (2011) described several higher education study programs as outdated, excessively theoretical, and irresponsive to the needs of the actual workplace. The weak links between universities and business is caused by insufficient channels for communications, misaligned interests, and both parties' poor understanding of the benefits of increased collaboration. In order to establish and strengthen the said linkages, the government is spearheading the Pohe Project which seeks to accomplish the following:

- Inclusion of industry sector in curricula design so as to incorporate the knowledge, skills and attitudes businesses demand.
- Diversification of assessment methods that gauge both theoretical and practical knowledge.
- Establishment of workplace simulation facilities and integration of internships/on-the-job training requirements.
- Engagement in collaborative research projects.

3.21.2. Job Matching Facilities and Labor Market Information

The National Center of Labor Market Information and Forecasting collects and compiles information from multiple sources, among which include local government units, employment and social insurance services, trade unions, statistical bureaus, research institutes, and various surveys. Collected inputs are then stored and processed at the Labor Market Information Integration Center. The government is currently investing on a system that will allow for the collection and dissemination of a labor market database. It is also in the process establishing a national employment portal that will serve as a conduit between employees and employers. However, financial constraints have slowed the progress of such projects.

In addition, several Public Employment Services units provide consultation and planning services, recruit laborers based on employers' demand, collect, analyze and disseminate labor market information to various stakeholders, implement unemployment insurance schemes, and organize vocational training programs.

IV. Comparative Analysis

4.1. The Questionnaire

The survey on Labor Market Signaling System conducted by the Department of Labor and Employment of the Philippines consists of three sets of questionnaire for government agencies, industry associations, and higher education institutions. Although the general thrust of the survey is to elicit information for labor market signaling, the construction of the survey differs in the role of these institutions in the labor market and in addressing the labor shortages and talent mismatch.

From the industry associations on labor, employment and manpower, four major questions were asked to elicit information on the following: key industries that experienced substantial increase in employment in 2005-2010, top key employment generators (KEGs), industries likely to expand/emerge in the next decade, and the uses of labor market information.

From the employment service providers including associations of human resource development managers and recruiting agencies the following information were solicited: Procedures in Recruiting Candidates, Positions/ occupations that are easy to place, Positions/occupations difficult to place, Reasons for Difficulties in successful Placement of job Applicants, Feedback mechanisms on labor Mismatch, Skills Needed by Applicants as viewed by Placement Agencies, Challenges in Recruitment/Talent Search, and Recommended Strategies to overcome recruitment challenges

From the public and private higher education institutions and training institutes questions on the following were included in the questionnaire: Schools with placement referrals of graduates, Availability of short-term non-degree course, Schools that have access to labor market information, Awareness of occupations that are in demand, Factors schools consider when they offer courses, Feedback mechanism on shortage of manpower from business and industry, and Agreement of schools with local industries for placement of graduates of schools with local industries for placement of graduates.

As the Survey Questionnaires were to be accomplished by respondents which belong to the private sector, due the inadequacy of the information supplied by its respondents in several aspects of the three Survey Questionnaires, government agencies in some economies, like in the case of Australia and New Zealand, supplemented the non-government responses with additional information.

4.2. The Respondents

Out of the 21 APEC economies only five economies responded to the survey namely, Australia, Brunei Darussalam, New Zealand, the Philippines and Thailand. In each economy there were also a limited number of key informants from various sectors. For industry associations, there were three in Australia with 33,000; 70 and an unspecified number of members. The Australian Government also provided an economy-level response to the survey. For Brunei Darussalam, no association responded but there were five establishments that answered the survey. There was no establishment that reported but a very useful report from the Department of Education, Employment and Workplace Relations was received. Brunei Darussalam, no association responded but there were five establishments that answered the survey. For New Zealand, there was report submitted by the Department of Labor. The Philippines, there were two associations with a combined membership of 98 members but no establishment participated. For Thailand, only one association with 43 members and one establishment responded to the questionnaire.

For educational institutions, Australia has two association-respondents with a combined membership of 1,161 institutions, and one institution for private education and training. Likewise, a complete report on the data and information covering the Survey Questionnaire from the Department of Education, Employment and Workplace Relations was received. For Brunei Darussalam, one institution, but no association responded. For New Zealand, no response from any educational institution was received. For the Philippines, four institutions responded with no association. For Thailand, two institutions responded and none for the association.

For employment service providers, Australia had submitted one accomplished Survey Response from an association with 2000 members and one agency. Brunei Darussalam submitted no survey response. For New Zealand, a report with current and relevant information was submitted by the Department of Labor. For the Philippines there were eight associations that responded but with no agency. Thailand had four associations with combined membership of 28 and six agencies that answered the survey instrument.

Given the limited number of respondents, collated tables for each economy and the descriptive statistics for the key questions were prepared. Likewise, the analysis cannot go beyond the descriptive statistics given the limited number of sample size, thus resorting to other means in securing other the information for each the APEC economies on their mechanisms in labor market signaling.

4.3. Survey Results

This section analyzes the results of the survey based on the following basic questions – (1) What labor information should be provided? (2) Who should provide and transmit the labor information? (3) How should the labor information be transmitted? (4) When will the information be transmitted? and (5) Where will the labor information be transmitted?

4.3.1. Industry Associations and Recruitment Agencies

In the case of Australia, in 2006, the retail trade industry had the highest number of employees (1.18 million persons), while Mining had the lowest number of employees at 132,500. In percentage terms, the Mining industry had the greatest growth in employment between 2006 and 2011, with the number of persons employed in the industry increasing by 68% to 222,600. However, the largest number of new jobs generated was in the Healthcare and Social Assistance industry, which had become the largest employer by 2011. The number of persons employed in this industry grew from 1.06 million in 2006 to 1.32 million in 2011, an increase of 24%.

The respondents to the survey reported that there is currently a shortage of management executives and engineers. In addition, the modes of recruitment are through walk-in applicants, announcement of vacant positions in the internet, availing of private employment intermediary service providers, newspaper advertisements, placement services/units in universities, trade schools, and other training institutions,

through "head-hunters", and overseas recruitment. That is, the required skills and competencies applicants should possess to be employed in Australia are relevant experience for the position, verbal and written communication skills, critical thinking, and agility, executive and managerial ability, self-discipline/work ethics, innovative problem solving skills, and technological progress. Hence, to be able to satisfy manpower the following actions are most commonly done by association members, up-skilling/multi-skilling of existing personnel to meet the demands of technological innovations or advancement in work processes, partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry, and commission an employment intermediary services provider for the specific requirements of firms/establishments.

Community aged care was the fastest-growing Australian sector (in terms of employment) covered by survey respondents. Difficulty in attracting nurses and allied health professionals to work in regional, rural and remote areas was the main recruitment problem encountered in this sector. Likewise, the specific positions that are difficult to fill-up in the construction sector are construction managers, while for the mining sector are the engineers of all types. The types of workers with fast turnover are the managerial and supervisory positions, professionals, associate professionals and technical staff. Furthermore, nurses have also a fast turnover. Meanwhile, under the category of managers, business managers and nurse-managers contributed to the success of the business operations of the aged care industry. Similarly, construction managers and finance managers contributed to the construction industry. Company executives, general managers, mining managers, and technical managers contributed to the mining industry.

Going to Brunei Darussalam, operations (operating oil and gas) have the highest employment at 956 employees. Moreover, by 2010, internal audit (internal control) have the highest growth rate of employment at 200%. Meanwhile, management executives and engineers are experiencing shortage while laboratory technicians, product or machine operators and database management experts are not experiencing any shortage. Additionally, 60% of the institutions cited that there is a need for management executives and engineers. It is also important to note that the most cited mode of recruitment is through newspaper advertisements. In addition, all institutions cited the use of newspaper as their mode of recruitment and the most relevant skill needed to qualify for a vacant position are possession of relevant experience in the position, critical thinking, and agility.

Additionally, association members are up-skilling/multi-skilling their existing personnel to meet the demands of technological innovations or advancement in work processes. Moreover, the following are also done to provider for the specific requirements of firms/establishments as a way to satisfy manpower - request from universities/colleges for applicants who possess the required qualification; partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry; and use multi-media advertisement for the hard-to-fill positions to be able to satisfy manpower. As such, the top key employment generator is the drilling sector of oil and gas. On the other

hand, the 9th key employment generator is the hire purchase products. However, the positions which are hard to fill up in their top key employment generator are drilling engineers, petrophysicists, petroleum engineers, and strategic planners. Similarly, in the business support sector, there is a need for IT Specialist-system analyst while in the commercial banking there are only a number of Commercial Lending Officers (CLOs).

Meanwhile, the source of key employment generators for personnel recruitment is through newspaper advertisements and there is a fast turnover for an informational technology staff. It is also vital to note that other forms of work with fast turnovers are bank teller and sales staff. Alternatively, there is a need for chemical engineers for downstream, petroleum engineers for deep water drilling, as well as property managers, property life cycle evaluators, and property maintenance for property management. It suggests that under the category of managers, strategic planners contribute to the success of business operations for the oil and gas industry. Similarly, petroleum engineers presented special recruitment problems in oil and gas activities, while drilling engineers presented a similar problem in drilling deep water activities.

Meanwhile, considering all industries, information technology (IT) specialists and occupations regarding marketing have presented special recruitment problems in IT and marketing respectively. On the other hand, in the financial services sector, risk managers, and treasury managers have presented the similar problem in policy making and policies and transactions activities respectively. Hence, the most cited perceived problems are still the lack of experience of technical personnel and limited number of highly skilled workers. Moreover, 100% of institutions cited these two problems in addition to the problem of school curriculum not responsive to industry needs. Such problems occur because the upgrading of curriculum of universities/colleges to be responsive to needs of industry brought about by the lack of qualified personnel or existing talent mismatch observed to support emerging industries. Therefore, services made available are providing skills training and list of available manpower with the required qualifications (manpower pooling). The recruitment assistance that is expected from the government are setting up an assessment center, more manpower with the relevant qualifications, more support from government to allow recruitment of skilled laborers from overseas, and better links of education institutions.

In New Zealand, health care and social assistance had the highest number of employees for 2005 reported at 170,600 workers while electricity, gas, water, and waste services had the lowest number of employees for the same year with 9,118 workers. Meanwhile, in 2010, health care and social assistance had the highest growth rate of employment posted at 14.88%. In addition, the modes of recruitment are through walk-in applicants, announcement of vacant positions in the internet, availment of public and private employment intermediary service providers, newspaper advertisement, placement services/units in universities, trade schools and other training institutions, through "head-hunters", and recruitment from overseas. As such, health care and social assistance is the top key employment

generator followed by education and training; accommodation and food services, mining, and other services

On the other hand, institutions in New Zealand are very much engaged with the following labor market information - job vacancy statistics from administrative source, statistics of tertiary education graduates, statistics on graduates of technical/vocational education, professional registry (includes marine and teachers), labor turnover statistics, unemployment rate from labor force survey, courses offered by local universities, skills training institution locally in operation, inflation rate, occupational wages both local and overseas, wage structures of companies with Collective Bargaining Agreements (CBAs) or any other forms of employer-employee agreements, wage rates of entry level/common/highly skilled occupations, aggregate output, and balance of trade.

For developing countries like the Philippines, the modes of recruitment, as cited by institutions, are through walk-in applicants, announcement of vacant positions in the internet, availing of public and private employment intermediary service providers, newspaper advertisements, and placement services/units in universities, trade schools, and other training institutions. Each of these modes is 50% cited as their mode of recruitment. In addition, it is evident that the most relevant skills needed to qualify for a vacant position are the possession of relevant experience in the position, good verbal and written communication skills, self-discipline and/or work ethics, and possession of technological progress. Moreover, to be able to satisfy manpower, there is a need to implement up-skilling/multi-skilling of existing personnel to meet the demands of technological innovations or advancement in work processes. Meanwhile, establishing a formal tie-up with a training institution to conduct special training for candidates for the position and then recruit from their successful trainees; and partnering with an educational institution in offering apprenticeship program to ensure the available supply of skills and experience required by industry are not well known or practiced methods since none cited such actions. Likewise, direct or information provided by other member-companies are commonly used for recruitment.

Furthermore, professionals, technicians, and skilled individuals in the Philippines are in demand for the power, electricity industry; the water tapping and services industry; as well as the information and communication industry (ICT). On the other hand, professionals, skilled individuals, and managers are needed for the transportation industry while professionals, skilled individuals, and workers are required for the housing and construction industry. Also, managers and service workers are demanded in the tourism industry. Finally, teachers and technicians are required for technical education. Equally, under the category of managers, resident managers and division managers contribute to the success in the business operations of the forestry industry; under the category of professionals, foresters and logging engineers contribute to the success in the business operations of the forestry industry while engineers, CPAs, MDs, and nurses contribute to the wood manufacturing industry; under the category of technicians and associate professionals, equipment operators, and rangers contribute to the success in the

business operations of the forestry industry, while mill operators and quality control contribute to the wood manufacturing industry; under the category of clerical support workers, computer technicians contribute to the success in the business operations of the forestry and wood manufacturing industry; and under the category of service and sales workers, sales clerks (college graduates) contribute to the success in the business operations of the forestry and wood manufacturing industry.

As far as Thailand is concerned, the rubber industry was the only industry to experience a substantial increase in employment reported at 300% growth rate from 2005 to 2010. From the survey results, Thailand is experiencing a shortage on laboratory technicians, production or machine operators and engineers. On the other hand, there is no shortage in skilled trades, management executives, accounting and finance staff, programmers and database management expert. In addition, the popular modes of recruitment in Thailand are walk-in application and announcement of vacant positions in the internet while recruitment from overseas and availing of private employment intermediary service providers are unpopular. Likewise, the most relevant skills needed to qualify for a vacant position are possession of relevant experience in the position, executive and managerial ability, and self-discipline and/or work ethics.

Survey results also showed that institutions in Thailand requesting from universities/colleges for applicants who possess the required qualification and partnering with an educational institution in offering apprenticeship program will ensure the available supply of skills and experience required by the industry. However, there is also a need to establish a formal tie-up with a training institution to conduct special training for candidates for the position and then recruit from their successful trainee, and commission an employment intermediary service to provide for the specific requirements of firms/establishments, which is not widely practiced in Thailand. Thus, the only key employment generator is the manufacturing of automobiles. In addition, the source of recruitment of key employment generators are walk-in applicants, announcement of vacant positions in the internet, newspaper advertisements, placement services/units in universities, trade schools, and other training institutions, and through "head-hunters."

Meanwhile, the automotive industry in Thailand is in need of electro-mechanical engineers, while under the managers category, manufacturing, marketing, purchasing, and HR contribute to the success in the business operations of the automobile industry. Likewise, computer engineers, finance, and logistics are the professionals who contribute to business operations, while technicians and associate professionals of the same nature are the electronic, environment, and safety. Clerical support workers are secretaries, and the service and sales workers are those from marketing. Also, casting technicians have presented special recruitment problems in casting work for the automotive industry. Meanwhile, painting technicians (color coating) have also presented the same problem in vehicle painting, also for the automotive industry. As such, perceived problems such as lack of experience of technical personnel, limited number of highly skilled workers, school curriculum not being responsive to industry needs, pay scale not being competitive internationally,

weak linkage with educational institutions, as well as many personnel in their present positions are either over-qualified or under-qualified. Furthermore, upgrading of curriculum of universities/colleges to be responsive to needs of industry, for companies to provide entry level skills training/apprenticeship program, for companies to provide up-skilling/multi-skilling programs to their employees to meet the skills requirements of technological innovations adopted by the companies, improving research and development initiatives, as well as to encourage industry-academe linkages and collaboration were all acknowledged to be vital. Hence, the recruitment assistance that must be provided by the government is cheap labor from neighboring countries, clear policy on educational system development and clear direction on the industry development.

4.3.2. Educational Institutions

In Australia, the construction industry reports that it is currently experiencing difficulties recruiting particularly in the following areas: managers overseeing the implementation of major construction works; civil engineers engaged in the planning of major construction works; site supervisors providing direct supervision of construction works; estimators tasked to estimate quantity and cost requirement for construction projects; and construction trades workers in setting out, erecting and finishing construction works. Likewise, for the mining industry, mining engineers find it difficult to recruit professional engineers while geoscientists are problematic with the exploration and mine geology. Overall, it can be construed that the most cited perceived problem is the limited number of highly skilled workers. Despite the problems encountered being minimal, to produce highly skilled workers that would balance the supply and demand for competent personnel, there would still be a need for an upgrading of curriculum of universities/colleges to be responsive to needs of various industries; for companies to provide up-skilling/multi-skilling programs to their employees to meet the skills requirements of technological innovations adopted by the companies; to encourage industry-academe linkages and collaboration; as well as to increase public spending for and strengthen technical/vocational education were the most recommended courses of action to ease the problem of lack of qualified personnel or existing talent mismatch observed to support emerging industries.

Worthy to note that only one of the respondents in the Australian economy for higher education indicated that the top short-term non-degree courses offered are the bridging courses namely mathematics, chemistry and physics; Mandarin language courses and Chinese proficiency tests; and professional development in law courses. This may not hold true, however, in other universities or educational institution in the said economy, including that of the vocational education sector where no data or information was collected through the Survey. Also, the following information are commonly used to decide which degree or non-degree course to offer - availability of teaching skills to handle the course/s and the specific needs of local industries. In most cases, however, Australian education institutions often draw on information on professions which are experiencing strong demand from employers when making decisions about which courses to offer.

In addition, most institutions do not have any formal agreements for placement of graduates, while there are no institutions with formal agreements for placement of graduates. Meanwhile, while the Australian economy also encourages the formation of consortia with foreign institutions to upgrade education, issuance of accreditation on the classification of university/college status, and initiation of trade fairs for labor and employment, the freedom is also left to the institutions to decide in establishing linkage with foreign partners.

Meanwhile, the only factors considered deciding which degree or non-degree courses to offer in Brunei Darussalam are the basic requirements of the Department/Ministry of Education. Meanwhile, government intervention may come in the form of the provision of strong career opportunities to keep up with fast changing technological development; and create/establish courses that offer apprenticeship for important industries to enhance the qualification of new graduates of the institutions. It is vital to emphasize that the only government regulation that affects educational institutions is regarding accreditation on the classification of university/college status. In Brunei Darussalam, there are two institutions that host regular symposium and public forum on challenges of the educational institution, while there is only one institution that offers foreign exchange programs for faculty training. Note that the two fields of study covered are Business and IT.

In the Philippines, experienced foresters, rangers, and equipment operators have all presented special recruitment problems in field and very technical production oriented activities for the forestry sector. On the other hand, experienced managers, machine operators, and quality control technicians have also presented the same problem in plant and very technical production oriented activities for the wood manufacturing industry. Hence, from perceived problems such as the lack of experience of technical personnel, the limited number of highly skilled workers, and the retraining of staff due to rapid change of technology were persistent. Consequently, the upgrading of curriculum of universities/colleges to be responsive to needs of industry, for companies to provide entry level skills training/apprenticeship program, for companies to provide up-skilling and multi-skilling programs to their employees to meet the skills requirements of technological innovations adopted by the companies, to offer scholarships on courses/skills required by hard-to-fill occupations to ensure local supply, to encourage industry-academe linkages and collaboration, to increase public spending for and strengthen technical/vocational education, as well as to provide tax incentives to emerging industries were highly needed.

Moreover, the Philippine government it is expected to provide recruitment assistance through strengthening TESDA in order to produce or match the manpower needs of forestry and wood manufacturing. Institutions are monitoring statistics of tertiary education graduates, unemployment rate from labor force survey, inflation rate, occupational wages both local and overseas, wages structure of companies with CBAs or any other forms of employer-employee agreements, aggregate output, and trade balance. Moreover, the degrees in demand among referrals are IT, Industrial Engineering, Business sales and Marketing, and Education. Likewise, there are 2

institutions that offer short-term non-degree courses and without short-term non-degree courses. The top short-term non-degree course is Finance.

The factors that are mostly considered in deciding which degree and non-degree courses to offer are basic requirements of the Department of Education and Commission on Higher Education, specific needs of local industries, and global developments in the field of research, education, and training. Hence, the following special training provided are training on the use of *Macromedia Flash Player* and training on the use of basic *Microsoft Office Programs*. Meanwhile, there are three institutions with formal agreement for placement graduates, and there is no data collected on institutions without formal agreements for placement of graduates. Moreover, reasons cited for the inexistence of formal agreement are that there are - no request for graduates received from local industries, no need because graduates are in demand both local and abroad, and no staff to attend to this type of external service; other reasons are that students apply and search.

The regulations of the Philippine government that mostly affects educational institutions are the regulation of curriculum content or syllabi of courses offered and issues of accreditation on the classification of university/college status. On the other hand, the government regulation that weakly affects educational institutions is the imposition of a quantitative quota on certain courses. There are two institutions that host regular symposiums or public forum about challenges faced by educational institutions. Other means of soliciting feedback on challenges faced by such institutions is through media, CHED, and DepEd. Moreover, there are three institutions with foreign exchange programs for faculty training. The fields of study covered in this program are management, exchange program with students, exchange of professors in the Physical Sciences.

Lastly, in Thailand, institutions utilize labor market information such as statistics on graduates of technical/vocational education and inflation rate. Likewise, the degrees in demand among referrals are Interior Architecture, Applied Computer Science, Mechanical Engineering, Chemistry, Printing Technique, Engineering, Agro Industry, Veterinary Medicine, Architecture and Agriculture. Furthermore, the most common factors considered in choosing a degree and non-degree courses to offer are basic requirements of the DepEd and CHED, demand of clients who have tie up with association members, specific needs of local industries, global developments in the field of research, education, and training, and provision of strong career opportunities to keep up with fast changing technology. In addition, the following are the special training provided on needed technology - Project Risk Management, Professional Project Management, Industrial Cost Reduction, Post-harvest Technology, Energy and Environment Technology, and Specific skills in requested areas

Finally, the regulations of the Thai government such as accreditation on the classification of university/college status, encouragement of the formation of consortia with foreign institutions to upgrade education, and issuance of prospective list of courses that will increase in importance in 10 years will most likely affect educational institutions. As such, there are only two institutions with foreign

exchange programs for faculty training covering Engineering, Natural Science, Physical Sciences, Social Sciences, Humanities and all fields.

V. Conclusions and Policy Recommendations

Although talent mismatch has numerous concepts and causes, asymmetric information seems to be the more dominant explanation emerging in the literature. As such the focus of the research report is to document various measures, programs and mechanisms on how the APEC economies are narrowing the gap in information asymmetry between the suppliers and consumers of labor services. Rectification of this market imperfection has to be addressed primarily by an agency of the public sector since the normal private participants in labor market transactions tend to under-provide the optimal level of information. This task of addressing information asymmetry has been assumed by the government as part of its role in correcting market imperfections and in promoting public interest.

However, the provision of information has to be done efficiently to properly address the problem arising from information asymmetry in the labor market. To have a better perspective on the optimal provision of information there is a need to respond to the following questions: (1) what labor information should be provided?; (2) why should it be provided?; (3) who should provide and transmit the labor information?; (4) who should use the labor information?; (5) how should the labor information be transmitted?; (6) when will the information be transmitted?; and (7) where will the labor information be transmitted?

The first question refers to the kind of information that is relevant to the actors and stakeholders in the labor market. At the national level, macro-economic data as well as labor force data are relevant information that can be provided by various agencies of the national and regional governments. On the other hand, there is another set data on the industry level including the state of employment, sunrise or sunset industries, manpower needs of the industry, and skills shortages in the medium term. Furthermore, specific information that may interest job seekers may include data on skills requirements, type of occupations, wage rates, and working environment provided at the firm level.
The above sets of data are related to the demand side in the labor market. But for an optimum provision of labor market information, data at the macro, industry as well as firm specific information on the supply side should likewise be provided. The macro data on educational trends may include enrollment trends, graduates by programs, and school participation rates at the national and regional levels. At the industry level, graduates of technical and vocational courses and graduates of higher education institutions may be relevant. At the firm level there are data from the HEIs on the number and quality of graduates, performance in licensure exams, programs offered, programs with accreditation, skills, and aptitude of graduates,

The second question refers to the basis for the provision of information. This is related to the first question whose response may concern the stakeholder's (particularly the government) response to a market failure arising from information

asymmetry. Government agencies are mandated by law to provide and transmit labor market information primarily to address the information imbalances between suppliers and users of labor services. However, for industry associations and firms including educational and training institutions, the purpose of producing and transmitting information is primarily to suit their internal and private needs and not primarily to address information asymmetry. For this reason, the private sector, employment services providers and even training institutions may produce and transmit information below what is socially optimal to address the problem of information asymmetry.

The third question deals with the identification of institutions or individuals that will be responsible in the production and transmission of labor market information. The production of information will depend on the types of data and information needed in the labor market. Macro data are normally produced by various agencies of the national and regional governments because data gathering and dissemination is part of their constitutional functions. There are also legal mandates on the production of these macro data to be used by the general public and other government agencies for transparency purposes, decision making and policy formulation. Information about the industry, on the other hand, is produced by the national and regional government and to some extent by the industry associations. For industry associations the absence of a legal mandate coupled with little incentive for the production of information as well as the cost of production may restrain them to gather, treat and transmit this information to the participants in the labor market. In the same manner, firm specific data are very useful but without legal directive beyond reportorial requirements from the national and regional governments there is no incentive for its production.

Thus, the systematic production, treatment and dissemination of firm specific labor information is difficult to undertake since it may deviate from the normal functioning of business firms and educational institutions and its cost may eat up a huge portion of its revenues. Although we can identify who should be responsible in producing various levels of labor market information, the difficulty lies in making sure that these institutions and individuals produce the appropriate amount of relevant information. These difficulties contribute to the market imperfection which brings about the problem of information asymmetry.

Although the task of addressing information asymmetry has been assigned to the public sector, the example of Australia in the privatization of an important component of this task through Job Services Australia may prove to be more efficient in matching the needs of the employers and the skills of job seekers. This practice can be adapted in other APEC economies.
Complementary to the third and fourth questions on who should use the information, in general the public, and in particular, various stakeholders in the labor market should have access to information generated by the government. However, because of the varied interests of these stakeholders, there is no unique set of labor information relevant to all participants in the labor market. For example, employers may need macroeconomic information for their business expansion but also

information on the qualifications of the graduates of training institutions. On the other hand, training institutions may need, aside from the skills requirements of industries, information on the emerging industries. Employment services providers will need information on skills availability domestically and externally to match the information on manpower requirements of the domestic economy. The difficulties in answering this question will further complicate the answers to question 1 and question 3.

Having identified, with difficulties, who will produce and transmit the labor information and who will use this information, the fifth question revolves around the process on how the labor market information is transmitted to relevant stakeholders in the human resource development of the economy. With the rapid development of information and communications technology, this question can be readily answered. With the wide reach of the cyberspace, various participants in the labor market have utilized the Internet and various social networking sites to transmit and access labor market information at the macro, industry, firm levels. Canada for example, has the "Working in Canada Tool," while Malaysia established the one-stop center for online job matching facility called Electronic Labor Exchange.

Aside from information technology, the traditional classified ads, as well as job fairs, and face to face contacts with suppliers and consumers of labor services may still be relevant and efficient. In Thailand, the Department of Employment operates a national unemployment registration system and labor market information networks that connect all the participants in the labor market. In Australia, the publication of the Australian Jobs provides information that is relevant to job seekers and employers at the national and local levels. However, transmission can also be done through consultation and participation of the business sector in crafting the curriculum offered by various training and educational institutions. In the Philippines, the private sector is represented in the technical panels of various disciplines in higher education. In addition, a number of higher education institutions have invited key leaders in the private sectors as members of their board of advisers, primarily to guide them on the current developments in their respective fields relevant to the training of students and the job prospects of their graduates.

When will this information be transmitted? Although the information can be transmitted on an annual, quarterly basis or even on a more frequent basis, what is important is the usefulness of the information. The timeliness of the information is crucial in making decision for both employers and job seekers. Information which is out of date can be useless and cannot address the problem of information asymmetry. The frequency of transmission will depend again on what kind of information are produced and transmitted. The frequency of information will also depend on how the websites of various stakeholders are updated. Since information update is related with the production of information, the cost of producing the appropriate and relevant labor market information may lead not only to the under provision of information, but also on the timeliness of information being transmitted. Thus, depending on the resources of the producers of information, labor market information can be produced and transmitted on an annual, quarterly or even on a monthly basis.

Where will this information be transmitted? The important and increasing role played by ICT in the transmission of information has been established. However, we cannot discount the value and role of physical venues in the transmission of labor market information. At the regional and local levels, real physical offices where job seekers can find information and seek assistance for very specific, unique and local concerns can be very useful in addressing information asymmetry. Examples of these avenues at the local level are the Job Services Australia (JSA) providers and, the Service Canada Centers (SCC) under the Human Resources and Skills Development Canada (HRSDC) in Canada.

From the above discussion, addressing the problem of information asymmetry in the labor market cannot be easily answered. As we have discussed above there are nuances in the provision of information that give rise to imperfect and insufficient information, thus, the emergence of talent mismatch. Aside from the varying interests of the stakeholders, foremost reason is the insignificant, if not lack, incentives for the stakeholders in providing the appropriate information. Even if there are benefits, these benefits may accrue to others including competitors resulting to a free rider problem. Moreover, even if these benefits are readily internalized by those producing and consuming it, it may be costly to produce and secure this information. The additional benefits may not be as significant as the additional costs incurred in the production of the information.

In this study, we have reviewed various measures undertaken by APEC economies in addressing information asymmetry. The national and regional governments, on one hand, and the other stakeholders in the labor market, on the other hand, have provided macroeconomic, industry and firm level information with varying frequencies using different means of transmission. But despite these efforts, the problem of talent mismatch persists since information cannot be fully disclosed.

In the end, one cannot really know the productivity of the laborer until he is observed on the job. For example, the need for flexible, creative and resourceful workers can only be tested when these workers are already in the workplace. Similarly, the requirements for supervisory and managerial skills on their ability to manage priorities and multiple tasks and meet deadlines can only observed when they actually perform their supervisory and managerial functions on the job. Thus, productivity of workers can only be fully observed on the job. Prior to this, the participants in the labor market can only signal information coming from educational institutions and training institutions and, individual job seekers. Hopefully, these sets of information are related or reflective of the productivity of job seekers. However, the existence of weak linkages of signals with job performance is one of the major causes of information asymmetry.

In addition, educational institutions may not be the best and efficient producers of skills. Although schools provide an environment for the cognitive, affective, psychological, behavioral, vocational and non-vocational development of students, skills training is best done on-the-job and not in school. Some tasks and specific skills can be learned from technical and vocational training institutions. However, for

higher education, employability of graduates may not be gauged on specific skills learned from school but on the trainability, adaptability and flexibility of job seekers to the dynamic changes in the workplace.

What is emerging from the data collected from macroeconomic profile of each APEC economy and the survey, is the need to localize these information when transmitted to end-users, the increasing role and use of information technology in job matching, the privatization of the provision and transmission of some of the key components of this important public role in addressing information asymmetry in the labor market. Although the government is the key agency in addressing information asymmetry, it can also perform this social function by outsourcing this to the private providers. The key role of government in talent matching is primarily to address the underserved needs of special sectors of society and not to compete with the private employment services providers. Another emerging best practice is the utilization of various measures that may be more efficient and can serve the immediate needs of employers and job seekers. Although the use of the Internet and ICT in the Labor Exchange, the traditional means of job fairs, classified ads, and physical offices are likewise useful. These are not substitutes but complementary measures.

Although there are numerous mechanisms being implemented across the APEC economies, in addressing the information asymmetry through labor market signaling, they are not enough. Aside from the incentives and cost of production and transmission, these measures cannot provide the full or perfect information. The most it can do is to mitigate or narrow the information gap. As already mentioned, full information can only be disclosed at the work place where job seekers learn about the difficulties of the job and, the employers learn about the skills and work aptitude of the workers on the job. The most that mechanisms on market signaling can do to minimize the cost of skills and talent mismatch for both the job seekers and employers. These best practices are meant to assist individuals in their decision on what and how much to invest in human capital, assist in the management of training programs, improve labor market efficiency and serve as framework for planning on public investment in training. And these best practices that we have documented in various APEC economies can be shared, learned and applied to make human resource development in the region more efficient which in turn can contribute significantly in maintaining the momentum of economic progress in the region.

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RECAPITULATIONS

Day 1 (25 July 2012)

In the face of a constantly changing economic landscape, the establishment of an effective and responsive labor market signaling system that can communicate information on the demand and supply of labor and skills within the economy has become critical. This gathering aims to allow participants a means to gain valuable insights from the diverse experiences of each member economy, among which include best practices, current and future challenges, and opportunities for regional collaboration.

The discussion began with Mr. David Arkless' speech on workforce trends and the key findings of the 2012 Talent Shortage Survey. Among the key takeaways from the keynote and the discussion that ensued are the following:

- To address the global skills mismatch, economies must intensify efforts to promote technical and trade skills.
- There exists a need to establish systems/surveys that collect, analyze, and disseminate information on current and projected industry skills demand. This will allow various stakeholders and decision makers access to information on human resources requirements within any industry group, for any occupational group, and for any time period.
- Governments have the capacity not only to forecast the skills its labor market will need in the future but also encourage individuals to take career tracks that will meet that said needs. This can be done through the provision of incentives in the form of scholarships and job assurance. In addition, governments must correct the perception that TVET degrees are inferior to university degrees. To do so, the government must inform its citizens of the real opportunities that await TVET graduates.
- The role of demographic changes must also be considered. China, for instance, faces internal issues of mobility (half a million people arriving in Shanghai from the countryside). Europe, on the other hand, will soon rely on cross-border mobility and international labor migration.
- Transferring labor from an economy/region experiencing a surplus to areas that are experiencing shortages can easily solve supply-demand imbalances. This highlights the need to formulate and implement good labor migration policies within and amongst ecomomies.

Recapitulations

After a general discussion on the most pressing labor market and workforce issues member economies face, economy-specific presentations followed. Noteworthy from Thailand's presentation are the following points:

- In order to match skills to the right job, the "Committee for Solving Labor Shortage" was created to increase labor participation and increase labor efficiency.
- Policies implemented in Thailand in providing solutions focused on (1) encouraging people of working age to obtain employment, as well as, (2) protecting the youth and female labor.

Meanwhile, Peru's presentation discussed key factors leading to mismatch, which are summarized as follows:

- The educational system in Peru does not reflect the requirements of enterprises and economic growth;
- Technical occupations are barely offered by the educational system while they are highly demanded by enterprises in Peru; and
- Rapid economic growth requires the development of certain labor skills such as: discipline, creativity and initiative, as well as quality concerns, which are not incorporated in the curricula of public education in Peru.

The open forum that then ensued emphasized on the following thoughts:

- In order to increase the volume of workers moving into the economy, Thailand has endeavored to (1) improve policies on movement of natural persons (i.e. revisit National Treatment) and (2) mandate firms to provide the same benefits for local and foreign workers.
- In order to address problems on an aging population, Thailand has amended the mandatory retirement age and increased the role of the elderly as trainers and mentors of young workers.
- Thailand's labor data collection mechanism relies on the efficiency of more than 70 regional offices that transmit data to a central office on a monthly basis.
- Peru emphasized on implementing surveys that identify enterprise variation and the employability of various occupations.
- There is a need for a stronger link between education and labor groups. Small collaborative projects can lead to bigger and high impact based projects.
- There is a need to focus on finding a market for individuals with secondary education. In line with this urgent need, a program that integrates the transmission of soft skills within the secondary education curriculum in Peru will be implemented by 2013.

The session ended with a discussion on the role of private recruitment agencies in facilitating employment and promoting the use of ethical recruitment strategies. Among the key insights derived are:

- Private Employment Services (PrES) provide the full spectrum of human resource services ranging from temporary agency work, recruitment of all kinds, and training.
- PrES ensures job creation and provides quick responses to business demands, highly-flexible workers to address the variability in demand, and relatively low fixed costs of searching for talents, while potentially securing permanent positions for workers in companies.
- The PrES industry supports companies with the entire process of skills matching. They match the needs of companies with the available labor in economies, contract them, and train them to meet the needs of the said companies.
- The rise in the number of PrES agencies is due to low barriers to entry into the industry. However, this also increases the incidence of abusive traders/employers who exploit workers and require them to comply with strict, yet unnecessary policies. *Ciett* ensures the regulation of recruitment agencies, making sure that they abide by international standards, accomplish the objectives of PrES, and eliminate rogue traders.
- The ultimate goal of PrES is the promotion of good labor recruitment practices, the improvement of per capita productivity via flexibility in the workforce, and the provision of enough people when required by businesses. In promoting good labor recruitment practices, *Ciett* seeks to remove the fees charged to jobseekers requiring help in finding work. Companies should pay recruitment agencies to look for workers. Workers should not have to pay for them to receive help in finding work.

The highlights of the corresponding forum are as follows:

- In the course of linking job seekers and companies, employers (may it be the end-user companies or the recruitment agencies) should be responsible for shouldering the costs of training to make employees job-ready and giving them the capability to cater to the needs of companies. Federations and unions simply act as representation for specific workers, giving them a collective voice in international dialogue.
- To effectively handle different labor market situations (particularly shortages), economies must have fresh, updated labor market information, and

synchronization of the economy's needs and the supply of skills. Economies should understand the needs of the labor market and have some way of forecasting the supply of labor according to specific occupations. Economies need to be open regarding the issues of shortages and must heed the advice of labor market experts regarding labor market characteristics, mechanisms that may be adapted to improve the labor market, and to review and possibly apply the best practices of different economies integrated in a synchronized mechanism.

Day 2 (26 July 2012)

The first segment of the first day's session focused on the collation of member economies' good practices on effective labor market signaling. The exercise was indeed fruitful and helped member economies that continue to seek for solutions to persistent labor market imbalances. Adopting and modifying such proposals and policies in a way that is responsive to member economies' diverse contexts and circumstances will be crucial.

Among the notable innovations and practices introduced were:

- The outsourcing of public employment services to private organizations that have more expansive networks. Malaysia outlined ways by which private firms can assist job seekers such as Executive Search and Selection, Permanent Placement, Contract Outsourcing, and Payroll Administration.
- The use of labor demand models to estimate future labor needs given the expansion and huge-scale projects.
- The development and utilization of digital systems that provide data on job vacancies and job seekers. Among these include employment portals, social media, and online databases.
- The provision of career guidance programs that provide information, consultation, and placement services.

Some of the concerns raised during the open forum that followed include:

- Optimal mix between private and public employment services
- Roles that the private sector can perform that the public sector cannot, vice versa.
- Streamlining coordination between various government offices and agencies
- Role of the government in providing assistance to job seekers with reference to private job services
- The resource and informational requirements needed by other APEC member economies that seek to construct its own labor demand model.

The last segment of the session concerned itself with a discussion on the results of a survey on effective labor market signaling. According to Dr. Tereso S. Tullao, the development of an effective labor market signaling system requires its designers and developers to answer at least five of the following:

- What labor information should be provided?

- Who should provide and transmit the labor information?
- How should the labor information be transmitted?
- When will the information be transmitted?
- Where will the labor information be transmitted?
- Why will the labor information be transmitted?
- Who will use the labor information produced?

Likewise, member economies must keep in mind that:

- Information asymmetries in the labor markets exist. Left to their own devices, agents in the labor market will produce sub-optimal levels of information.
- Public employment services must be localized in order to respond to the diverse circumstances end-users of information are in.
- Institutions of higher education are not solely concerned with producing laborers. They are also concerned with other aspects of human development (cultural, political, social, etc.). As such, governments must focus on TVET institutions and other modes of learning as well.
- There is a need to systemize data collection on a firm/organizational level. Right now, data is always in its raw form, unprocessed.

Meanwhile, the best practices for the Philippines and Viet Nam were emphasized and included but are not limited to:

- Digital systems (social media) that provide data on jobs and jobseekers ex: Phil-JobNet and Skills Registry System
- Career guidance programs (those that provide information, consultation and placement services)
- Specialized employment programs for specific-clients: (persons with disabilities, and students who have no initial endowment/capability to finish their studies)

After which, the key issues highlighted in the forum included:

- “What is the optimal mix between private and public employment services?”
- “What roles can the private sector perform that the public sector cannot and vice versa?”
- “Up to what extent is private participation involved in public activity, and vice versa?”
- In the Philippines, for example, aid from public employment services is more for the underprivileged and vulnerable segment of the labor supply. Private

employment services cater to the more privileged (executive, managerial) segment of the labor supply.

DISCUSSION OF RESULTS & CONCLUSIONS

Best Practices across All APEC Member Economies

Of all the good mechanisms practiced in the labor markets of the various APEC members, three overarching themes have arisen:

1. ***Developments in Information and Communication Technology***. ICT is important to facilitate gathering information/data in the labor markets. This entails establishment of digital systems, social media, social networks of professionals and companies which will act as employment portals. This facilitates the exchange of information: what skills are available and looking? And what skills are needed by the companies?

2. ***Client-specific employment services.*** Employment services such as job consultancy, career guidance and information provision, training and placement, need to be administered to all kinds of jobseekers: new entrants, female, youths who lack income to finish their studies, persons with disabilities, even displaced workers. This includes encouraging future labor market participants to train/study in the jobs needed by the economy.

3. ***Estimate Labor Demand Models.*** After gathering information on the labor market and identifying the targets (jobseekers and companies), testing out different models and predicting future labor needs depending on the growth and development of the nation is necessary to provide an effective signaling system, giving future labor market entrants the option to enter technical and vocational courses and developing their soft skills prior to entering the labor market, may serve as a more effective avenue to improving an economy's human resource, rather than pushing them to take university degrees that do not necessarily cater to the needs of companies.

Major issues in improving the labor market are as follows:

1. Among all aspects of the labor market, the largest issue would be that of the collection and dissemination of information. Before being able to recommend anything further, information is needed for:

    a. Identifying problems such as shortages or surpluses in different sectors
    b. Analysis of which skills are essential to develop

c. Forecasting to make sure that the distribution of skills, and that the training that jobseekers engage in are sustainable and will address future needs of job markets

This highlights the need to improve the following:

1. There is a need to promote technical and vocational skills so as to cater to the needs of companies. The youths' dilemma of whether to take a university degree or a technical vocational course needs to be set straight. The number of educational unemployed is increasing although the number of unfilled jobs is very high as well.

2. There is a need to institutionalize Private and Public Employment Services (PrES and PES, respectively) to enhance their roles in facilitating the cycle of job-seeking. Furthermore, existing PrES and PES need to be strictly regulated, and illegal or rogue traders need to be eliminated to protect the labor supply from possible exploitation.

Good Practices on Pubic Employment Services for the Philippines and Viet Nam

1. With all the discussion on the good management practices of both private and public employment services of different APEC economies, an important issue has been raised: “What is the optimal mix between private and public employment services?”, “What roles can the private sector perform that the public sector cannot and vice-versa?”, and moreover, “Up to what extent is private participation involved in public activity, and vice versa?”The level of infrastructure in an economy imposes the question of which sector to prioritize.

   a. Ireland has a social networking program involving universities (faculty, students) which acts as a database of professionals. The interconnectivity of actors through a social network will ensure the availability of job market information and serve as a liaison for both companies and jobseekers to receive the information they need. This can be done via the cooperation of both private and public employment services as it is the role of both to disseminate information regarding the availability of jobs and expertise.

   b. There is a dichotomy between public and private employment services wherein private employment services are available only to the more privileged, executive and managerial portion of the labor supply, and the public employment services are available only to the underprivileged and vulnerable segment of the labor supply.

2. The perspective of society today has shifted such that parents have strictly required their children to finish university degrees, and even get Master’s and Ph.D. degrees, underestimating the relevance and capabilities of technical and vocational education. Korea has magisterial high schools which analyse the needs of the neighborhood, and through their analysis, the government supplies the secondary schools with experts to teach the needs of students. This is possible through the interconnectivity of the secondary schools and the government, thus bridging the gap between the lack of vocationally-trained laborers and the demand for such kind of laborers.

Report on the Conduct of the Survey

APEC has currently 21 member economies that are to participate in this survey. The complete list of APEC member economies that were included in the survey are enumerated below:

Australia
Brunei Darussalam
Canada
Chile
People's Republic of China
Hong Kong, China
Indonesia
Japan
Republic of Korea
Malaysia
Mexico
New Zealand
Papua New Guinea
Peru
The Philippines
Russia
Singapore
Chinese Taipei
Thailand
The United States
Viet Nam

To conduct the survey, the Project Team requested each economy to designate a focal person as the contact of the Philippine Project Team. The designated focal person will take charge and supervise the conduct of the survey. He is responsible for the distribution and collection of questionnaires to and from the three types of respondents, the associations of employers; association of educational and training institutions and the associations of providers of employment intermediary services.

Three types of questionnaires accompanied by a document containing the guidelines on how the survey will be conducted were electronically sent to the designated focal person. In order to track the progress of the survey, designated focal persons were also asked to provide the Project Team with a list of prospective respondents. This list contains all associations that will answer the survey. Unfortunately, none of the focal persons submitted the list of prospective respondents.

All of the abovementioned APEC member economies, through their respective focal person, received the electronic copy of the three questionnaires from the Project Team. Hard copies of these questionnaires were reproduced and distributed to target respondents on 16 October 2011. Recipients of the questionnaires were instructed to return the accomplished questionnaires to the focal person one week after receipt of which.

Due to poor response from member economies, the deadline for submission was extended to 31 January 2012. Despite the follow-up made, only five economies responded, namely: Australia, Brunei, New Zealand, Thailand and the Philippines. The Project Proponent experienced quandaries during the distribution of the Survey Questionnaires to the economies. The participation of member economies in the conduct of Survey was very minimal, thus, a low turnout in the retrieval of survey responses was expected. Issues had been raised regarding the Survey design which includes complexities and the lengthiness of the Questionnaires. The undertaking itself, which includes the accomplishment of the Questionnaires, the distribution and the submission of survey responses, especially for those whose federal/central governance structures do not provide a direct link to business or employer groups, including the education and training institutions, would need a longer time frame.

Apart from those mentioned, language barrier also posed to be one of the main problems and challenges, as it would significantly entail some time to have the Survey Questionnaires be translated in other economies' own language, which could have been considered as well. Likewise, despite the member economies' willingness to participate, some tended to decline due to the ongoing changes in their government's organizational structure. Political activities which also coincided during the implementation of the Survey were also among the reasons raised. It must be noted, however that the Questionnaires had undergone a peer review from co-sponsoring economies. Although relevant comments were indirectly received, the lengthiness of the Questionnaires was minimally criticized since a peer review of the co-sponsoring economies was sought prior to the distribution of the Questionnaire. And, had it been raised, the Project Proponent is very much willing to have the Survey design revised to remedy the issues above-mentioned.

Meanwhile, it is worthy to note that the economies that responded are co-sponsoring economies of the Project, although some were not able to participate in the conduct of Survey due to the reasons previously mentioned. Accordingly, co-sponsoring economies had also provided supplemental data and information, especially in cases where the survey respondents possess no available information on some items in the Questionnaires. The overall response rate is 23% which is rather low but is expected. The survey was administered as a self-enumeration type of survey which is cumbersome in nature. Perhaps, if the survey was conducted with an interviewer who will administer the questionnaire, it would have gained higher response rate. Conversely, if an interviewer was involved, the cost of the survey may have been too steep due to the salary of interviewers and transportation expenses to and from the place of interview. One lesson learned from this methodology is that a self-

administered type of questionnaire is not an effective way of conducting a survey for such an important study.

Processing of Accomplished Questionnaires / Survey Results

The list of respondent establishments that accomplished the questionnaires (including the name of persons who accomplished them and their designations) collected by the focal persons in the five economies are shown below.

AUSTRALIA			
Name of Association/Firm		**Respondent**	**Designation**
Q1 - Industry Employers			
1	Aged and Community Services Australia	M. Stephens	Researcher
2	Master Builders Australia Limited	Dr. Alex Maroya	National Training Director
3	Minerals Council of Australia	Chris Fraser	Director, Education and Training
4	Australian Government (Department of Education, Employment and Workplace Relations)**	Nick Dowling	Assistant Director, Workforce Analysis and International Section I Industry Strategies Branch
Q2 - Educational Institutions			
1	Australian Council for Private Education and Training	Ben Vivekanandan	Manager, Policy & Research
2	Queensland University of Technology (QUT)*	Mrs. Abigail Winter	Information Coordinator
3	TAFE Directors Australia		
4	Australian Government (Department of Education, Employment and Workplace Relations)**	Nick Dowling	Assistant Director, Workforce Analysis and International Section I Industry Strategies Branch
Q3 - Employment Intermediary Services			
1	MAXNetwork Pty Ltd	Richard Spurrell	Executive General Manager
2	Recruitment & Consulting Services Association	Steve Granland	CEO
NEW ZEALAND			
Name of Association/Firm		**Respondent**	**Designation**
Q1 - Industry Employers			
1	Department of Labour**	David Paterson	Principal Analyst
Q2 - Educational Institutions			

1	Department of Labour**	David Paterson	Principal Analyst
Q3 Providers of Employment Intermediary Services			
	No respondent		
BRUNEI DARUSSALAM			
Name of Association/Firm		**Respondent**	**Designation**
Q1 - Industry Employers			
1	Brunei National Petroleum Company (Petroleum Brunei)*	Jefrawi Kifli	HR Executive
2	Baiduri Bank Berhao*	Jeromica Chonly	Senior Mgr HR
3	Brunei Shell Petroleum Company SendirianBerhad*	HJ Amit HJ AbdRazak	HD HRIB, Bruneianisation& Resourcing
4	Primeland Estate Agency*	Monaliza Noordin	General Manager
5	Bank Islam Brunei Darussalem Berhad*	---	---
Q2 - Educational Institutions			
1	Laksamana College of Business*	Ssivarajah	Chief Operating System
Q3 – Providers of Employment Intermediary Services			
	No respondent		
THE PHILIPPINES			
Name of Association/Firm		**Respondent**	**Designation**
Q1 - Industry Employers			
1	Federation of Philippine Industries	Rufino Margate Jr.	Secretary General
2	Philippine Woods Producer Association	Leonardo D. Angeles	Executive Director
3	Business Processing Association	Gillian Virata	Senior Executive Director
Q2 - Educational Institutions			
1	DLSU Manila*	Dr. Tereso S. Tullao	Director, AKI
2	UA&P Manila*	George Manzano	Assistant Professor
3	University of San Carlos*	Dr. Elizabeth M. Remedio	Director, Zonal Res. Ctr.
4	Mindanao State University-Marawi (Main Campus)*	Dr. Alma E. Berowa	VP for Academic Affairs
Q3 - Employment Intermediary Services			
1	Regional Officers of PESO XII	Ricardo T. Dagcuta	PESO Manager
2	Kasambahay Providers Association	Rosita Alias	President
3	PESO Federation Region IV-A	Ariel M. Mugol	PESO Federation President

4	PESO Federation - Region VIII	Norman Victor M. Ordiz	PESO Manager
5	PESO-CAR, Inc.	Florita Bay-on	President
6	PESO Region IV-A (Taytay)	Gina De Leon-Pineda	Supervising LEO
7	Region III PESO Managers Federation, Inc.	Ms. Elizabeth Alonzo	President
8	League of PESO Managers of Region XI	Lara Zaphire Kristy N. Bermejo	President
THAILAND			
Name of Association/Firm		**Respondent**	**Designation**
Q1 - Industry Employers			
1	Saeng Thai Rubber Co., Ltd.*	BoonharnOu-Udomying	Executive Director
2	Automotive Industry Club (Federation of Thai Industries)	Ms. Preeyaporn	---
Q2 - Educational Institutions			
1	King Mongkut's University of Technology Thonburi*	Asst. Prof. Anak Khantachawana	Assistant to the President for International Affairs
2	Kasetsart University*	---	Director, International Affairs Division
Q3 - Employment Intermediary Services			
1	Fame Placement Co., Ltd.*	---	---
2	Nippon Consulting Recruitment Co., Ltd.*	Ms. Tomoka Moriyama	---
3	JAC Personnel Recruitment Ltd. (JAC Recruitment Thailand)*	Yu Suzuki	Associate Director
4	RSM Recruitment (Thailand) Ltd.*	Mike Hollonay	Director
5	Adecco Company Limited*	Reception	---
6	Manpower Professional & Executive Recruitment Ltd.*	Sentchui P.	Technology Business Manager
7	Start Recruitment (Start People + USB Group)*	---	---
8	Star Search Services Co., Ltd.*	Mrs. P P	Recruitment Director
9	Smart City People (Thailand) Recruitment Co., Ltd.*	C. Kamrano	---
10	GNR8 Manpower Solutions (Thailand) Co., Ltd.*	Suparat N.	General Manager
** Individual firms*			
*** Government*			

Since only a number of questionnaires can be aggregated and responses to survey are non-comparable, it was decided that the tabulation and analysis of the survey results be done by respective economies. Since the level of development of the responding economies are different, it was necessary to provide some background

information on the form of government, economy, trade level and other relevant information that may contribute to the understanding of the labor market in these responding Economies. If we look at the responding economies, two belong to developed economies in Asia namely, Australia and New Zealand, while the other three economies are from Southeast Asia.

The questionnaires were edited for consistency of entries and it was observed that some items did not have any answer. Brunei Darussalam did not cover providers of employment services and only one educational institution submitted. For New Zealand, the government provided limited information and there were no respondents for associations of employers, educational institutions and providers of employment services which are supposed to be covered in the survey. Australia did not have respondents on employment services providers although it was adequately described in a separate document that accompanied the accomplished questionnaire. In fact, the government of Australia has a complete description of its entire labor market system. The Philippines and Thailand covered individual providers of employment services but not associations. The same is true for educational institutions where the respondents are individual universities. Because of these differences, it was necessary to prepare the statistical tables according to how the questions were asked in the questionnaire. Aside from the receipt of accomplished questionnaires which came in trickles, aggregation of data for the five responding economies was not possible; hence, the analysis was done by Economy. There was an attempt to standardize the format of analysis but it was difficult for some economies to present a result which contains full information from the survey.

Analysis of Results

The analysis of survey results and secondary data will provide a wider perspective on the labor market signaling system in the five responding economies. The employment situation of the more advanced economies are very much different from those of the developing economies in terms of the services provided in responding to challenging issues such as talent shortages, hard-to-fill positions and oversupply of labor for a particular type of occupation. As such, the analysis focused first on the overall individual participating economy and after which assessed the result of the survey of key industries and employment generators. From the results, we identified the presence of labor market signaling system which other economies may emulate. Additional information from secondary sources was incorporated as background material in order to provide a deeper understanding on labor supply and demand situation of the responding establishments covered by the survey. It is however difficult to make comparisons on certain indicators between and among economies participating in the survey. The aggregated responses among the associations are not similar to responses of the individual establishments included in the survey. In other words, responses may not be on the same level because of non-comparability of coverage. For instance, Australia's respondents are associations of employers in the key and emerging industries compared with Brunei Darussalam's respondents which include only individual establishments.

Plenary Discussion on Labor Market Signaling, Indicators and Systems

The plenary session was led by Dr.Tereso S. Tullao, whose aim is to engage the entire delegation in developing the framework for labor market information collection, processing and dissemination. Seven questions were answered and answers were segregated according to specific groups namely: Government, Private Institutions and Training Institutions.

1. What labor information should be provided?
    A. Government
        a. Macroeconomic indicators
            i. Economic growth
            ii. Population growth
            iii. Unemployment rate
                1. Industry
                2. Occupation
                3. Regional
                4. Local
            iv. Poverty
        b. Manpower skills needed in the labor market at the macro level
            i. Type and level of skills
            ii. Level of demand in industries
            iii. List of vacancies
            iv. Statistics on industry vacancies
                1. Trends
                2. Forecasts
        c. Manpower supply
            i. Available skills
                1. General
                2. Specific/Specializations
        d. Availability of employment services
            i. Proper matching of skills
            ii. Clear job description and requirements
        e. Labor market policies and regulations
        f. Government thrusts and priorities
        g. Critical labor indicators for both supply and demand side
    B. Private Institutions
        a. Industry specific profile
            i. Skills Requirements
                1. General
                2. Specific
            ii. Clear job descriptions and requirements
            iii. Information on job openings
        b. Employment Path
            i. Clear career track
            ii. Wage and benefit structure

c. Linkages with the government

C. Training Institutions
   a. Labor supply statistics
      i. Data on number of enrolees
         1. Secondary education
         2. Tertiary Level
         3. Technical and Vocational
      ii. Data on number of graduates
         1. High School Graduate
         2. College Graduate
         3. Graduates with Master's and/or Ph.D. degree/s
         4. Technical and Vocational
   b. Courses offered
      i. Tertiary Level
         1. Bachelor's degree
         2. Associate's degree
      ii. Technical and Vocational
      iii. Curriculum of courses
   c. Training received
      i. General
      ii. Specific
   d. Career choice
      i. Job aspirations and career goal of individuals
      ii. Job placements

2. Who should provide and transmit the labor information?
   A. Government
      a. Various Government Agencies
         i. Ministry/Department of Human Resources
         ii. Ministry/Department of Trade and Industry
         iii. Ministry/Department of Education
         iv. Ministry/Department of International Affairs
         v. National Statistics Office
         vi. Local government units
      b. International and External agencies linked with the government
         i. Asia Pacific Economic Cooperation
         ii. United Nations
         iii. International Labor Organization
   B. Private Institutions
      a. Employers
         i. Human Resources Department
         ii. Industry skills council
      b. Labor Unions
   C. Training Institutions
      a. Educational Institutions
      b. Associations of Universities- Public and Private

c. Consortium of training institutions
d. Planning Officers

3. Who will use the information?
   A. Government
      a. Various government planning agencies
         i. Economic planning unit
         ii. Ministry/Department of Education
         iii. Ministry/Department of Budget
         iv. Congress
         v. Policy Makers
         vi. Public Service employment agencies
         vii. Settlement Services
   B. Private Institutions
      a. Entrepreneurs
      b. Investors
      c. Employers
      d. Industry Associations
      e. Labor Unions
      f. Employment Services Agencies
      g. Jobseekers
   C. Training Institutions
      a. Educational Institutions
      b. Associations of Universities- Public and Private
      c. Consortium of training institutions
      d. Planning Officers
      e. Labor market

4. How should the labor information be transmitted?
   A. Government
      a. Developing effective labor market policies
         i. Information dissemination
            1. Local Level (Urban vs. Rural)
            2. Regional
            3. Industry based
            4. Occupation based
            5. Community based units labor organizations
         ii. Policies concerning domestic and international standards
      b. Strengthening Private-Public Partnership
         i. Establishment of linked organizations for information exchange between public and private sector
      c. Government sponsored forums and conferences
      d. Government sponsored Job Fairs
      e. National Planning
      f. Release of pertinent documents
         i. Annual Reports
         ii. Labor Survey

iii. Higher Education Archives
iv. National Statistical Data

g. Mass advertisement through newspaper, internet, billboard
i. Job Postings/Vacancies

B. Private Institutions and Training Institutions
a. Forums, Workshops and Conferences
b. Multimedia
i. Social Networking Sites
ii. Television
iii. Firm specific website
iv. Newspaper
c. Private-Public Partnership
d. Employment Services

5. When will the information be transmitted?
A. Government, Private Institutions and Training Institutions
a. It depends on the need of the specific organization. It can be produced daily, weekly, monthly, quarterly, semestral or annually. Availability of labor market information will depend on the need for the information and purpose it will serve.

6. Where will the labor information be transmitted?
A. Government
a. Government agencies' websites
i. Central Offices
ii. Rural Offices
iii. Local Government units
iv. Statistical Archives
b. National employment service office
c. Ministry/Department of Labor and Employment
B. Private Institutions
a. Human Resources Department
b. Labor related associations
c. Labor unions
C. Training Institutions
a. Workshops, Forums and Conferences
b. Formal and informal training institutions from primary to tertiary level of training
c. Job placements
d. Educations Intuitions

7. Why is this information needed
A. Government
a. Research and Development
i. In order to forecast data on demand and supply of labor
ii. Understand labor market

iii. Statistical and interpretation of labor data
iv. Assess or determine the strength of the labor supply
v. Monitor employment growth

b. For planning of government interventions and actions
   i. Policy development and timing of responses (Internal mobility, Migration, Training, Employment services)
   ii. Policy direction in the implementation of programs
   iii. Monitoring government targets
   iv. Develop good and effective national labor policy
c. Effectively match demand with supply of labor
   i. Inform and prepare jobseekers about to enter the labor market
   ii. Assist employers
   iii. Provide responsive labor market information for target clients
d. Effectively allocate budget for labor market

B. Private Institutions
   a. Recruitment Strategies
      i. Establish strategies and frameworks to recruit workers
   b. Skills and Training
      i. Skills development
      ii. Improve competence of the workers
      iii. Ensure that the training institutions can produce & develop the necessary standards for the various TRG programs for the participants
      iv. Address skill shortage
   c. Address needs of the industries
      i. Locate skills requirements of industries
      ii. Determine in-demand/hard to fill skills requirements of industries
      iii. Match industry requirements with the skills available
      iv. Increase awareness on the available manpower and match it with their needs
      v. Increase accessibility to pool of available workers
      vi. Start-up and expansion of firms
   d. Job placement-labor mobility flow
   e. Transition phase of skills utilization
   f. Educate public and prospective students of economy and preferred programs

C. Training Institutions
   a. Offer the right courses and skills training
      i. Determine the need to design programs and the need for schools
      ii. Develop standardized curricula
   b. Develop effective training materials
   c. Develop a framework to attract students to take courses which are deemed to be in-demand
   d. Produce labor that supports the market demand

i. Properly identify and match the skills of an individual
ii. Ensure learner develops the right skills needed by employers
iii. Utilization of skills in meeting skills demand
iv. Design the most appropriate employment services for jobseekers

WELCOME REMARKS

Hon. Rebecca J. Calzado
Assistant Secretary,
Department of Labor and Employment
The Philippines

Honorable Danilo P. Cruz, Undersecretary of the Philippine DOLE; Dr. Young-Hwan Kim, Lead Shepherd of the APEC HRDWG; Distinguished resource speakers and delegates from the APEC member-economies; Honored guests, ladies, and gentlemen:

Good morning.

On behalf of the Philippine Department of Labor and Employment, may I extend a warm welcome to all the delegates from APEC member-economies who are here to attend the three-day forum on *"Effective Labor Market Signaling: A Strategy for Addressing Unemployment and Talent Mismatch."* Welcome to the Philippines! We are also joined here today by representatives from the different member-agencies of the Philippine APEC HRDWG, the labor sector, our public employment service offices (or PESOs), and the International Labor Organization – Manila Office. Thank you all for accepting our invitation to this forum.

We are well aware that the global economic crisis has directly affected the employment situation in the APEC member economies. The challenges that need to be addressed to fully recover from this crisis are the persistence of structural unemployment and job-skills mismatch. The problem of talent shortage, resulting from the inability of our educational and training institutions to produce the human resources needed by employers due to insufficient labor market information on their manpower requirements, hinders the resolution of these challenges. Hence, it is important to develop clear and appropriate labor market signaling strategies that member economies could adopt in developing their own domestic labor market signaling system.

In our continuous efforts to achieve inclusive economic growth for all, job creation became the rallying cry of the APEC Leaders in Singapore in 2009 to address the social implications of globalization. The APEC Leaders further highlighted the "outcomes in education and skills training to improve long-term economic sustainability" as one of the main areas of concern. In response to this challenge, under the auspices of APEC, the Philippines, with the support of co-sponsoring economies of Australia, Brunei, Chile, China, Malaysia, Thailand, and New Zealand, initiated a project which aims to identify core labor market signals in key employment industries and to provide recommendations in addressing talent shortages and structural unemployment. It is expected that at the end of the project, government policy makers, the business sector, and the education and training institutions in APEC economies will be provided with good practices in designing and implementing workable labor market signaling systems.

The implementation of the Project was divided into two main phases: The first phase was the development and conduct of a survey and the second is this forum which will be a platform to present and discuss the survey results and analysis. Today, as we start the more important phase, we have invited international experts who will talk about the current trends in the world of work, particularly how existing and emerging work arrangements have reshaped the structure of labor markets, and why it is important for the industries to be systematic in signaling their requirements to the suppliers of skills, so that the latter are able to calibrate their skills' production responses that are attuned to the employers' requirements. We will likewise hear from the delegates of APEC member-economies about their policies, programs, and the good practices of their respective public and private employment services.

The results of the survey will be presented tomorrow by our labor market expert, Dr. Tereso S. Tullao, and we will have representatives from the APEC-HRDWG, APEC Business Advisory Council, and the Philippine APEC Study Center Network to react on the presentation on the third day. After this, we will have a plenary discussion on the proposed Labor Market Signaling System to gather additional recommendations.

Allow me to take this occasion to particularly thank the APEC member economies' Focal Points and representatives from labor ministries who have participated in the said survey. We expect that through this event, effective labor market indicators that surfaced in the survey results will be highlighted. We look forward to your constructive feedback during the forum discussions.

Thank you very much, and once again, my warmest welcome to everyone.

KEYNOTE SPEECH

Hon. Danilo P. Cruz
Undersecretary,
Department of Labor and Employment,
The Philippines

Good morning, distinguished guests, ladies, and gentlemen. I have the great honor to welcome all our international delegates from APEC member-economies to our beautiful and beloved Philippines. In particular, I welcome everyone to this forum on *"Effective Labor Market Signaling: A Strategy for Addressing Unemployment and Talent Mismatch."* On behalf of the Philippine Department of Labor and Employment, I would like to extend our deep appreciation to all of you for accepting our invitation to this forum. Welcome to the Philippines!

We are all aware that the global economic crisis has directly affected the employment situation in the APEC member economies. The challenges that need to be addressed to recuperate from the crisis are the persistence of structural unemployment and job-skill mismatch. The problem of talent shortage, resulting from the inability of our educational and training institutions to produce the human resources needed by employers due to insufficient labor market information on their manpower requirements, hinders the resolution of these challenges. Hence, it is important to develop clear and appropriate labor market signaling strategies that member economies could adopt in developing their own domestic labor market signaling system.

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Thank you very much, and once again, my warmest welcome to everyone!

LIST OF CONFERENCE PARTICIPANTS

Resource Speakers

Economy	Name	Position	Organization
The United States of America	Mr. David Arkless	President, Global Corporate and Government Affairs/ Vice-President	ManpowerGroup/ Ciett International Confederation of Private Employment Agencies
The Philippines	Dr. Tereso S. Tullao, Jr.	Labor Market Expert and Director	De La Salle University – Angelo King Institute
The Philippines	Ms. Lorna B. Hayag	Regional Federation President	Public Employment Service Officers of the Philippines (PESOPhil, Inc.)

Discussants

Economy	Name	Position	Organization
Korea	Dr. Young-Hwan Kim	Lead Shepherd	APEC HRD-WG
The Philippines	Mr. Guillermo M. Luz	Alternate Member	APEC Business Advisory Council
The Philippines	Ms. Erlinda M. Medalla	Project Director	Philippine APEC Study Center Network

APEC Member Economies

Economy	Name	Position	Organization
Australia	Ms. Penelope Ireland	Director, Labor Market Strategy Group	Department of Education, Employment and Workplace Relations
Canada	Ms. Candace Brooks		Embassy of Canada in the Philippines
Japan	Mr. Masami Hirata	First Secretary and Labor Attache	Embassy of Japan in the Philippines
Malaysia	Mr. Rahmat Bin Ismail	Director of Employment Services	Department of Labor Peninsular Malaysia/Ministry of Human Resources
Malaysia	Ms. Muji Binti Hassim	Senior Assistant Director	Department of Labor Peninsular Malaysia/Ministry of Human Resources
Malaysia	Mr. Mohd Syahrul Syahid Bin Mohd Salleh	Manager	Jobs Malaysia Center
Malaysia	Nor Faezah Binti Saini	Assistant Manager	Jobs Malaysia Center
Malaysia	Mr. Kennedy Kumar Manickam Henry	Assistant Director	Department of Labor Peninsular Malaysia/Ministry of Human Resources
Mexico	Ms. Krissie Anne Imo	Exec. Asst. Political Section	Embassy of Mexico in the Philippines
New Zealand	Dr. Dafydd H. Davies	Director, International	Ministry of Business, Innovation and Employment
Peru	Ms. Norma Puican	Minister Advisor	Ministry of Labor and Employment Promotion

The Philippines	Hon. Rebecca Calzado	Assistant Secretary	Department of Labor and Employment
The Philippines	Maria Criselda R. Sy	Director, Bureau of Local Employment	Department of Labor and Employment
Chinese Taipei	Ms. Yu-Jen Ting	Director of Employment Services Center	Commission on Labor Affairs
Thailand	Ms. Uthaiwan Buakrun	Director, Planning and Information Division	Department of Employment
Thailand	Ms. Nalatporn Charoenwan	Labor Specialist, Practitioner Level	Department of Employment
Viet Nam	Mr. Lieu Xuan Ngo	Deputy Head of Employment and Labor Market Division	Bureau of Employment--Ministry of Labor-Invalids and Social Affairs (MOLISA)
Papua New Guinea	Ms. Vele Micah		
Papua New Guinea	Madam Maria Lovaga		
Papua New Guinea	Mr. Thomas Kipau	Director	National Apprenticeship Trade and Testing Board
Papua New Guinea	Mr. Kennewton Kennedy	Manager	National Employment Service, Department of Labor and Industrial Relations
Papua New Guinea	Mr. Michael Gene	Legal Consultant	Department of Labor and Industrial Relations
Papua New Guinea	Mr. Samson Aquila	Deputy State Solicitor	Department of Justice and Attorney General
Papua New Guinea	Ms. Monica Maluan	TIVET Division	Department of Education
Papua New Guinea	Mr. Steven Matainaho		Office of Higher Education
Papua New Guinea	Mr. Lonnie Baki		Office of Higher Education
Papua New Guinea	Mr. Tony Yadu		Department of National Planning and Monitoring
Papua New Guinea	Ms. Elenita Gregorio	Coordinator	
Papua New Guinea	Mr. Stanislaus Roger Motolova	Director	National Training Council

Philippine Delegates

Philippine APEC HRD-WG Members

Economy	Name	Position	Organization/Agency
The Philippines	Ms. Adelaida L. Inton	Executive Director	Department of Trade and Industry / Philippine Trade Training Center
The Philippines	Ms. Irene M. Isaac	Deputy Director General	Technical Education and Skills Development Authority
The Philippines	Ms. Agnes D. Padilla	Executive Director	Civil Service Commission – Civil Service Institute
The Philippines	Hon. Romulo V. Manlapig	Assistant Secretary	Department of Trade and Industry
The Philippines	Ms. Maria Susan P. Dela Rama	Executive Director	Technical Education and Skills Development Authority - Planning Service
The Philippines	Ms. Sarah Edna A. Tabije	OIC-Director of Office of Financial and Administrative Services	Professional Regulation Commission
The Philippines	Ms. Myrna B. Asuncion	Assistant Director	National Economic and Development Authority – Social Development Staff
The Philippines	Mr. Alfonso D.C. Viloria	OIC, Educational Statistics Division	Professional Regulation Commission
The Philippines	Ms. Priscilla C. Reyes	OIC, Planning and Monitoring Division	Professional Regulation Commission
The Philippines	Ms. Ma. Daisy A. Demoni	Supervising Science Research Specialist	Department of Science and Technology - Science Education Institute
The Philippines	Ms. Josefina A. Fernandez	Senior Science Research Specialist	Department of Science and Technology - Science Education Institute
The Philippines	Ms. Janice M. Vasquez	APEC National Secretariat Staff	Department of Foreign Affairs
The Philippines	Mr. Exxon B. Susmerano	Social Welfare Officer III	Department of Social Welfare and Development
The Philippines	Ms. Amuerfina Reyes	OIC-General Administrative and Support Services	Philippine Overseas Employment Administration

Other National Government Agencies

Economy	Name	Position	Organization/Agency
The Philippines	Ms. Arlene Alipio	OIC, Office of Tourism Standards	Department of Tourism
The Philippines	Mr. Israel Jayson R. Vinta	Asst. Secretary	Public Employment Service Officers of the Philippines (PESOPhil)

Department of Labor and Employment

Economy	Name	Position/Agency
The Philippines	Hon. Danilo P. Cruz	Undersecretary, Department of Labor and Employment
The Philippines	Ms. Maria Celeste M. Valderrama	Director, International Labor Affairs Bureau
The Philippines	Ms. Elizabeth O. Recio	Assistant Secretary
The Philippines	Ms. Nenita O. Garcia	Director, Financial Management Service
The Philippines	Ms. Alice Visperas	OIC, Division Chief International Labor Affairs Bureau
The Philippines	Ms. Maria Luisa Khristina C. Oliveros	DOLE-National Capital Region
The Philippines	Mr. Alex V. Avila	Regional Director DOLE-Region IV-A
The Philippines	Ms. Editha B. Rivera	Former Division Chief, Bureau of Labor and Employment Statistics
The Philippines	Ms. Namesia Karen Arlan	International Labor Affairs Bureau
The Philippines	Ms. Hazel Joy Galamay	Labor Communications Office
The Philippines	Mr. Jomer Lagmay	Labor Communications Office

Guests from International/Local Organizations

Economy	Name	Position	Organization
The Philippines	Mr. Roderick Boss	Country Manager	Manpower Group, Philippines
The Philippines	Ms. Lourdes Kathleen S. Macasil	Program Assistant	International Labor Organization
The Philippines	Mr. Jose Sonny G. Matula	National President	Federation of Free Workers
The Philippines	Mr. Ray G. Tadeo	Training Officer	Employers Confederation of the Philippines
The Philippines	Mr. Dan Laserna		Federation of Free Workers
The Philippines	Ms. Roxanne Lu	Senior Researcher	ABAC Philippines
The Philippines	Mr. Jaime S. Estrada		People Management Association of the Philippines