A Comparison of Career Guidance Information in the US and Japan

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September 29, 2008

Introduction

A goal of career information is to prepare the workforce for changes to employment demand. Rather than look at career information in isolation, it is important to understand large-scale trends in the economy. This paper begins by comparing major drivers of change in employment in Japan and the US. Next this paper will contrast the reaction to changes in employment in both countries. To better understand common career paths in Japan, interviews were conducted with the help of Japan Institute for Labor Policy and Training (JILPT) staff members. After completing this analysis, this paper focuses on the methods used to match job-seekers to job openings.

In particular, employment growth within the health care industry in Japan and the US will be discussed, along with nurses. Increasing utilization of information technology across many industries and growing environmental concerns will shape employment in both countries.

The aging population will have a substantial impact on employment demand in both countries. Japan faces more severe changes than the US, experiencing a declining population and labor force while the US deals with a slowdown in population and labor force growth. Workers in both countries are expected to delay retirement, boosting labor force participation among older persons. While the US is more likely to use immigration to bolster its workforce, Japan is increasingly likely to turn to service robots.

As the US continues to shift to an increasingly service-based economy, Japan intends to maintain a strong emphasis on both service and manufacturing sectors.

As occupational demand changes, Japanese employers are more likely to shoulder the responsibility of re-training employees, while the US is more likely to rely on community colleges or workforce re-tooling programs.

To better understand the perspective of workers in Japan, a survey was conducted to gather information on various career paths. The surveys were conducted in-person and by a questionnaire transmitted by e-mail. Job-changing occurred regularly, but it was still low in comparison to workers in the US.

Career information in Japan and the US is disseminated in various ways. Jobseekers in Japan are more likely to pay a visit to employment service centers or make use of free job-searching magazines, while US jobseekers prefer resources on the internet or newspapers. Job-searching magazines in Japan provide quality information that has been verified with the employer by the publisher.

Japan offers a wealth of career information, especially in comparison to the US. Places in Japan such as the Vocational Museum in Kyoto or Kidzania Tokyo offer children pleasant environments to learn about a wide number of careers through hand-on training. The US may consider opening similar institutions in the future.

As job-switching occurs more often in Japan, the career information community may wish to find ways to build communication between jobseekers to make the transition between jobs more smooth. The responses from the career story questionnaire revealed an interest in hearing more about the work lives of others in a similar situation. One possibility is to develop a well-structured, searchable database with career stories that can be tapped at any time by jobseekers. This could help jobseekers have more confidence in their own career decisions.

Major drivers of change in US

Several wide-sweeping changes have been impacting US employment. Since the age 55 and over population have higher consumption rates of health care services than other age groups, the demand for health care services is expected to grow as the proportion of the population age 55 and over continues to increase. Also the increasing adoption of computer systems drives growth of IT professionals across nearly all industries. Increasing public awareness of environmental issues will lead to more conscientious business practices and greater reliance on workers such as environmental scientists.

The U.S. Bureau of Labor Statistics projects the health care and social assistance industry sector—including State- and local-government owned hospitals--will add 4 million new wage and salary jobs between 2006 and 2016, more than any other sector. (BLS, 2008-09 Career Guide to Industries) Wage and salary employment in health care and social assistance is projected to increase 25 percent through 2016, compared with 11 percent for all industries combined. Within the health care subsectors, projected rates of employment growth range from 13 percent for hospitals, the largest and slowest growing industry segment, to 55 percent for the much smaller home health care services. The social assistance subsector is projected to grow at 47 percent, buoyed up by rapid growth in industries such as services for the elderly and persons with disabilities.

The number of jobseekers is expected to be in rough balance with the number of job openings in all employment settings, which means job opportunities should be good. High turnover from a large number of expected retirements should boost job openings while the number of jobseekers will be tempered by tougher immigration rules that will slow the number of foreign health care workers entering the United States.

There are several reasons employment in health care will continue to grow. One major reason is that the number of people in older age groups, with much higher than average consumption of health care services, will grow faster than the total population between 2006 and 2016; as a result, the demand for health care services will increase. Also, advances in medical technology will continue to improve the survival rate of severely ill and injured patients, who will then need extensive therapy and care. New technologies will make it possible to identify and treat conditions that were previously not treatable. A combination of (1) the growing number of people in older age groups with rising life

expectancies and (2) aging children who are less able to care for the parents will boost employment growth in home health care and long-term care facilities, such as nursing and residential care. The increasing size and complexity of medical group practices and integrated health systems will boost the demand for office and administrative support workers.

The growth in the elderly population is expected to boost the number of stroke patients and Alzheimer victims that must be treated.

Outpatient care at offices of physicians and home health care is expected to grow much faster than inpatient care at hospitals because of a push to reduce costly overnight stays, improvements in diagnostic tests and surgical procedures, and patients' increasing preference to be treated at home. Some hospitals have outpatient facilities, such as those providing same-day surgery, rehabilitation, and chemotherapy, which are expected to grow rapidly.

Several of the fastest growing occupations between 2006 and 2016 are health care related. For example: home health aides (49 percent increase), medical assistants (35 percent increase), and physical therapist assistants (32 percent increase) will grow rapidly as many health care facilities attempt to contain costs by substituting lower paid providers where patient care demand and regulations allow. In addition to increasingly utilizing auxiliary personnel, health care facilities will cross-train employees to assist with duties outside their traditional scope.

Demand will continue for health care workers with all levels of education and training, but having specialized clinical training can help jobseekers who are just starting to find work or who are trying to advance in their career.

One occupation that is expected to have many job openings is registered nurses. (BLS, 2008-09 Occupational Outlook Handbook) Employment growth between 2006 and 2016 for registered nurses is expected to be 23 percent, which is much faster than the 10 percent growth expected for all occupations. Employment for registered nurses in 2006 was already about 2.5 million jobs, much larger than most occupations. Job openings due to growth through 2016 are expected to be about 587,000. In addition, many job openings are expected due to the need to replace workers who permanently leave because of retirement or another reason. As the median age of registered nurses increases, a large number of retirements is expected to occur. Enrollments in nursing

programs have recently been increasingly rapidly; however, employers in some parts of the country are reporting difficulties in attracting and retaining enough nurses. In order to ensure a steady supply of qualified registered nurses, employers may restructure workloads and job responsibilities, improve compensation and working conditions, and subsidize training or continuing education.

Just as industry growth is slower at hospitals than in offices of physicians or home health care services, employment growth for registered nurses will also be slower within hospitals than in outpatient care. Although the number of nurses per patient is likely to increase, the number of patients remaining in the hospital for more than 24 hours is not likely to grow substantially as patients are being discharged earlier and more procedures are performed at an outpatient care facility.

In order to sustain growth in enrollments at nursing programs, qualified instructors must be obtained.

Stress and burnout among registered nurses will lead to high turnover. Nurses working in hospitals frequently work overtime or have night and weekend shifts. Treating seriously ill and injured patients is physically and emotionally demanding. Critical care units, emergency departments, and operating rooms have especially high job turnover due to stressful working conditions. While offices of physicians and outpatient care centers offer regular working hours and more comfortable work environments, nurses may face greater competition for these positions. Even after taking into consideration the rapid employment growth expected for physician offices, it may be easier to obtain a position at a hospital. Hospitals may offer signing bonuses, family-friendly work schedules, or subsidized training to attract and retain qualified nurses. Also, a growing number of hospitals are experimenting with allowing nurses volunteer for open shifts at premium wages by bidding on-line. This practice can decrease the amount of mandatory overtimes for nurses.

Despite the high rate of employment growth for employment services, there may be competition for nursing jobs due to relatively high wages and flexibility in work schedules.

In general, registered nurses who have earned a bachelor's degree or a higher degree will have better job prospects than nurses without a bachelor's degree. Advanced specialists, such as nurse-midwives or nurse practitioners, will be especially in high

demand as they are increasingly used as lower-cost primary care providers instead of physicians. Similar to physicians and surgeons, high demand can be found in medically underserved areas such as inner cities and rural areas.

Educational services, including both public and private institutions, is expected to show an 11 percent increase in wage and salary jobs between 2006 and 2016. This is about as fast as the growth projected for all industries combined. Along with a growing emphasis on offering better education to more people, the demand for educational services will be driven by growth in the student population at each educational level. Enrollments are projected to grow faster in postsecondary institutions than in elementary, middle, or secondary schools, due to more high school graduates entering college and more working adults returning to school to enhance their knowledge and employability. This will boost demand for postsecondary teachers, who are expected to grow substantially faster than the average for all occupations. However, there will continue to be keen competition for tenured positions among postsecondary teacher, because many colleges and universities are increasingly relying on adjunct or part-time faculty and graduate students.

While some people can enter a teaching career through an alternative licensing program after working in a different field, job opportunities will continue to be strong for highly qualified teachers. Subject areas that will have the most demand include math, science, and special education.

Due to a growing focus on complying with environmental regulations throughout many industries, environmental engineers are expected to show a 25 percent increase in employment between 2006 and 2016. This is substantially more than the 10 percent increase expected across all occupations. Environmental engineers must address the challenges of controlling water and air pollution, disposing of waste materials, and recycling.

Employment for environmental scientists will increase 25 percent as a growing population takes a greater toll on the environment and water resources. Through conservation, recycling, and replenishment efforts, these workers will help companies comply with environmental laws and regulations for clean air and water. Often environmental scientists will take on a consulting role to firms and businesses and offer risk assessments or technical proposals.

The increasing adoption of computer systems drives growth of IT professionals across nearly all industries.

While the changes discussed above will drive employment growth, increasing automation or mechanization of duties for office and administrative or production occupations will lead to employment declines in many, but by no means all, of these occupations.

Major drivers of change in Japan

Japan is facing a declining population and labor force, not simply a slow-down in population or labor force growth as in the US. A low fertility rate has prevented Japan from maintaining its population size and contributed to a large increase in the proportion of the population age 65 and over. The proportion for the age 65 and over population will rise from 21 percent in 2008 to 27 percent by 2018. The proportion is expected to rise through 2050, according to the National Institute of Population and Social Security Research. Meanwhile, the US Census Bureau only expects the proportion of the population age 65 and over to be 13 percent in 2010, barely reaching 20 percent by 2035. After 2035, the proportion is expected to remain level. (Census Bureau, 2008) Japan has one of the fastest aging societies in the world.

The rising proportion of older persons in Japan will lead to mounting costs to support retirees through pensions and social security. (Gross and Minot, February 2008) A large amount of retirements are expected. Close to 10 percent of Japan's current labor force is expected to retire within the next five years. (Gross and Minot, January 2008)

In order to shift the risks involved with private pension from the employer to the employee, companies are choosing to offer pension systems with a defined contribution instead of a defined benefit. In other words, rather than guaranteeing a certain amount for a pension, companies are guaranteeing a certain payment into a retirement account for employees. Since the current law only allows employers to pay into defined-contribution systems, instead of employees, the acceptance of this system has been slow.

In both Japan and America, the dependent population is growing at a faster rate than the working population. For example, between 2008 and 2018 the number of workers supporting each retiree will fall from three to two in Japan. In the US, the number of workers supporting each retiree is not expected to fall from three to two until 2034. (Social Security Administration, 2008)

Additionally, health care costs are expected to rise as persons age 65 and older demand more health services than other population groups. By 2050, health care expenditures (as a percent of GDP) are expected to triple. Currently, national health insurance

premiums are 8.2 percent of workers' salaries.

According to a report from the Ministry of Health, Labor, and Welfare, the demand for nurses will fall short of supply by 16,000 workers in 2010. (Nagaike, 2008) While the number of nurses is expected to grow and 46,000 nurses successfully completed the licensing exam this year, it will not be enough to meet upcoming demand. Training to become a nurse typically requires 3 years of technical training after high school. Since nurses often spend more time observing patients than doctors, they play a crucial role in the health care team.

Besides demographic issues, Japan will face rising competition from overseas. Japan became the second largest economy in the world toward the end of the 1960s. (METI, 2006) While this moniker has stayed with the Japanese economy for the past 40 years, China is expected to overtake Japan with respect to growth in GDP within the next 10 years. India will follow suit and Japan will no longer be considered the second largest economy.

GDP growth in Japan will be limited by the decline in the population and labor force. Rather than simply trying to maintain itself as a major economy, Japan should strive to hold a strong competitive position in a global context through being resilient in risky environments. Japan's Ministry of Economy, Trade, and Industry recommends that Japan try to keep its edge through developing products, processes, and services that are high value added. Assuming that Japan enacts certain new reforms and policies, METI estimated that it will be possible to achieve 2.2% annual growth in GDP over the next 10 years. The IMF estimates GDP growth will still expected to be positive between 2008 and 2013 in Japan, but not as fast as the 2.1 percent increase seen in 2007 or the 2.4 percent increase from 2006. (IMF, 2008)

Japan will continue to be strong in Research and Development and building collaboration among academic, industry, and government circles. One of Japan's strengths is its ability to integrate knowledge and ideas from different source through teamwork. Japan can also help build creative innovation by fostering a business environment that is conducive to the development of venture enterprises.

Since emerging economies are now able to undercut Japanese products on price, Japan must focus on products or processes that are high value added in order to remain

globally competitive. While the scale of R&D in Japan is among the largest in the world, R&D is not necessarily linked to increased corporate profits of national wealth. In order to improve the results of R&D, it is important for several industries, academic institutions, and public research organizations to collaborate. To foster an environment that is conducive to innovation, it is important to reduce the waiting period for patents.

In order to offset a decrease in consumption that is associated with a declining population, Japan could continue to focus on product innovations that drive up demand. For example, mobile phones, convenience store, online shopping, and hybrid cars are all products or services that have created their own demand. The diversification of broadcasting and communication distribution will also be a driver for economic growth.

Japan will continue to interact with other Asian countries in developing innovative products to offer in newly open markets. Japan will collaborate with other Asian countries and develop regional specialization, which can add value for the Asian continent as a whole.

Japan aims to brand Japanese goods such as agricultural products, food, commodities, fashion, railway, and tourism industries. This can help boost international marketing power.

One of the strengths of Japanese companies is their ability to develop a line of new products by learning from others and by collaborating with upstream and downstream companies. Japan has a broad range of industries that can meet the demand for sophisticated, high-quality parts and processes. In order to accelerate innovation in Japan, it is important to support the cooperation of industry, government, and academic institutions.

Products such as fuel cells, robots, and digital consumer electronics are currently high priority areas for Japanese companies. Research and development is on-going for batteries of next-generation automobiles, advanced medical equipment to combat cancer, and environmental aircraft. International technical cooperation in these areas would be beneficial for all participating countries.

Advanced parts and materials manufacturing will continue to be a core industry for Japan. This industry is known for high-quality and high-performance. Japan aims to

improve the technological abilities of small and medium-sized manufacturing enterprises. Within Japan, there are many opportunities to improve productivity and cohesive business models at the local level. Privatization of government enterprises, such as the post office, can help improve overall productivity.

Japan has a goal to double the direct investment balance to about 5% of GDP by 2010. By promoting direct investment, Japan can further utilize technologies and know-how from overseas. Revising the corporate tax system to favor direct investment or improving access to information within Japan and in foreign countries can foster growth of direct investment.

The contribution to productivity growth by information technology investment is much greater in the US than in Japan. Japan has a sub-optimum utilization of information technology due to problems with visualization and integration of IT among many industries. Japan aims to boost its IT utilization by reforming businesses and organization to take a more IT-friendly managerial approach.

Part of the reason Japan was able to achieve such high growth during the post-WWII period was due to a high ratio of working population to dependent population and the migration of people from rural to urban areas. Japan has the chance to show whether a developed country can continue to remain competitive and add value with a declining population, a growing proportion of the dependent population, and saturated urban areas. So far, Japan has shown rising GDP while keeping unemployment and consumer prices in check. The average annual unemployment rate has been drifting downward over the past five years, from 5.4 percent in 2002 to 3.9 percent in 2007. (MICA Statistics Bureau, 2007 Labour Force Survey) According to a 2007 annual consumer index report from MICA Statistics Bureau, prices in Japan have remained stable for the past several years.

Japan aims to become a creative base of new values. For example, Japan can serve as inspiration for coexistence with the environment, a safe society, a culture that allows people to express their originality and personal identity. Japan aims to make the most of its human resources, promoting creative jobs that allow people to find self-fulfillment.

Reaction to change in Japan and the US

Japan and the US may differ on their reaction to changes affecting the size and composition of the workforce. In order to ensure a steady supply of workers to meet demand and keep social security programs financially sound, Japan and the US may consider a variety of options.

The US is more likely than Japan to turn to immigration to fill any gaps in its workforce. In 2005, the percent of the labor force attributed to foreigners was 15 percent in the US while it was only 1.1 percent in Japan. For comparison, the percent of the labor force attributed to foreigners was 9.3 percent in Germany and 0.7 percent in Korea. (JILPT, 2008 Databook of International Labour Statistics) However, immigration has become a more contentious issue in the US, so this trend may start to decline.

Despite the anticipated decline in Japan's labor force, it is unlikely Japan will turn to immigration to boost its workforce. Because Japan hopes to maintain its ethnic and linguistic homogeneity, it has historically allowed very little immigration.

Currently, only foreigners with special skills are allowed to work in Japan, but a December 2007 poll by the Mainichi Daily News showed that about two-thirds of respondents were in favor of allowing unskilled foreigners to work in Japan.

In order to counteract the population decline, about three to four hundred thousand foreigners would need to enter Japan each year for the next several decades. This is drastically higher than the 20,000 foreigners who entered for work Japan in 2006, according the Ministry of Health, Labor, and Welfare statistics. Such a drastic change could have a number of undesirable ramifications, such a higher crime and social tension. However, bringing in foreigners who work well with their Japanese colleagues could have mutually beneficial results.

In 2007, new tax rules broadened the definition of permanent resident in Japan. Previously, foreigners would pay taxes on foreign-sourced income if they lived in Japan five years continuously. Presently, foreigners pay taxes on this income if they live in Japan for five out of ten years non-continuously. Since November 20, 2007, the screening process for foreign visitors entering Japan has become much more strict. All

foreign citizens must have their fingerprints and photograph taken at immigration each time they enter Japan. This leads to longer waiting periods at airports and, compared to Hong Kong or Singapore, it diminishes Japan's appeal as a site for international business. (Gross and Minot January 2008)

As the population in both Japan and America has been aging, workers in both countries are expected to retire at an older age. While employers in Japan often have a statutory retirement age within their company, this is not the case in America. However, some occupations in the US, such as pilots of air traffic controllers do have mandatory retirement ages.

As part of the push to boost labor force participation of persons over age 60, the age when workers can start receiving pensions in Japan—or retirement age—is gradually increasing. (Gross and Minot, February 2008) Also, the government offers financial incentives to companies that are employing older workers. A large company can receive about 500,000 yen, or $4,700, for each full-time employee age 60 to 64, while a small or medium-sized company can receive 600,000 yen, or $5,600. Incentives for part-time workers are smaller.

Although age discrimination is prohibited by law in Japan, this law is seldom enforced. Older persons can have trouble obtaining employment, even if they are highly capable and experienced. It may be necessary for employers to actively seek out older persons with relevant expertise.

While most Japanese companies have a mandatory retirement age of 60, since 2004 the Act Concerning the Stabilization of Employment of Older Persons has required companies either raise their mandatory retirement age, keep it but give retirees the option to enter new positions, or eliminate their mandatory retirement age altogether. In 2006, the retirement age for men was raised to 62 and in 2007 it was raised again to 63. By 2010, it will again rise to 64 and it will reach 65 in 2013.

Many Japanese companies prefer to exercise their option of keeping a mandatory retirement age of 60 and offer new positions to older persons who do not wish to retire. The percent of companies with an official retirement age of 60 only fell from 91 percent in 2004 to 86 percent in 2006, according to Ministry of Health, Labor, and Welfare surveys. A survey by the Japan Institute for Labor Policy and Training showed that 60

percent of workers prefer to remain in the same job after reaching age 60. Large companies find over half of their senior employees choose to postpone retirement and remain with the company.

When senior employees accept new positions within Japanese companies, they often receive less favorable terms of employment. Their pay can be drastically cut, so that they may only earn half as much as their previous position. Their contract is changed to a fixed-term, renewable contract. They may be transferred to different offices.

As part of the push to raise labor force participation of women in Japan, employers are increasingly offering childcare leave and other family-friendly accommodations. While nearly all women enter the labor force after completing their education, about 70 percent quit when they marry or have children.

The Japanese government introduced a child-rearing support program in 2005 that required companies with over 300 employees to develop a child-rearing support action plan with numbered goals. Companies are gradually offering employees the opportunity to work from home. In an effort to be more family-friendly, the large communications group SoftBank Corporation announced recently that it will give employees 5 million yen, about $42,700, to have children.

Also, career tracks for women seldom have prospects for promotion in Japan. In order to persuade more women to remain in the workforce, it is important provide opportunities for career advancement. In 2005, women occupied only 10 percent of management positions in Japan, according to the Gender Equality Bureau. This seems low compared to 32 percent in Germany or 42 percent in the United States; however, for Japan this is an increase from the 1 percent of management positions occupied by women just 10 years before in 1995.

Women have also had concerns with discrimination in Japan; however, the Equal Employment Opportunity Law was revised in April 2007 to establish concrete penalties to HR managers who discriminate directly or indirectly. Indirect discrimination occurs when a prospective employee must agree to a condition such as nationwide transfers, which many women with families cannot accept.

In 2000, 65 years old was when a person ought to retire from work for 40.3 of

respondents in Japan and 45.3 percent of respondents in America. Surprisingly, another 31.3 percent of respondents in Japan elected 70 years old as the appropriate retirement age, compared to 15.5 percent of respondents in America. (JILPT, 2008 Databook of Labour Statistics)

In order to achieve the full potential of Japan's human resources, businesses can tap talented and motivated women and elderly persons for additional manpower. However, since the decline in the number of children born is based more on a change in social values than due to economic reasons, it would be ineffective to address this issue by taking economic measures such as offering tax benefits for families with children. Even if there was a way to immediately raise the fertility rate, it would still take decades to have a positive impact on the size of the labor force.

It could be possible to increase labor force participation rates of youth who have just completed their education, women within prime working-age groups, and people over age 60. Through the cooperation of educational institutions, industries, and local government, Japan can develop its workforce.

In response to the growing burden of providing pensions for retirees, a recently proposed bill would call for part-time workers and "freeters" to contribute to the Employee Pension Insurance system, in addition to employers and regular employees. Freeters are non-regular employees who frequently hold temporary positions with many different employers. Over 2.5 million university graduates in Japan currently hold temporary or part-time jobs. There is a drive to recruit these workers into full-time positions.

Another labor issue that will impact employment is the push to reduce health issues and death from overwork, or "karoshi". Average overtime in Japan is around 2,000 hours per year. If overtime can successfully be reduced or eliminated, it may increase the need for a larger workforce to maintain output levels.

Japan intends to tackle the challenges of an aging society with a low fertility rate by encouraging the labor force participation of youth, women, and elderly persons. Before turning to immigration, Japan is more likely to explore the possibility of utilizing robots to perform routine tasks in daily life. Recently there has been a push to handle Japan's aging population issues through the widespread use of service robots.

(Harden, 2008) Service robots can help older people with daily tasks, such as carrying groceries or taking medicine.

Since the population is expected to decline and there will be few young people able to take care of aging population, robots could serve as an attractive alternative to immigration.

Japanese companies have made great strides in developing a wide range of robots, including humanoid robots. For example, ASIMO, developed by Honda, is able to dance, climb stairs, and kick a soccer ball. Toyota has developed humanoid robots that can play the violin or the trumpet.

Robots are being designed for such practical tasks as spoon-feeding the elderly, hoisting a person onto a toilet, or phoning a nurse when the person in their care refuses to take their medication. This can bring a great deal of relief to a country with an aging population and shrinking workforce. A large number of elderly persons will require care while only a few young people are available to provide such care.

The Japanese government is readily subsidizing the development of care-giving machines. Toyota is presently making service robots one of its core businesses. Over the next decade or so, Toyota expects wheelchair-like robots to be among the most useful. These devices would be smart, highly mobile, and able to help carry people or shopping bags.

Robots are not expected to resolve all social issues in Japan. There is still a shortage of affordable day care and no reversal in sight for the decline in population.

The director of the Japan Immigration Policy Institute, Hidenori Sakanaka, thinks that investing in the recruitment and education of immigrants would be a better solution to issues related to Japan's aging population. The 127 million strong population is expected to fall by one-third within 50 years. Japanese women are increasing deciding not to have children or even get married. Since 1980 the percentage of women age 25 to 29 who remain single has doubled from 24 percent to 54 percent. Due to a lack of affordable day care, many Japanese women must choose between their jobs or raising children.

Japan strategist for Goldman Sachs Katy Matsui recommends that Japan relaxes immigration rules to allow working mothers to employ foreign-born nannies. This could make it easier for women to have more children.

In the US, since immigrants generally come to America in order to find work, they have much high labor force participation rates than the native-born population. So increasing immigration could help moderate the decline in Japan's workforce. The investment firm Goldman Sachs estimates Japan's workforce will fall by 10 percent within 20 years. Boosting the size of the workforce would mean there would be a greater number of workers contributing to pension and health care systems. The aging population is already putting a strain on these systems as it is.

While robots may be able to take over routine duties and allow health care providers to save money on personnel, it may be some time before robots are cost effective and reliable alternatives to immigration. Also, service robots must be able to bring a profit for their manufacturers. Industrial robots already overcame these obstacles during the 1980s, and the Ministry of Economy, Trade, and Industry expects as much success for service robots in homes.

However, Japan has highly restrictive immigration laws that are enforced aggressively. Immigrants are often frowned upon in Japan because they are often connected with crime, impolite behavior, and untidiness. Immigration is politically unpopular; however, robots possess widespread support. Forty percent of all robots in the world are in use in Japan, primarily in industrial settings such as automobile factories.

Besides differences in approaches to changes in the size of the workforce, the US and Japan will take different approaches to changes to employment by industry. While the US continues to shift to a service-based economy, rather than a manufacturing economy, Japan intends to maintain a strong emphasis on both service and manufacturing sectors.

Temporary workers can be a useful mechanism to adapt to change. Industries can add and drop workers as demand rises and falls. In 2006, Japan had 1,280,000 temporary workers. These workers were primarily in finance, insurance, communications, real estate, and manufacturing. Outside of software development, which has no limitation on the length of employment for temporary workers, 3 years is the maximum.

In 2005, US had 1,220,000 temporary workers, slightly fewer than Japan. These

workers were primarily in service, manufacturing, and retail stores.

The US and Japan will also take different approaches to training workers. US employers are more likely to expect job applicants to have already completed certain training at community colleges or universities, while Japanese employers are more likely to conduct in-house training. As economic conditions worsen, US employers offer less and less in-house training.

Human resource development in Japan is facing numerous limitations, such as companies holding back from investing in their own human capital, or the incongruity between what the education system provides and the needs of society, or the decline of education in the home. Japan aims to switch away from its traditional model of single-track education and corporate career path and move towards a more flexible framework that can include multiple education and career paths. In order to accomplish this goal, the cooperation of businesses, schools, and local communities is essential. An example of this change is allowing students to transfer from technical junior college to special courses in university or allowing students to advance from technical high schools to universities.

One way for businesses and technical high schools or junior colleges in Japan to collaborate is for the company to dispatch its own technicians to serve as instructors at schools. Also, businesses could offer students the opportunity for onsite practice. Company technicians and post-doctoral fellows could collaborate on providing science classes in elementary and junior high schools to make science more appealing to students.

Japan will continue to promote cultural interaction among Asian youth, encouraging overseas study and research in Japan while supporting the dispatch of Japanese youth to other countries. Japan aims to increase opportunities for foreign students to work in Japanese companies after completing their studies. Japan aims to remain competitive with the quality of its human resources and plans to foster an environment that is appealing to the world’s most gifted students and researchers.

Surveys on common career paths

Career information plays a role in preparing the workforce to face the on-coming challenges. Job-seekers require quality information in order to make informed decisions.

The typical career path can have an affect on the kind of career information that could be useful for job seekers. For example, if most people only work for one company their entire lives, it is less important to provide information on mid-career job-changing opportunities. In the US, lifetime employment is relatively rare, and many career materials are often designed for new entrants and job-changers alike.

In order to better understand what job-searching is like for Japanese individuals, career interview surveys were conducted during the end of August and the beginning of September 2008. One survey was conducted in person, while the other 5 participants responded to a questionnaire, which can be found in the Appendices. The in-person survey helped determine the format for the questionnaire. Also, the questionnaire was based the one used for 2005 JILPT research report that tracked the worklife of individuals for 35 years (JILPT, Survey Research Report 2005).

Participants were acquaintances of JILPT staff. Participants were Japanese nationals in either their 30s or 50s. They were men and women working in the private sector. These individuals cooperated on a voluntary basis and did not always accept the 2000 yen gift certificate that was offered as a token of appreciation.

In-person interview

The subject of the in-person interview could be considered to have an atypical career history. This male in his early 50s has been running his own software development company for 10 years. He has only two employees, and they mainly contract out to the local government in Chiba to assist with construction projects.

He grew up in a small town where everyone believed good grades were the way to success. He thinks the decline in the community mindset once held by Japanese firms is a serious problem. He aims to move towards open source software, with the goal of

helping small companies who can't afford expensive computer software.

His formal education background includes a law-related college degree from a public college in Chiba prefecture. He also studied office administration and economics.

His first job out of college was with a large, well-established textile factory. It was an old company with over a thousand employees. He worked in the accounting department. He found the job by visiting Hello-Work once towards the end of his studies; he did no other job-searching whatsoever. The job itself was not very demanding, and he was never expected to do overtime work. However, after 3 years he was frustrated with the limited potential for promotion and changed jobs to work as a temporary employee in a computer programming job. At the textile factory, it would take at least 10 years to become section chief, and he did not want to wait that long. He learned more about computers on his own, when computers were still at a very developmental stage. As a temporary employee he worked on a team of 10 programmers that developed banking systems.

He spent 4 years as a temporary employee before joining a venture capital company. He was with the venture capital company for 15 years, rising to management level. This company was in the information technology sector, producing dongles. Dongles are small pieces of hardware that can connect to a computer to authenticate software. They can be used to protect the software from unlicensed users. Generally only very high-end software packages, such as CAD, use dongles. His company opened a branch in Shanghai and he spent 3 years going back and forth between the Shanghai branch and Japan. The burst of the Japanese bubble economy and competition from Korea and Israel ruined his executive position. Finally, in 1999 he decided to start his own software company.

Questionnaire interviews

The next five interviews were complete via questionnaire over e-mail. This allowed the participants to complete the survey at their convenience and gave them a way to organize their thoughts.

Summary of questionnaire respondents:

<<Highest Level of Education>>
Junior College – 1
College – 2
Graduate school - 2

<<Gender>>
Men – 3
Women – 2

<<Age group>>
Age 30-39 – 4
Age 50-59 – 1

<<Job changing>>
Changed employers once – 3
Assigned to a different department – 2

<<Company size>>
Experience at a company with over 1000 employees – 4
Experience at a company with between 100 and 1000 employees – 1
Experience at a company with less than 100 employees – 1

<<Method used to first job>>
Company recommended by professor/staff member at school – 3
Pamphlet at school – 1
Company website – 1
OB/OG (met with college alumni who currently work at the company) - 1

<<Method used to second job>>
Head-hunter – 1
Career-switching website – 1
Working as a temporary employee first – 1

<<Desirable job-searching information>>
Two respondents expressed a desire to listen to career stories from other people in their own situation. One of these respondents said places like KidZania in Tokyo are an

excellent way for children to learn about their career choices and hoped that there could be more places like it.

Another respondent said they would learn about companies by working there part-time.

Another respondent wished they could have more information about companies to make a decision.

The last respondent wished for a place where they could discuss their long-term career goals and be introduced to the right people at companies that matched their career goals.

—End survey results—

The results of this survey demonstrate that job-changing occurs; however, it is low in comparison to the US. Data from the US National Longitudinal Survey published in a 2008 news release showed that respondents between ages 18-42 held an average of almost 11 jobs. For the purposes of the press release, a job is defined as an uninterrupted period of work with one particular employer. This amount of job-changing occurred for groups at each level of educational attainment. Job-changing was nearly the same for men and women. On average, more job-changing occurred during the respondents' late teens and early twenties than in their mid thirties. Some respondents held more jobs than average while others held fewer. For example, 23 percent or respondents held 15 jobs or more between ages 18-42, while 14 percent held zero to four jobs.

According to the 2008 Databook of International Labour Statistics, most 18-24 year olds in Japan considered job change to be unavoidable in 2004 (53 percent). Another 17.9 percent considered it better to change jobs if unsatisfied. However, 18-24 year olds in the US were nearly the reverse, with 56 percent considering it better to change jobs if unsatisfied and 21.9 percent considering job change to be unavoidable. This suggests young people in the US are more open to the idea of changing jobs if unsatisfied. However, Japanese youth have become much more open to this concept than they were in the past.

In higher-ranked colleges, a growing number of graduates are reporting they turned down job offers from traditionally prestigious banks, manufacturers, securities

brokerages, and other companies. During the economic downturn of the late 1990s, the competition for these jobs was very high, but now students are more concerned with work/life balance, prospects for future advancement, and their impression of the work environment from the job interview. Younger Japanese are increasingly individual-minded and more concerned with their quality of life. They are more willing to accept unconventional practices such as pay for performance and non-lifetime employment.

Comparison of career information between Japan and the US

Job-searching in Japan was once very straight-forward, where students would receive job offers before graduation and then work for the same company until retirement. Gradually, Japan is moving to a more flexible system that will require job seekers to develop more career planning skills.

The methods used to recruit new hires can vary on whether the employer is seeking a recent college graduate or a mid-career professional. According to a 2004 survey by the Ministry of Health, Labour, and Welfare, HelloWork is the number one method for employers to recruit mid-career hires (64.9%). Other notable methods include classified ads in newspapers (33%) or job search magazines (30%). The main methods to recruit college graduates include job search magazines or websites (38%); introductions by teachers or staff at schools; a job fair; or HelloWork. (JILPT, 2006/2007)

For younger job-seekers, the willingness to learn was often more important to employers than technical skills. The most important quality sought by employers in younger job seekers for either administrative or technical occupations was their motivation to work. At least three-quarters of employers stressed this point. (JILPT Survey Research Report No. 151, 2003)

This section compares career information between Japan and the US based on its method of dissemination. Career information is found in places or buildings like employment service centers. Also, it can be found in publications such as weekly magazines. Lastly, it can be found in on-line databases such as O*NET from the US Department of Labor.

Places

In Japan, the public employment service office is operated by the central government under the name “HelloWork.” In addition to regular HelloWork offices that cater to all types of jobseekers, there are also offices that cater to women with children or young people under age 30 who have not yet found a full-time regular position with a company.

In the US, public employment service offices are primarily run by each State government. Career One Stop offices are an example of a collaborative effort between the Federal Government and State Governments in assisting with job placement.

Both HelloWork and State employment agencies in the US allow jobseekers to locate jobs over their website and offer counseling services within their office locations. It may be more common for jobseekers to visit a HelloWork office than to visit a public employment office in the US.

Annual average Current Population Survey data for 2007 showed that visiting a US State public employment agency was less than 10 percent of all methods used by the unemployed to find work. However, it is possible that many of these unemployed used the website for their State employment agency to search for jobs. A November 2006 report by the Conference Board showed that job-search websites as well as newspaper ads were used by over 70 percent of US job-seekers to locate job openings. This was far and above other searching methods such as visiting either a public or private employment agency.

As mentioned earlier, HelloWork is the number one method to recruit mid-career hires, according to a 2004 survey by the Ministry of Health, Labor, and Welfare. Also a JILPT researcher also noticed that Japanese employers and jobseekers in the same area will often visit the same HelloWork office. A staff member assists the employer with filling out a job announcement form and has a chance to become familiar with the employer's situation. This means the staff at HelloWork may be able to provide jobseekers with information about the employer not posted on the job announcement form. Since employers in America can submit their documents by mail or electronically to a public employment service agency, the staff members who assist jobseekers have not had direct contact with the employer. They cannot provide any more information than what is written on the job announcement. This supports the idea that a greater proportion of jobseekers choose to visit HelloWork than a State employment agency in the US.

Another difference in employment service centers noticed by a JILPT researcher was the US center offered GED preparatory classes to adults who did not have a high school diploma. If these adults can pass the GED, they will have a qualification that is

equivalent to a high school diploma. This can be an asset during a job search. Japan's employment service centers generally do not offer this type of training, possibly because this service seems to already be provided adequately by special support schools.

At public employment service offices, employers submit job announcement forms, which will be compared across countries for the purposes of this report. Japan's HelloWork job announcement form for a full-time job is compared to the job order form for the New York State Department of Labor (NY DOL). Please see Appendices for images of these forms. These forms include a number of similar items, such as unemployment insurance number, employer name, title of job openings, and number of job openings. The HelloWork form has some more detail and asks about the number of employees with the company, number of female employees, set retirement age, whether or not to make opening available to the public or just registered users, number of holidays per year, and a hand-drawn map to a company location including nearest public transportation. However, the NY DOL form has a couple of details not found on the HelloWork form, such as an e-mail address for the contact person, and the number of resumes they wish to review as well as the number of people they wish to interview.

A JILPT researcher highlighted the fact that the job description itself is actually very brief in HelloWork job announcements, while the job description is relatively lengthy in State employment agency job announcements, such as those from NY DOL. Employers are encouraged to make the job description fit inside a fairly small box on HelloWork job announcement forms, while they are allowed to attach additional pages as necessary to the NY DOL form. Examples of posted job announcements on HelloWork and NY DOL websites were selected for network engineers during the second week of August 2008. The job description for a network engineer position on the NY DOL website reads as follows:

"*You will be responsible for planning and evaluating complex existing network systems and making recommendations for resources required for maintaining and/or expanding service levels. You will be in charge of installation, configuration, and maintenance of network systems and solutions and technical support as required in a predominately Cisco environment. Essential functions include developing training plans for network resource administration; coordinating installation of hardware/software;*

implementation of plans for process improvements; testing network performance and providing network performance reports; managing effectiveness of servers and their operating systems; manage effectiveness of security solutions; and mange negotiations with vendors, outsourcers, and contractors to secure network products and services."

In contrast, the job description for a network engineer on the HelloWork website translates to the following:

"*Video transmission using IP [Internet Protocol]*
Network or server construction"

The full, original text of these examples can be found in the Appendices. While the NY DOL example includes a great deal more detail, the HelloWork description may be adequate for the employer's purposes. Employers in Japan are willing to train employees as the need arises and employees work as a team. So specific duties may not be decided until after the employee is hired and these duties are subject to change.

While employment service offices primarily help jobseekers locate employment, Japan also has places where children can learn about potential careers through hands-on training.

The Vocational Museum (私の仕事館) in Kyoto is a useful way for children to learn about careers by simulating the work environment. This institution was developed by a quasi-governmental agency called the Employment and Human Resources Organization of Japan. The Ministry of Health, Labor, and Welfare also contributed to the development of the institute. The Japan Institute for Labor Policy and Training contributed to the vocational assessment tools available in the museum. It has been operating since 2003. (Kyoto Prefecture, 2003)

In a visit on August 14th, 2008, this paper's author was able to see first-hand the wealth of interactive displays available at the Vocational Museum. They offer a wide series of hands-on training for a wealth of occupations such as news broadcaster, fashion designer, crane operator, aerospace engineer, and more. The museum's target audience is middle-school or high-school students. They also feature pottery and weaving techniques that are specific to the Kyoto area.

KidZania (キッザニア) is also a place to introduce children to the world of work through hands-on experience. Its target audience is primary school students who are interested in having a world to themselves. KidZania is designed to look like a small town, with everything built at 2/3 to scale. Children can get hands-on experience in 50 different work settings, such as a hospital, a fitness gym, a fire department, and more. They learn first-hand about occupations such as doctors, chefs, cabin attendants, and more. When they participate in a work activity, they earn a special type of currency called a KidZo and they can spend the money on real food, cellphones, the beauty salon, among other places.

KidZania differs from the Vocational Museum in Kyoto by attracting children who want to role-play as adults. Also, KidZania is a for-profit institution with corporate sponsors, while the Vocational Museum is a non-profit institution supported by industry groups. While there is a great opportunity to learn about a large number of careers, KidZania is more focused on entertainment, developing social skills, and learning to make independent decisions than the Vocational Museum. The Vocational Museum focuses more on practical career development. KidZania provides children with more opportunities to prepare food than the Vocational Museum. While the Vocational Museum has a low entrance fee and then charges separately for each workshop, KidZania only charges an entrance fee and then lets children sign up for workshops on a first-come first-serve basis. Depending on how many workshops a child participates in, the price could be similar between the two institutions.

The Tokyo location of KidZania opened in October 2006. At that time it was the first KidZania to open outside of Mexico. The annual attendance in Tokyo between April 2007 and March 2008 was 930,000. This is higher than the 820,000 annual visitors at the Mexico City location. Another KidZania is expected to open in the Osaka area of Japan in March 2009.

In a visit on September 16th, 2008, this paper's author was able to tour the KidZania Tokyo facility to learn how career information was presented. The facility is well-coordinated and the children appeared to be engaged and enthusiastic. Children were allowed to see first-hand many machines and tools that they would not ordinarily be able to see in real life, such as an endoscope, a binding press, a Coca-Cola bottling machine, and more. The electrical lines repair participants were taught about the importance of safety gear. Each of the workspaces appealed to children on some level.

The tasks were usually simple enough for children of all ages to perform successfully, such as spraying a water hose, pushing a button, turning a knob, waving a flag, putting toppings on a hamburger, reading a script, etc.

The Tokyo facility is very similar to the original facility in Mexico City, although some changes were made to make it look more like a city in Japan. Most of the work environments are the same, although the content can change depending on the sponsor. In both the Mexico City and the Tokyo KidZania, children receive a 50 KidZo traveler's cheque when they first enter the park; however, the children at Mexico City are more likely to spend their cheque immediately before choosing a place to work while children in Tokyo are more likely to save their cheque to spend after working a while. This reflects a cultural difference in people's attitude towards working and saving. The facility opening in Osaka next spring will be the first facility in the world to have a train depot.

Neither the Vocational Museum nor KidZania provide a chance for children to experience agricultural, fishing, or forestry occupations. This is probably due to constraints on space and resources. Also, neither institution provides much insight into a managerial position, which may not be considered to be as practical as other professions, given the target audience.

Since KidZania is primarily focused on developing a world for kids, it is inadequate to be used as a micro-model for real world issues. Since it is constantly full of children, there are no issues with a declining population, a growing proportion of older persons with a shrinking proportion of children, immigration pressures, or social security solvency. Needless to say, there is no focus on which future skills or occupation will be in high demand.

The US does not have an equivalent institution to either the Vocational Museum or KidZania. Given the current budget situation for the Federal or State Governments, it is unlikely that an appeal for a Vocational Museum will be well-received. It is remarkable that Mexico-based KidZania is a global institution that does not yet have a US presence. Our guide at KidZania assured us that there were definitely plans at one point in time to open a branch in the US, but it was not able to gain support from enough sponsors to be realized. In the US, education is separated from entertainment, so it is doubtful that potential customers would be willing to continually return to an

institution that is a cross between Disneyland and school. Many potential customers would simply choose to either go to a school or go to Disneyland. Nevertheless, it is conceivable that this issue can be overcome—as theme parks continue to try new gimmicks, as corporate sponsors continue to try new ways to build recognition, and possibly as career education tries new methods to appeal to the public. An American couple from California who were touring KidZania on September 16th also saw potential for this enterprise in the US.

Publications

Japan has free weekly magazines featuring job openings in a certain local area. These magazines are readily found throughout the neighborhood at train stations and various businesses. In America, job openings are more commonly featured in newspapers or bulletin boards. Depending on the city, job classifieds magazines may be readily available or not available at all.

One example of this magazine in Japan is "TownWork," offered by Recruit, a private publication company. For the purposes of this paper, the Ikebukuro/Tobu Tojo Line edition from the week of September 8th, 2008 was selected. This magazine offers jobs exclusively in this region, and the magazine allows readers to select an even more specific area inside the region. It includes almost 90 pages of classifieds--a sample page can be found in the Appendices. Each job posting indicates where the nearest train station is and how long it takes to walk from the station to the worksite. It includes numerous details on each job, such as the salary, shift hours, benefits, etc. The magazine publisher actually pays a visit to the employer to verify the information, ensuring its accuracy. Many colorful pictures highlight the friendly atmosphere at various employers.

One example of this magazine in the US is "CareerSource," privately published for the San Francisco Bay area. This magazine is published once every 5 weeks and can be picked up for free at libraries, shopping centers, or career centers, among other places. It is not organized in any particular way. It includes 20 pages of general advertising space and articles on job-searching--a sample page from the August 12-Septebmer 16th, 2008 edition can be in the Appendices. Vocational training at community colleges is also advertised. Job announcements are non-specific; they do not indicate any salary, details on work shifts, or nearest public transportation. The magazine publisher does

not pay a visit to the company to verify any information. It does include colorful pictures to show the friendly atmosphere.

Job classifieds in newspapers in the US are more likely to include specific details such as salary and working hours; however, not even the newspaper staff will visit the employer to verify the accuracy of the information. Job classifieds from Japanese newspapers vary from being just as detailed as job-search magazines in the Sunday edition, to being very succinct to fit 3 columns in weekday editions. Examples of newspaper ads can be found in the Appendices.

Websites and online d*atabases*

The Japan Institute for Labor Policy and Training Career Matrix is based on the US Department of Labor Employment and Training Administration Occupation Information Network (O*NET) database. As a result, the two on-line databases have any number of similarities. Both provide ranking scales for various skills and knowledge areas within detailed occupations.

O*NET is primarily a database for raw information. Developers are welcome to take this information and create any interface they desire with it. The Career Matrix is more of an end-user tool, and offers more functions than O*NET. For example, the Career Matrix links directly to specific occupational information that is found in the Occupational Handbook for Youth (OHBY). This is information on numerous specific training paths, earnings statistics, etc. While the suggestion has been made to have the US DOL Occupational Outlook Handbook (OOH) statement web pages link directly to the corresponding O*NET web pages for the same occupation, presently neither the main O*NET Online occupation web pages link directly to the OOH or vice versa. It is helpful that the Career Matrix links to information found in OHBY.

A key part of developing an OOH statement is checking the corresponding information on O*NET and ensuring it matches the statement. The O*NET database was useful for describing duties of occupations that were unfamiliar and rarely seen or discussed in everyday life. Also, the list of alternative titles often proved useful when trying to help someone from the public decide where a job title of interest to them would be classified.

However, the training categories used in O*NET, or “job zones,” were too broad to be

useful. For example, there is often no distinction between occupations that generally need a postsecondary training certificate, an associate degree, a bachelor's degree, or a graduate degree. There is also no mention of a specific field of study.

Also, the skills and knowledge areas were too vague to have specific implications. For example, knowing that the occupation Medical and Clinical Laboratory Technicians has an importance ranking of 36 out of 100 for biology does not translate into a particular action plan for employers, schools, or jobseekers. Perhaps if the skills were broken down by which were acquired on the job, which are learned in the classroom, and which are simply natural talent, then it would be possible to ensure that the skills learned in a classroom are adequately covered in schools. However, it may not always be possible to make such clear divisions in where skills are acquired. Also, the importance ranking may vary by setting or even from person to person. The same concerns also apply to the Career Matrix.

Both Japan and the US have employment projections presented with occupational information websites; however, employment projections play a larger role in determining the appropriate number of college programs in America than in Japan.

While web sites designed specifically for mobile phones are increasingly available in both Japan and the US, the Japanese government has been far more active in utilizing this medium to provide career guidance materials to young people. The Career Matrix and other vocational assessment tools have web sites specifically designed for mobile phones. This is an excellent way to reach Japanese teenagers who are deciding on a career path. In the US, however, materials such as the OOH are more focused on the traditional printed publication format than the Internet version, despite the growing preference of students and jobseekers to utilize Internet resources.

Conclusion

After reviewing economic changes in Japan, the changing career path, and various methods for supplying career information, it appears as though Japan offers an extensive amount of quality career information, especially in comparison to America.

There would be advantages to having State employment agencies in the US be more community-based, where the job-seeker could speak with an unbiased staff member who could tell them information about a company that they might not learn from a company representative. HelloWork can serve as a model for this. Also, there would be advantages to having the quality of job announcements checked and having job information readily comparable between employers, following a model similar to what is found in Japanese job-searching magazines.

Additionally, there would be advantages to having companies in the US that are more willing to re-train employees, rather than lay them off in order to hire different employees. Many unemployed persons try to figure out on their own what training they need to become employable, only to find employers are looking for different skills.

In an attempt to bring more attention to career education in the US, an institution like Kidzania could prove to be a novel approach with interesting ramifications.

However, there is one possible implication for the career guidance community in Japan that can be taken from this research. As more job-switching occurs and there is a growing need to make the transition between jobs more smooth, there will be increasing demand for better communication so that jobseekers can have more confidence in their career decisions. The responses to a career story questionnaire revealed an interest in hearing more about the work lives of other people. While America certainly has no model for this, a possible policy implication for Japan is to serve as a role model for other countries by taking a lead role in encouraging open dialogues about people's own careers.

While it is possible to find career stories collected at random, there is not a well-structured database of career stories that can be tapped at any time. Reading the career story for someone in their 50s may not provide much useful information to a

recent college graduate, especially as the work environment changes and people no longer expect to work for one employer over the course of their career.

It is not yet clear how this could be accomplished, but career counselors and career education institutions could work with the public and establish a system.

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