Thailand's Labor Mismatch: Contemporary Situations and Solutions

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Abstract

This case study focuses on the causes and consequences of labor mismatch in Thailand and the other similarly situated developed and developing countries, i.e., France, the United States (U.S.), Nigeria and Vietnam. In the case of developing countries and some developed countries, the quality mismatch stems from the low quality of formal education that leads to lower-than-expected skill on the part of labor. In the case of Nigeria and Vietnam, the problems come from the lack of adequate university curricula and teaching that lead to lower quality graduates. On the other hand, for the developed countries like France and the U.S., the labor mismatch and high unemployment stemmed from overeducated employees who cannot find jobs that are suitable for their skills, given the relatively small demand for labor with such quality. In consequence, these employees have to work in jobs that do not require their education and skills, with the resulting lower wages and lower opportunities to improve their skills and experience. In both cases, labor mismatch leads to higher unemployment and a lowering of the importance of formal education and its connection to human resource development. These will ultimately hamper the economies, as well as people's ability to achieve their full potential.

Keywords: Labor Mismatch, Quantitative Mismatch, Qualitative Mismatch, Vertical Skill Mismatch, Horizontal Skill Mismatch

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สภาพปัญหาและการแก้ปัญหาคุณภาพแรงงานไม่สอดคล้องกับความต้องการของภาคอุตสาหกรรมไทย

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บทคัดย่อ

กรณีศึกษานี้ต้องการศึกษาถึงสาเหตุและผลของปัญหาคุณภาพแรงงานไม่สอดคล้องกับความต้องการของภาคอุตสาหกรรมที่เกิดขึ้นทั้งในประเทศไทย ประเทศที่พัฒนาแล้ว และประเทศกำลังพัฒนาอื่น ๆ ที่มีสภาพปัญหาคล้ายคลึงกัน อาทิ ฝรั่งเศส สหรัฐอเมริกา ไนจีเรีย และเวียดนาม ในประเทศที่กาลังพัฒนาและประเทศที่พัฒนาแล้วบางประเทศ ปัญหาคุณภาพแรงงานไม่สอดคล้องกับความต้องการของภาคอุตสาหกรรมเกิดจากคุณภาพของการศึกษาในสถาบันการศึกษาอยู่ในระดับต่ำ ซึ่งนำไปสู่การที่แรงงานมีทักษะต่ำกว่าที่นายจ้างคาดหวัง สำหรับประเทศที่พัฒนาแล้วอย่างประเทศฝรั่งเศสและประเทศสหรัฐอเมริกานั้น ปัญหาคุณภาพแรงงานไม่สอดคล้องกับความต้องการและปัญหาการว่างงานในอัตราที่สูงเกิดจากการที่แรงงานมีการศึกษาสูงกว่าความต้องการ เนื่องจากตำแหน่งงานที่ต้องการแรงงานที่จบการศึกษาระดับสูง และมีทักษะสูงมีจำกัด ทำให้แรงงานที่สำเร็จการศึกษาในระดับสูงไม่สามารถหางานที่เหมาะสมกับวุฒิการศึกษาและทักษะของตนได้ จึงต้องยอมทำงานที่ต้องการทักษะในระดับต่ำกว่าความสามารถของตน ซึ่งแรงงานก็จะได้รับค่าจ้างในระดับที่ต่ำด้วย ทำให้แรงงานเหล่านี้ขาดโอกาสในการพัฒนาทักษะ และเพิ่มพูนประสบการณ์ในการทำงาน จากตัวอย่างทั้งในประเทศที่กำลังพัฒนาและประเทศที่พัฒนาแล้วข้างต้น พบว่า ผลของปัญหาคุณภาพแรงงานไม่สอดคล้องกับความต้องการของภาคอุตสาหกรรมก่อให้เกิดปัญหาการว่างงานเพิ่มสูงขึ้น และลดความสำคัญของการเชื่อมโยงระหว่างการศึกษาในสถาบันการศึกษาและการพัฒนาทรัพยากรมนุษย์เนื่องจากการศึกษาในสถาบันการศึกษาไม่สามารถสนองตอบความต้องการของภาคอุตสาหกรรมได้ ซึ่งผลอันเกิดจากปัญหาแรงงานนี้เป็นอุปสรรคต่อการพัฒนาประเทศและการพัฒนาศักยภาพของแรงงาน

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Working as a human resource manager (HR manager) of multinational corporations (MNC) in Thailand, a developing country in South East Asia, was challenging and intimidating at the same time. Given the country's vast natural resources and strategic location in the region, the challenging task in running the firm was to not only acquire sufficient numbers of workers for the factory but also recruit the well-equipped engineer and information technology personnel to smoothly operate the production process. While in terms of numbers of workers, Thailand's unemployment rate for the past decade was lowest among the developed and developing countries (see Exhibit 1), finding the right person for the right job had not been an easy task for the manufacturing sector. This Labor mismatch, a situation in which the employee and employer cannot find a suitable equilibrium of employment, either in terms of quantity and quality of labor, was a common phenomenon in labor economics and human resource management.

For Thailand, the shortages of human resources (both quality and quantity) were symptomatic of more complex problems that urgently needed to be addressed in order for the economy achieve its full potential (Amornvivat, 2013b). Hence, not only was it hard for a human resource manager in a private firm to decide how to solve the labor mismatch problems, but also it was harder for Thai human resource development officers and policymakers responsible for solving the national-level problems. Indeed, the quantitative and qualitative mismatches seen in the Thailand labor market in the manufacturing sector were similar to those faced by both developed and developing countries.

Quantitative mismatch referred to the case where there was a low unemployment rate or shortage of labor as reported in the official statistics comprising both the formal and informal labor markets. *Qualitative mismatch* referred to the situation where there existed either a vertical mismatch or a horizontal mismatch in the labor market. A *vertical mismatch* existed when labor participating in the job market had either a higher degree of education or lower degree of education than what was required by the job description – that is, either *over*-or *under*-education. A *horizontal mismatch* occurred when labor graduated from one field of study but worked in a job unrelated to that field of study.

Labor mismatches of both types, quantitative and qualitative mismatches, tended to manifest as labor market problems, as well as difficult human resource management challenges. Hence, the policy makers was keen to understand the root causes of this disequilibrium in the labor market, with a view to determining whether existing private-sector human resource practices were likely to be effective over the long term and, if not, how Thai policymakers, alone or in coalition with the private sector, could help alleviate these problems.

Nature and Origins of Quantitative Mismatches

Consulting with a Thai labor economist, the manager might ask, "Why was it so hard to recruit factory worker, even when the firm paid market rate wages?" At the same time, the labor minister might ask, "What are the causes of the problem and what was the government policy that supports the firm's problem solving?" The economist would reply that Thai labor market faced a problem of *quantitative mismatch*. A *quantitative mismatch* occurred where there was scarcity of labor in terms of quantity, thus signifying the existence of disequilibrium in the labor market at a particular point in time. In this situation, with more labor demanded than labor supplied, especially in particular economic sector, employers were often obliged to increase the wage offered by labor. However, in situations in which the offered wage was not enough or where labor supplied had more attractive choices, the excess demand would persist. That is, the labor market could not temporarily clear itself.

In addition, the explanation would continue, the nature of Thailand's quantitative mismatch was due to a labor shortage in which the supply of labor could not be fulfilled by domestic supply or even foreign labor in a timely manner. This shortage ranged across the spectrum of human resources, from the unskilled to the blue collar, and even to the white collar worker. Moreover, the cause of quantitative mismatch in Thailand was not high economic growth as in the case of other countries. That is, under normal labor market conditions, this situation would be suggestive of an overheating economy, where almost all human resources were used up and where there was no unemployment gap to be filled, and where nationwide prosperity

was in full blossom. This high economic growth made MNCs more than willing to offer high wages and produce more goods to satisfy the growing market – thus effectively resolving the problem of quantitative mismatch solved. In actuality, however, the situation in Thailand was completely different: Far from being a sign of an economy steaming along at full capacity, the unfilled job vacancies stemmed from certain salient characteristics of the Thai labor market and could lead to a poor economic outcome. Indeed, as pointed out by Economic Intelligence Center (EIC), 2015,

> *A growing labor undersupply is one of the factors behind Thailand's recently sub-par economic growth. It is no secret that employers in Thailand are short on workers. A nationwide survey of companies in six key sectors by SCB Economic Intelligence Center last year found that at least half of them have trouble filling vacancies within a three-month search. Firms that need workers with vocational degrees struggle most, reporting a 23% shortfall of hires. For every 100 openings, they can only find 77 recruits. That leaves expansion plans stuck at square one.*

Reasons for the Quantitative Mismatch

There were five distinct causes of the Thai quantitative mismatch explained by the economist, as indicated in the following list:

1. agricultural sector employment opportunity as a "job-safe" haven;
2. an aging population;
3. the role of informal sector employment;
4. foreign labor; and,
5. the lack of universal unemployment benefits.

The Agricultural Sector as a "Job-Safe" Haven.

Though agricultural sector contributed only 9 percent of Thai gross domestic product (GDP), it provided the full-time, seasonal or temporary job for almost 40 percent of Thai labor force. Hence, during an economic boom, farm labor moved to work in the city, mostly in the formal employment sector, e.g., as an unskilled labor

in construction or semi-skilled labor in factories, given the wage and work conditions trade-off. Later, when the economy entered into a slowdown cycle, labor easily moved back to the agricultural sector and worked on either the family farm or became labor for other's farms. Thus, a laborer was deemed an employed worker even if he or she lost her job in the city. This adjustment process of labor movement to and from the agricultural sector in Thailand was not the instantaneous or perfect process prescribed by labor market theory, there almost always being a "lag." Therefore, quantitative mismatches in industrial sector were inevitable and became a constraint in human resource management, especially in the short-run.

The Reality of an Aging Population.

For decades, the Thai "demographic dividend," i.e., the boost in economic productivity from growing numbers of people in the workforce relative to the number of dependents, was characterized by a population structure shaped by three forces: a shift away from agriculture to industry, more female labor participation, and fewer non-working dependents, including children and old people. However, after the acceleration of processes of industrialization and urbanization, birth rates fell substantially, in part because both rural and urban families wanted to have fewer children. Consequently, the working-age population eventually shrank, which would in time further constrain the overall future quantity of Thai labor. By 2014, Thai society had entered into the realm of an aging society, with more than ten million people, i.e., 15 percent of the population, greater than age 65 (see Exhibit 2). It was projected that by 2030, that this figure would double, and the demographic dividend would completely disappear.

The Accelerating Rise of the Informal Sector.

Thai labor market was composed of both formal and informal segments. In the formal market, the employee and employer formed a legal labor contract, whereas the informal markets were characterized largely by either self-employed or paid employment outside of a labor agreement legally formed by employer and employee. Among the labor that were not covered by formal work arrangements were street vendors, taxi and motorbike taxi drivers, workers in small shops and

restaurants, other self-employed, and those who worked in gray areas of the economy. In 2013, the informal labor market accounted for more than 64 percent of the total workforce. Similar to agricultural employment that could be labeled as "informal," the informal sector provided many needed products and services and served as a cushion for workers during economic downturns. However, recent surge of informal employment and production had the effect of further shrinking the pool of workers available for hiring, not only for unskilled labor but also for university graduates. As pointed out by (Amornvivat, 2013a),

> *Even college-educated workers have been joining the informal sector in larger numbers. Today about 30% of workers with a college degree or higher have gone "informal", up from 22% a decade earlier, with most of them taking jobs in small shops and eateries*.

The Inadequacy of the Policies Allowing and Controlling Foreign Labor to Work in Thailand.

The economist suggested that currently Thai government had not offered a good response to this mismatch problem. For example, to solve the problem of quantitative mismatch, Thai government turned a blind eye on illegal migrant workers, especially from the neighboring countries. There might have been up to 3 million mostly undocumented migrant workers in Thailand from Cambodia, Laos and Myanmar, according to Human Rights Watch (2010). The inflows of illegal migrant workers put downward pressure on the wages offered to Thai unskilled labors since they were comparable in nature to migrant workers. However, allowing illegal migrant workers, though they increased labor supply in Thailand, did further exacerbate the other costs of quantitative mismatch. Thai workers preferred being employed in agricultural or informal sector since the formal sector wages were low. In addition, given the illegal status of migrant workers, there was no incentive for employers to provide unemployment benefits to foreign as well as Thai workers. Hence, when illegal immigrants had more choices, they preferred working in the best working conditions with reasonable wages. Therefore, allowing immigrant workers

reduced the quantitative mismatch only in the short run; but, in the end, the problem persisted.

Moreover, recent government policy that partially allowed foreign unskilled and skilled labor to work in Thailand legally only partly solved the quantitative mismatch problem. The unskilled labor had to pass through the health check-up and registration processes. Government steps to register foreign workers had been ongoing, but the language barrier greatly limited their entry into the more skilled sectors. Skilled workers had to pass qualification tests that were organized in Thailand, along with a Thai language test concerning the workers' profession. However, it did not cover the whole spectrum of the labor force needed, as pointed out by Yuvejwattana (2015).

The Absence of Universal Unemployment Benefits.

Unlike the other countries, an unemployment benefit scheme was practically non-existent in Thailand. By law, the laborer had to contribute part of his wage to the unemployment fund for at least six months during a qualifying fifteen–month employment period to gain the unemployment benefit offered by government's Social Security Office. That is, the employee had to both employed for at least fifteen months and contribute at least six monthly payments to unemployment fund. This virtually non-existent benefit scheme, coupled with the relatively easy availability of informal sector employment, made labor quick to jump to whatever job was offered to them. During economic downturns, those who lost their jobs invariably entered the informal sector and had no need to be engaged in formal employment. By contrast, during periods of high economic growth, those who did not like their jobs could quickly enter the informal sector, too. Certainly, these dynamics also aggravated the quantitative mismatch in the Thai labor market.

The economist further pointed out that these trends were worrying from both a business and economic perspective, and could also contribute to the other mismatch, "the *qualitative* mismatch". That is, recruiting sufficient numbers of workers was hard enough; but, recruiting the *right caliber* or quality of workers became even harder.

Nature and Origins of Qualitative Mismatches

Issue of qualitative mismatch was a worldwide phenomenon. The mismatch made the work of human resource manager harder in terms of recruiting, training, and maintaining qualified workers. That is, the classic practices of all three activities had to be adjusted to adequately address the problem.

There were two economic schools of thought, *neoclassical* and *asymmetric* information, that offered explanations of the nature of qualitative mismatch (see Exhibit 3). Each offered important insights into the origins of qualitative mismatches. The neoclassical school explained that the mismatch problem would exist only in the short run both because labor could immediately acquire needed skills and the firm could adjust the inputs used in the production process. However, asymmetric information theorists maintained that the qualitative mismatch would persist even in the long run because of the difference in the information sets between the labor and employer.

Qualitative Mismatches: Comparative National Experiences

The Qualitative Mismatch Experiences of Thailand

In Thailand, qualitative mismatch, whether of the vertical or horizontal type, reflected the difference between the skills that employers seek and the skills possessed by workers educated and/or trained under the Thai educational system. At present, the phenomenon was relatively new to Thailand, with neither a clear policy response from the government nor a change in HR practices by Thai firms. The World Economic Forum (WEF, 2014) stated that there were five forms of mismatch: i) Skill Shortage; ii) Skill Gap; iii) Over- or Under-Skilled; iv) Qualification Mismatch; and, v) Over- or Under-Qualification/Education (Exhibit 4). Each form had its own characteristics and contributing factors, as explained below.

Skill Shortage.

As had been documented in many research studies and even by mainstream media, skill shortage was the predominant problem in the Thai labor market. At the

meso-level, Thai vocational training students were only twenty percent of all students in post-secondary education -- a very low percentage compared to other South East and East Asian countries, such as Malaysia (50 percent), Indonesia (30 percent), and South Korea (45 percent). This was indicative of a skill shortage since most Thai manufacturers actually had a greater need for the skills of vocational school graduates with practical training rather than those with a formal education background that ended at grade nine or grade twelve (EIC, 2015). Further contributing to the skill shortage was the fact that the number of college graduates in science and technology was only about 24% of all graduates, with the rest being either humanities and social science graduates. This was problematic because the high-tech manufacturing sector -- such as the automobile, electronics and electrical, medicine and petrochemical industries -- could not procure the needed skilled labor. Meanwhile, these industries had become increasingly important for Thailand to maintain her competitive advantage in the global economy.

Skill Gap

The *Productivity Investment Climate survey* by the World Bank PIC, together with a study by Pholpirul and Rkumnuaykit (2012), found that even newly graduate bachelor degree students lacked both the basic and technical skills required by employers. These professional-level hires performed poorly in communication, creativity, innovation, information technology (IT), English language communication, and mathematics. In fact, their skills, especially in English and IT, had been deteriorating overtime. The skill gap had become concerning since workers from other ASEAN countries, such as Malaysia and the Philippines, performed much better both in basic and technical skills. In the case of Michelin Thailand, this situation had led to the Company's having to put newly graduated engineers from Thai universities through their common training program for a period of 10 months (Interview with Country Recruitment Manager at Michelin Siam Co., Ltd. March 5, 2015). This further exacerbated the skill deficiency problem in Thai labor market, in that skill-deficient university-educated job seekers who could not find a job usually ended up turning to the safe employment haven of the informal economic sector even though those jobs required less skilled than they possessed.

Over- and Under-Skilled

The foregoing led to the third form of the mismatch, Over-/Under-Skill. The *under-skill* problems stemmed from the problems in both formal and vocational education, together with student choices in study programs that did not correspond to the needs of the market. On the other hand, the *over-skill* situation stemmed from both the skill shortage and skill gap problems. For example, when a manufacturing firm could not hire a technician to work in the production line, they had to hire a newly graduated engineer who had higher level of skill than was required to operate machinery in the factory (Interview with Professor at King Mongkut's University of Technology North Bangkok, January 8, 2015). Aggravating this form of skill mismatch was the fact that some engineering graduates preferred not to work in the production plant since the working conditions were deemed unpleasant. They opted out to work in the informal business sector as baristas, open online buying and selling shops, and so on.

Qualification Mismatch

The qualification mismatch, where the level of qualification and/or the field of qualification is different from that required to perform the job adequately (WEF, 2014) was also a dynamic problem faced by human resource managers. At the macro level, the qualification mismatch in Thailand was prominent, mostly among the Science Technology Engineering and Mathematics (STEM) graduates, except for engineering per se (Pholpirul, 2014). The seriousness of the mismatch was such that one observer averred that "the new graduates of science and technology personnel could not find jobs in their respective field since they are trained to work for academia rather than for private enterprises" (Interview with Policy Fellow at National Science Technology and Innovation Policy Office, March 26, 2015).

Over- or Under-Qualification/Education

For Thai engineering graduates, the problem was different – a problem of Over-/Under-educational qualifications -- in that most of the engineering job demand derived from the need for technicians rather engineers. More specifically, the manufacturing firms hired engineering graduates to work as supervisors on the

production line maintaining the machines – which effectively prevented their using the critical thinking and technical skills learned as engineers. At the micro level, there was a difference in expectation as perceived by human resource management and the engineering schools in Thailand. Such was exemplified by the case of one factory's search for new industrial engineering graduates who could design and implement a new machine setup of rubber material. Given that at the time that the job was posted, there was no engineering school that actually equipped their graduates with material science skills, those who applied for the position would be certainly under-qualified from a human resource management point of view (Professor from King Mongkut's University of Technology North Bangkok, January 8, 2015).

The Qualitative Mismatch Experiences of Selected Other Nations

The experiences and data coverage of select other nations were not the same (Exhibit 5). The data coverage of developed countries such as the United States (the U.S.) and France was more comprehensive since the developed countries had suffered the mismatch problems at earlier points in time. Especially in European countries, specialized economic units such as European Centre for the Development of Vocational Training (CEDEFOP) and committees of the international bodies such as the European Union and the Organisation for Economic Co-operation and Development (OECD), had long been engaged in the analysis of the quantitative mismatch problem, and had suggested policies and practices. By contrast, for developing countries such as Nigeria and Vietnam, the qualitative mismatch problems had surfaced only within the recent decade. Thus, the information regarding forms, causes, consequences, and responses were quite limited and far from complete. Nevertheless, cross-country comparisons of the forms, causes, and consequences of qualitative mismatch in the four countries were deemed potentially instructive with respect to shaping the responses of the Thai government and Thai HR practitioners. For example, knowledge from developing countries might help Thai HR managers understand the similarities in constraints, contexts and surroundings of the mismatch problem. Additionally, the study of developed countries that had had encountered the problem before developing countries could help Thai companies in adopting and applying the contemporary HR practices, as

well as help the government adjust policies to embrace cooperation between each stakeholder, even though the developed countries had not completely solved their own mismatch problems.

The qualitative mismatch problems and solutions were different depending on the stages of development of different countries. The experiences of France, the United States, Nigeria, and Vietnam were of particular interest with respect to their different qualitative mismatch forms, causes, consequences, and corresponding policies. As shown in Exhibit 5, in France, the mismatch problem was more severe than that among other European Union members. The mismatch problems were composed of both a horizontal and vertical element, as well as education quality in vocational and university training. In United States, in recent years, there were growing concerns with labor skills, particularly those related to education at the university level. The supply of skills of US labor force had further deteriorated in recent years, according to a series of reports from employer-associated organizations, independent organizations and even government sources. These complaints about skills had started a debate regarding labor force skill and improvements needed in government education policy. In Nigeria, the available literature focused on the Nigerian information technology industry. Nigeria's experiences exhibited skill gaps rooted in the difference between what had been taught in Nigerian university computer science programs and what the information industry had been expected. Vietnam's experience had both similarities and differences with those of Thailand. Both countries adopted the similar industrialization process where the first industry to be developed was labor-intensive industry. However, in later process of industrial development, Vietnam chose to focus more on inclusive human capital development than Thailand.

Labor Mismatch in Thailand – The Quest for a Remedy

For Thailand, the problems of qualitative mismatch were relatively new. Thus, it was beneficial for Thai government, to learn from the some of the new human resource (HR) practices (Exhibit 6) that had proven successful in reducing labor mismatch in the developed countries. If the firms had enough capital and resources,

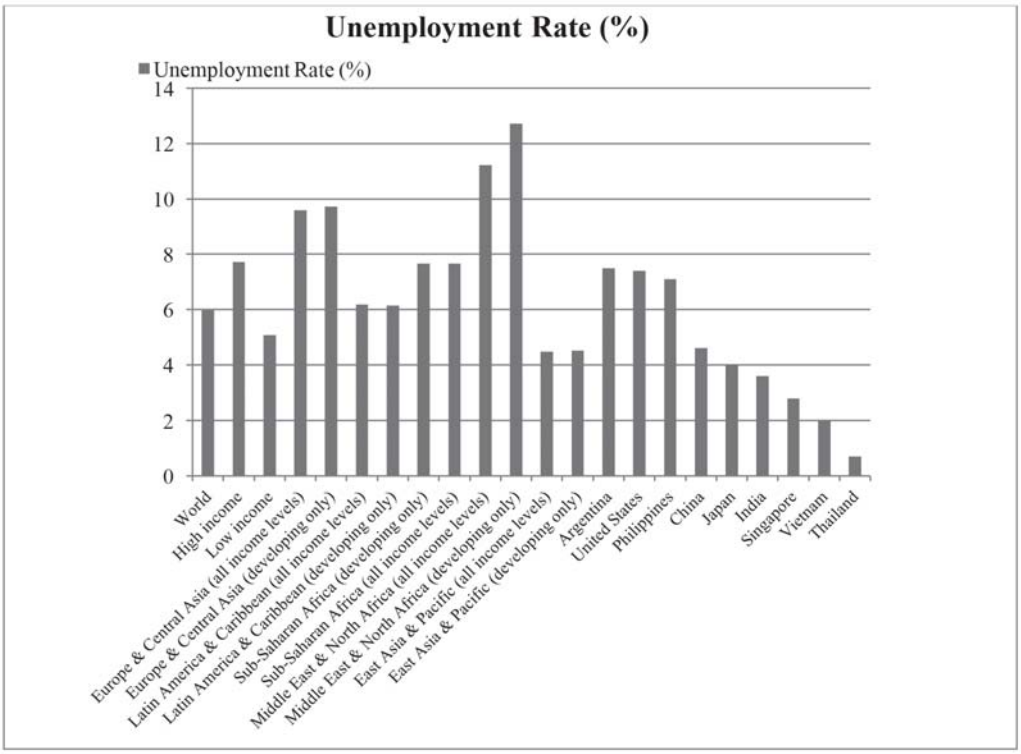
the adoption of such practices would rather be relatively easy (for Thai SMEs, however, the adoption would be more costly). Hence, Thai human resource development officers and policymakers could help by emulating, albeit with adjustments to fit with Thai circumstances and surrounding factors. The government could partially fund the adoption of practices for SMEs, as well as create the required infrastructure to facilitate their successful adoption. In return, with effective guidelines and government support, there could emerge a model initiative for collaboration between the firms, government, and the education sector to successfully alleviate the labor mismatch problems.

Given the adverse effects of labor mismatch, many MNCs had changed their HR practices in the direction of comprehensive and integrated strategies. These strategies combined better hiring practices, training provisions, and workforce pool and skills retention. As a part of these integrated strategies, HR practices had followed the future trend of HR, especially digital HR management. Apart from these potential solutions, it was unlikely that contemporary HR practices would be sufficient in solving the problems since small and medium enterprises (SMEs) in developing countries would not have enough resources to pursue the best practices.

The labor mismatch in Thailand shared similar patterns, causes, and consequences with those of several other countries, both developed and developing. However, with looming economic uncertainty and the operationalization of the South East Asia common market, the effectiveness of the matching between skills and labor market was now a matter of utmost importance to the nation's ability to weather the troubled times that could lie ahead. From a "macro" perspective, through its damaging effect on human capital investment and productivity, the skills mismatch reduced the nation's competitiveness, as well as decreased the national intellectual and technical capability. From a "micro' perspective, the mismatch led to higher rates of turnover -- turnover that had reached a level that was detrimental to firms' success, especially in the manufacturing and service sectors. Several practices had been implemented in manufacturing firms, especially among multinational

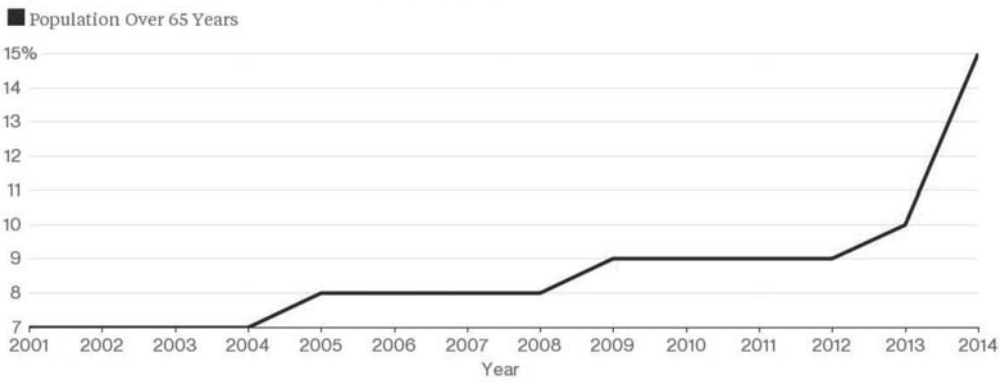
companies; however, labor mismatch remained unsolved at the macro level. Hence, a comprehensive set of long-term policies and priorities was needed for Thailand to prevail in the fight against labor mismatch.

Exhibit 1: Unemployment Rate of Select Countries and Groups of Countries



Source: International Labour Organization (2013)

Exhibit 2: Percentage of Thai Population over 65 Years Old



Source: United Nations Population Fund

Exhibit 3: Two Economic Schools of Thought about Qualitative Mismatch

Insights from the Neoclassical School of Thought

The neoclassical school suggested that there was actually a small chance of a qualitative mismatch, and even if it existed, the labor market would adjust swiftly, certainly over the long run. The common economic model started with homogenous labor and homogenous employer. The market structures in both labor and product markets were perfectly competitive, and there were only two factors of production: capital and labor. Under the basic model, a qualitative mismatch was predicted to stem from the misallocation of capital and labor through *scale and substitution effects*. The *scale effect* happened when the economy was expanding and the product price was increasing, thereby increasing the demand for labor; however, if the employer could not expand the capital at the same rate as labor employed, then the marginal product of labor would fall and create the lower-than-expected quality of labor as perceived by employer. Then, the *substitution* effect would ensue, leading the firm to acquire more capital or machines to substitute for labor, resulting in an increase in the marginal product of labor. Quite likely, however, labor would think that their increased productivity should be reflected in further increases in wages, thereby enabling the mismatch to persist. In addition, when economists introduced two types of labor, unskilled and skilled, into this particular model, a mismatch arose

because of a change in demand for the good that was skill-intensive. If the unskilled labor could not change to became skilled labor, their wages and productivity would be less. More importantly, it was common that unskilled labor could be easily substituted by capital.

The final cause of mismatches under the neoclassical framework was the *cross-industry effect*. Assuming that there was more than one product and a specific labor type for manufacturing each product with capital, an expansion in the market for the one product would lead to an increase in labor being employed specifically for that particular sector. For example, if the cloth market had an increase in demand, the demand for tailors should also be higher. If an increase in wages for tailors was high enough, more labor from the other sectors would be lured to work in the clothing business. This transition would not be perfect and would therefore further enhance the quality mismatch problems.

Although these factors contributed to the qualitative mismatch, the problem would vanish quickly enough since labor could acquire needed skills very soon, and the firm could also adjust their optimal use of labor and capital.

Insights from the Asymmetric Information School of Thought

The second school of thought posited the existence of asymmetric information between stakeholders in the labor market. Asymmetric information theorists predicted that the qualitative imbalance would persist even in long run because the labor and employer did not have the same information set, and this difference in information set would not easily disappear. Therefore, the process of hiring labor would be similar to the *search and matching model* in economics. For example, if labor knew more about their skills than the employer did, they would have an incentive to search for the jobs that matched their skills. However, if majority of employer or the market did not need their skills, the labor would spend too many resources searching for the right job and eventually might not find one. In some cases, it could be that labor would take a lower-caliber job while waiting for an opportune time to search again for a job that matched their skills. Alternatively, the labor could undertake additional training to acquire the needed skills. In addition, during

an economic boom, where the demand for skilled labor should be very high, employers would certainly need more skilled labor; however, if the search and matching process took too long, the employer would settle for hiring people of lower skill than needed by the job. This type of mismatch, then, stemmed from market failure and would not go away without introducing policymakers and other stakeholders to solve the mismatching problem.

Exhibit 4: Five Forms of Mismatch

Forms	Definition
Skill shortage	Demand for a particular type of skill exceeds the supply of people with that skill at equilibrium rates of pay.
Qualification mismatch	The level of qualification and/or the field of qualification is different from that required to perform the job adequately.
Over-(Under) qualification/education	The level of qualification/education is higher (lower) than required to perform the job adequately.
Skill gap	The type or level of skills is different from that required to perform the job adequately.
Over-(Under-) skilling	The level of skill is higher (lower) than required to adequately perform the job.

Source: Cedefop, 2010

Exhibit 5: The Qualitative Mismatch Experiences of Selected Other Nations

The French Experience with Qualitative Mismatch.

Qualitative Mismatch Forms

As shown in the Table below, the labor mismatch in France had both a vertical and horizontal dimension, with a comparatively higher degree of severity than the mismatch situations in the other 26 European countries.

Average Incidence of Vertical Mismatch among 25-64 year Olds during 2001-2011

Unit: Percentage of employees

	Ordinary		Severe	
	Under-qualified	Over-qualified	Under-qualified	Over-qualified
European Countries	21%	15%	8%	9%
France	32%	12%	16%	11%

Source: European Commission (2013)

Using data from the European Labor Force Survey during 2001 to 2011 (European Commission, 2013), the average incidence of vertical mismatch was 36% of European employees. On average, nearly 15% of European employees were over-qualified, while 21% were under-qualified (Exhibit 6). In France, there was a 44% incidence of vertical mismatch, a higher rate than the average rate of European countries. Of the 44% overall incidences of French mismatches, 32% were instances of lower-qualification and 12% were attributable to over-qualification. Despite the low incidence (12%), over-qualification was of the severe type in which labor graduates of post-secondary and post-tertiary institutions ended up working in jobs that required only a secondary education. For the under-qualification mismatches, the incidences arose primarily from lower-secondary or primary school graduates who were employed in jobs requiring an upper-secondary qualification and from upper secondary graduates working in jobs that required a university diploma. For the horizontal mismatch, French incidences of 27 percent were higher than the European Union average of 23 percent, placing France among the highest among OECD countries.

Causes

There were several causes of the labor mismatch in the European Union, and in France, in particular. *First*, given its diverse economic sectors, the vertical mismatch was common in the high-skills sectors. For example, firms in health and social care faced more skilled-shortage problems than did companies in the

manufacturing sectors. The level of mid-range skill requirements, firms that operated in the finance, wholesale and retail trade and in the public administration areas of the economy, experienced fewer high-skill bottlenecks. By contrast, firms in the hotel and restaurant business faced a shortage of low-skilled labor. Thus, the diversity of the economic sector made both over- and under-qualification possible since it was a matter of personal choice on the part of labor to choose whatever sector in which they desired employment. Moreover, during a downturn in the financial sector, for example, labor could move to tourism sector where threats to employment were to some degree reduced by virtue of reliance on foreign buyers. Comparing France to the other more economically advanced countries, there were limited jobs offered in the high-skilled positions, which further drove the incidences and severity of over-qualification mismatches in France.

The *second* cause of labor mismatch in France and in the European Union was the change in the socioeconomic factor, especially the distribution of population age. Similar to Thailand, where there was a larger distribution of old age population, the aging population of both France and the European Union exhibited positive and significant effects of old age on over-qualification, while there was also a negative and significant effect of young age on the under-qualification (European Commission 2013). That is, the old-age population found out that their accumulated skills became obsolescent, while for the younger generation, the lack of experience, or relevant information about the opportunities available in the labor market, led to under-qualification.

Third, the degree of urbanization played a large role. The lower degree of urbanization in France, compared to the countries that it bordered (e.g., the United Kingdom and Germany), increased the search costs and reduced the variety of jobs offered per location. That is, it was harder for labor to find the job that corresponded to their skills and qualifications. Likewise, it took longer for a firm in a less urbanized area to fill a vacant position.

Lastly, the economic crisis of 2009 put even more pressure on the labor mismatch in not only France but also other European countries. The overall

economic decline of dynamic labor markets drove a certain degree of qualification mismatch because of restructuring and the resulting turmoil within the job market that led to non-stable, short-term employment relationships. Though a flexible and dynamic labor market was important in enabling an efficient allocation of productive human capital, "exuberant" job mobility could be further conducive to labor mismatch.

In the aftermath of the crisis, lower rates of job creation and higher rates of job destruction facilitated higher labor turnover with which neither employers nor labor could cope. On the labor side, people were jumping to whatever jobs were available since *some* employment was much better than living on the social safety net. For the employer, long-term labor contracts were not a viable option. Hence, a higher degree of over qualification ensued after the outbreak of the crisis.

Consequences

In terms of the consequences, the mismatch led to direct costs, such as loss of income and absenteeism, while the indirect costs comprised loss of skills and skill obsolescence, loss of confidence, and loss of job-satisfaction. For the employer, the mismatch led to high recruitment costs, lower productivity and product quality, and especially higher turnover rates. The indirect costs were lower competitiveness and innovation capacity. For the French economy as a whole, the mismatch was detrimental. It led to a higher equilibrium unemployment rate and reduced the GDP by lowering the human capital and skill bottleneck. Furthermore, it entailed a potential waste and misallocation of public expenditure, especially those spent on education and training at the secondary and tertiary levels. Society forewent the output that could have been generated by reallocating mismatched workers to higher productivity jobs.

Corresponding Policies

For France, the main suggested policy was related to the joint effort by government, firms and labor in enhancing the responsiveness of education and training to market needs. There were two keys aspect of this suggestion. *First*,

education and training should cater to diversity. Given France's diverse economic structure, labor were required to possess a range of skills with which to supplement the narrow but crucial occupational skills of the past. Communication skills and a combination of problem-solving, analytical and linguistic abilities, along with the capacity to self-manage and work in teams, were crucial common skills that were required in any jobs. In addition to these "transversal" skills that had become increasingly valued in the labor market, individuals' basic knowledge (numeracy, literacy) and attitudes ("soft skills") represented the type of key competencies in the knowledge economy and represented the foundation for 21st century skills that should be possessed by any recent graduates (European Commission, 2013).

In addition, it was clear that combination of vocational training and general training could not be ignored. Vocational training contributed to the acquirement of occupation-specific skills, whereas common or general training promoted the acquisition of generic transversal skills. Vocational content was more effective in channeling and developing young labor toward matched qualifications into work rather than pursuing tertiary degrees. This workplace-based learning and training through apprenticeships provided skills that were difficult to replicate without practice and real-life experiences.

Given that learning and training had a public goods nature and created positive externalities to not only the labor but also employer, then there was a room for good coordination between human resources manager and public sector. It was suggested that the public sector could assist employers in the assessment and elaboration of training plans with a least partial funding or tax credit. It was also proposed that the public sector or government could provide necessary accreditation of training such that afterwards trained labor would be valued by the enterprises. Further, this cost sharing required necessary public or joint public-private institutional arrangements, such as sector skills councils to identify the needed skills. In addition, the institutions could also act as mediators between the labor market and the education and training sector.

The United States Experience with Qualitative Mismatch

Qualitative Mismatch Forms, Causes and Consequences

In the case of the United States, caution was appropriate in determining whether or not there existed a true skill mismatch. It was certain, however, that studies of the possibility of a labor mismatch became more focused in the aftermath of the so-called "hamburger crisis" that began in late 2007. The economic crisis led to a large increase in unemployment in the U.S., accompanied by many employers reporting and voicing concerns about the increased difficulty of finding the required talent. Employers claimed that the *shortage of skills* was attributable to not only the number of high-school dropouts, but to the quality of university graduates, as well. These deficits could be explained by the distinct characteristics of the new generation of labor, along with a number of other contributing factors.

In addition to a geographical mismatch between skill supply and demand due to new graduates' internal migration to the east or to the west, poor working conditions for high school dropouts and inefficient or stringent human-resource practices contributed to the skills shortage in certain areas of the country. However, the key driver of *skills mismatch* was limited job opportunities in the initial years following the economic crisis. Similar to the case of France, the crisis pushed many employees to accept mismatched employment of lower-quality jobs and lower wages. During the period of weak demand that characterized the era, employers tended to take one of two tacks: remain patient when recruiting, and wait for the perfect candidate; or, hire over-skilled workers, thereby contributing to labor mismatch through over-education (Leuven and Oosterbeek, 2011). At the same time, difficult economic conditions forced employers to reduce training and recruitment expenditures, which further exacerbated skills shortages, mismatch within the workplace, and deterioration of the nationwide stock of human capital.

However, as economic recovery got underway, the underutilization of the skills and no human capital development of mismatched workers led to a new round of mismatch problem. During the recovery period, the demand for skilled labor would be higher; however, during recession, the damaged careers of mismatched

employees did contribute to the depreciation of labor's unused skills. Holzer (2013) pointed out that this further reduced the pool of skilled labor during the recovery period, and in turn, it led to further under-qualification problems and skill gaps as well as unemployment. In a recent study of United States labor market after the recession, mismatch explained at most one third of the total observed increase in the unemployment rate. However, the geographical mismatch played no apparent role, but occupational or qualification mismatches become more severe for college graduates, especially in the West of the nation (Şahin et al., 2012).

The aforementioned dynamic nature of labor mismatch in the U.S. after the 2007-08 crisis made pinpointing the validity of the mismatch causes highly uncertain. Indeed, as noted by one observer:

> *Overall, the available evidence does not support the idea that there are serious skill gaps or skill shortages in the US labor force. The prevailing situation in the US labor market, as in most developed economies, continues to be skill mismatches where the average worker and job candidate has more education than their current job requires. Persistent, high levels of unemployment reflect the fact that job seekers still outnumber available job openings.* (Cappelli, 2014)

Corresponding Policies

In the U.S., the most common policy was to deal with skill gaps by publicly financed training. However, the problem was there were no clear measures of skill gaps. Even if the skill gaps did exist, it could be argued that it was employers' responsibility for recruiting and retaining employees, and then training and developing them to meet changing skill needs. In addition, several reports showed that standard human resource practice had been neglected since the economic crisis, and that employer practices of "*no training*" were driving much of labors' perceived skill problems (Cappelli, 2014).

Even the policy regarding with the Science Technology Engineering and Math (STEM) education was having certain problems regarding its practice and budget. The government provided financial subsidy and support to promote STEM education. This would improve the pool of STEM labor supply. The higher supply, in turn, would afford employers more choices with respect to either hiring the new STEM graduates or outsourcing the work internationally. Practically, the policy would reduce the degree of outsourcing by private firms and reduce the skill gaps problems. However, the critics pointed out that as the U.S. tried to increase the STEM graduates, there would be a tendency for other countries to increase their STEM graduates, too. Hence, employers would have no need to hire new US graduates of STEM programs. Then, students who pursued specific STEM education in hopes of procuring better jobs at the end would be taking a substantial financial risk.

The policy to promote vocational teaching in the U.S. had not yet borne much fruit. As was true in France, US manufacturers had long complained about the shortage of graduates of vocational training programs. The US firms asserted that the cause had been that schools and guidance counsellors were not advocating for those programs. However, another explanation was that the pay for such jobs had declined by 20 percent in real terms over the past two decades, while the skill requirements had shifted toward computer use, a field with better pay (Cappelli, 2014).

The Nigerian Experience with Qualitative Mismatch

Qualitative Mismatch Forms, Causes and Consequences

Pitan and Adedeji (2012) analyzed the incidence of skills mismatch of employed university graduated and found that there were gross inadequacies in the supply of all the skills needed. Moreover, 60.6% of graduate employees had skill mismatch problems, and the critically deficient skills were communication, information technology (IT), decision-making, critical thinking, interpersonal relationship, and entrepreneurial, technical and numeracy skills.

The qualitative mismatch in Nigeria, especially in computer science and information technology graduates, had many causes and consequences. The main causes of skill gaps resulted from the university curriculum. In Nigeria, as in many developing countries, the computer science curriculum was static in nature while the industry was extremely dynamic. That is, the knowledge and training embedded in one particular curriculum year would not be relevant in the following year. Hence, universities needed to update their curricula as well as lecturers and professors at least every other year. However, universities in developing countries, such as Nigeria, were not willing to do so, or did not have the capacity to train their staffs. Given the dynamic structure of Information and Communication Technology (ICT) and computer science courses, the financial burdens and costs of regular curriculum upgrades were high. In addition, some lecturers and professors were unenthusiastic about undergoing updated training for the latest technology, as they had other priorities and in any case university facilities were lacking. As lecturers, one of the main priorities for their survival was research for publication in order to secure tenure, not so much on attending lectures and workshops to maintain currency with the ever-evolving technology. In addition, even if they attended such workshops, they could not implement or even sometimes lecture to their students what they had learned, given the insufficiency of computer labs, programs, and other instructional resources. Therefore, it was largely considered a waste of their time to try to maintain currency with the latest technology. Hence, their ICT and computer science graduates were stuck with only basic computer knowledge (in some cases, only Microsoft Office and basic web page design using HTML), far below what prospective employers wanted (Ayofe and Ajetola, 2009).

Adding to the problem were new forms of work structures in the ICT industry that were flexible, adaptable, and multi-skilled, and less hierarchical – all of which required even more of the new graduates. Despite the willingness of foreign firms to pay an ever-growing premium for Nigerian ICT talent with the requisite skills, the firms could not often find suitable candidates and had to resort to the outsourcing of IT operations elsewhere. Ironically, the mismatch and labor market imbalances led to a further widening of the skill gaps both in the labor

market and in the university curriculum. That is, ICT firms would seek to outsource rather than hire domestically, thus negatively impacting the ability of universities to invest more into ICT program development and updates in order to produce graduates needed in the labor market. This downward spiral led to discontinuity in the university programs, which further affected the quality of skill supplied. Even short-term, practical exposure of students through the SIWES (Student Industrial Work Experience Scheme) proved ineffective, mainly because of limited industry demand and the lack of proper IT facilities.

Relying on foreign resources to fill the skill gap in the Nigerian IT industry was wasteful of human resource development and education and ultimately generated additional unemployment. For example, in order to assure smooth operation, the proliferating banking systems, including the electronic banking systems, preferred to escape the problems of inadequately trained local talent by adopting IT systems created and maintained by the U.S., Chinese, or Indian firms. This obviated the hiring of local hire IT personnel to manage or even maintain the system, affordin inadequately skilled local labor no chance of participating in the production and operation process. Such unemployed personnel raised nationwide concerns about unemployment because of it was a threat to both economic growth and national security.

Corresponding Policies

Among the several suggestions for reducing the gaps in the Nigerian case was that of setting up a dialogue between universities and employers. There was proposed as an ongoing improvement of the outline of a framework to foster the partnership and interaction between academia and industry. The idea was to promote discussion of the skills gap problem and identify actions that benefited all parties, i.e., employers, universities, and the government. This could be achieved by focusing on practical work and real life situations rather than academic theory in the curriculum. The postulated benefits to employers were not limited to the generation of a stable supply of Nigerian graduates, as well as professors in the computer science and IT field who could undertake the special industry projects, but also an improvement

in the technical and intellectual capital of the overall industry. For the government, the increase in technical and intellectual capital would increase the competitiveness of the nation.

The Vietnam Experience with Qualitative Mismatch

Qualitative Mismatch Forms, Causes and Consequences

The labor mismatch in Vietnam exhibited characteristics similar characteristics to those of Nigeria and France. Anh et al. (2015) found that 47.3% of young Vietnamese workers had vertical mismatch problems. Approximately 23.5% of young employees had the overeducated problem, while, 23.8% of young employees had an undereducated problem. Moreover, the vertical mismatch could be measured by both the degree of education and training. Eighty per cent of Vietnamese labor force did not take official training, such as the training in Technical Vocational Education and Training institutions (Swiss Programme for Research on Global Issues for Development, 2015). This was one of the causes of low productivity in the country. In addition, the mismatch existed not only in urban areas, but also had a geographical component, in that there was a high concentration of highly educated labor in the urban areas and in the Red River delta. In urban areas, about 70% of labor had less than a secondary school education (Chalamwong et al., 2012); but, in rural areas, 82%t had less than a secondary school education. Further, the distribution of professional and training labor in urban areas was 30%, versus 8.6% in rural areas. For post-secondary education, 15.4% of the labor in urban areas had university or higher education, while only 1.5% of labor in rural areas had such a background.

Corresponding Policies

Despite being a developing country, Vietnam had embarked on an effort to identify the key skills that could indicate the core competencies of Vietnamese labor. The *first* one was resource-related skills that dealt with personal human resource, material and facilities, money and time management. The *second* one was interpersonal skills with the foci on client and customer and on working as team member. The *third* was information skills that focused on usage of computers

to process, interpret, and communicate the relevant information. The *forth* one was system-related skills with the focus on understanding, maintaining, and correct performance. The *last* one was technology skills that focused on applying technology to the task, and maintaining, and troubleshooting the equipment.

Given that Vietnam was a socialist country with formal education expected to be the first source of training the labor with these skills, Vietnamese employers expected that formal education would help to improve such skills and reduce the mismatch within the labor market. However, formal education in Vietnam emphasized some skills but not the others. In a recent survey of 21 employers, Vietnamese labors were considered sufficiently capable at some skills such as information skills, interpersonal skills, understanding of systems, and ability to apply technology to assigned tasks. However, several areas of needed improvement were also highlighted. These included making the government and firm realize the nature and importance of the skills gap. Then, the government was committed to undertaking a project to support employers whose labor recruits lacked such skills by providing a channel by which employers could endeavor to improve those skills of labor at work.

Vietnam's labor mismatch and policy solution was an instructive example. Vietnam chose the same development part as Thailand in term of moving from agricultural production to industrial production and export-led industrialization. This process of industrialization and economic development needed similar human resource development. Hence, without proper coordination between stakeholders -- labor, employer, and government -- there was a positive chance that labor mismatch would ensue.

In addition, Vietnam provided a contrast to Thailand. Though both countries had achieved remarkable economic growth over the past decade, accompanied by significant poverty reduction, Vietnam chose an inclusive growth path while Thailand chose a redistributive growth path. Redistributive growth was the process wherein the benefits of economic growth flow from one group of population to other ones. It could be from the capitalist to labor or vice versa. That is, under the development

process, Vietnamese enjoyed a relatively wider participation and better allocation of benefit from economic activities than Thais did. This shared income from economic development had enabled the Vietnamese labor to invest in education for not only themselves, but also for their children. The investment in education from the private sector certainly reduced the problem of skill mismatch since Vietnamese believed that education improvement would lead to improvement in not only better career choices, but also the skills required by employers. In addition, as a hub of the electronic and electric industry in ASEAN, Vietnam's education and labor policies were thought to be the most directly relevant to Thailand since Thailand relied heavily on electric and electronic product export as the main source of national income.

Exhibit 6: The New Human Resource (HR) Practices

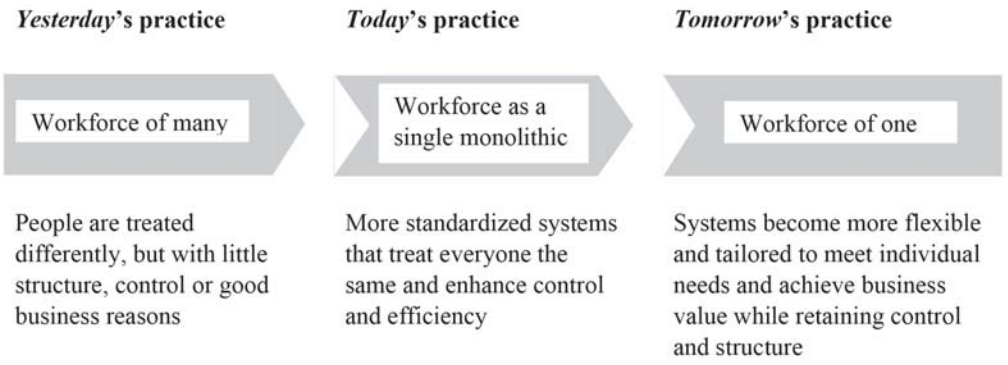
The contemporary HR practices of MNCs could be categorized along several dimensions: new hiring practices, new training provisions, and new approaches to maintaining the workforce and skills pools.

Hiring Practices

In recent years, the adoption of the "*today practice"* form of HR management had been common in most countries, including Thailand. In *today* practice, the treatment of workforce as monolithic entity led to practices that emphasized cost and control of the standardized worker who was supposed to have the same skills set as perceived by HR managers (see chart below). That is, when an engineering graduate was hired, he or she was supposed to have sufficient common skills to perform the duties of an engineer. This led to hiring practices that encompassed the use of a standard format application and screening process. The standard format yielded efficiency in filling the job vacancy fast, but it could not solve the problem of qualitative mismatch that was much more crucial. For example, assuming that every industrial engineering graduate has the same skill set, the HR manager would quickly use the grade point average, institution, and standardized test as the key recruiting criteria. In addition, to make matters worse, when a skill mismatch

occurred, the solution prescribed for hiring practices was either employing an external recruiter or raising the announced salary.

Evolution of Talent Management



Source: Good et al. (2015)

By following the trend of *tomorrow*'s practice (see chart above), the hiring process had to become more flexible and tailored to meet both employers' and employees' needs. In order for hiring practices to be flexible, the forward skill and workforce planning approach had to be in place. HR manager would consider and work with every part of the organizations to determine the skills needed to increase the business value of the firms. That is, there should be a development of information technology and database system regarding skill deficiencies and available skill supply within the workplace or, if possible, within the domestic labor market. In addition, the projection of skills needed should consider the current social constraint, such as an aging society and a new generation of labor and youth. However, the cost of developing the information systems and forecasting would be high and would therefore necessitate public and private collaboration.

For aging societies, the concern was that both qualitative and quantitative mismatch that would lead to reduced skill and talent pools. Therefore, the hiring practices had to focus on maintaining the labor force within the organization by promoting existing employees and recruiting recent graduates. For the youth and new generation, there is the recent trend of using gamification and technology to improve the hiring practices and recruitment process. For example, America's

Army® (AA) was developed as a serious type of game that integrated an element of the Army's recruiting program. AA was the simulation-based game that conveyed the challenges involved in common Army missions that made the soldier's role appealing to the Army's targeted audiences, especially high school graduates (Good et al., 2015).

Training Provisions

Even if Thailand had a low unemployment rate, some youth and high school dropout employment was in the informal sector where there was no proper training. Hence, these job holders' acquired skill could not help them get the job in the formal sector. In addition, in recent years, the bachelor degree graduates contributed mostly to an increase in the unemployment rate since they were either lacked the proper skills or were overeducated in an irrelevant field of study. Therefore, the training offered by the firms started from the "ground up," with the basic or common skills incorporated in to the training program. This helped maintain partial control and structure of the organization. Concurrently, *complementary tailored training* focused on filling the individual skill gaps and reducing the skill mismatch that would later benefit both employers and firms. For instance, overeducated workers could follow firm-specific training courses that could align their "surplus" knowledge to that required by the firms. Furthermore, skill gaps could be eradicated through firm-sponsored training or by providing individuals with relevant incentives to participate in upskilling. Formal courses or on-the-job training could benefit those suffering from skills obsolescence due to ageing or a prolonged period of employment in the informal sector (European Centre for the Development of Vocational Training, 2012).

Though use of gamification in training was still at an early stage, it stimulated the learning experiences of the new generation and enhanced the success of the training. For example, Cold Stone Creamery® used the Stone City game to help employees learn the correct "portioning behavior" for ice cream and made them understand its effect on profitability and customer satisfaction. A viscosity model simulation stressed the way in which various flavors form the "scoop" differently.

Success in the game required speed and skill, which made the simulation and training fun and effective for the younger generation (Good et al., 2015).

This integrated training, along with properly updated labor and product market information, increased the benefits of such on-the-job training. Both were necessary for workers to continuously adjust their skills and meet changing job demands that would further reduce the mismatch in the work place. In addition, receiving continuous training helped in retaining the internal organization work force and further improving the skill supply in the larger labor force.

Maintaining the Pool of Workforce and Skills

The first important point for maintaining a suitable workforce within the organization was *performance appraisal and management*. With proper execution, it further reduces the skill mismatch, as well as encourages people who had acquired the needed skill to remain with the firms. Given that mismatch at the initial stages of individuals' careers was a common feature of labor markets, the responsiveness of performance appraisal was crucial for counteracting the prevalence and perpetuation of skill mismatch by monitoring progress of training and offering feedback on staff performance. The manager could be constantly alerted to potential problems in skill fit and task allocation. This further enhances the value of training and reduces the frustration of new employees, as well as increases their job satisfaction.

Recently, the use of gamification has been applied to maintain the workforce and skills pools. In retaining young professionals, games provides instant feedback or reward in a timely manner. For example salesforce.com, Inc. had adopted the work.com application. The application uses gamification mechanisms to provide timely feedback to employees and to identify high performers. Employees are able to recognize fellow salespersons by the customized electronic badges that show their achievement level. The recognition or game achievement employees receive became part of their social profiles, making their reputation visible throughout the enterprise. The human resource manager could also use the game score to evaluate

each employee and provide timely feedback for further training.

The second contemporary practice in the areas of workforce and skills retention concerns *wage policies*. Contemporary HR practices propose that firms differentiate employees' payment according to mismatch status. The mismatch status is digitally recorded in to the database and used heavily in wage determination. The record is updated before and after each training endeavor that aims at reducing the mismatch. The idea is based on the hypothesis that before the training, the offered wage would not help in reducing the mismatch problem or truly reflect the real potential of each employee. However, after proper training and appraisal, the wage should not be used only as an indicator of employees' skill and productivity but also as a tool to retain the organization's employees. In addition, the management of the wage premiums/deficits are supposed to take into account whether they actually reflect different employee's productivity and the other relevant factors such as the competitive environment within the organization.

The last contemporary practice in employee and skills retention addresses *career development*. Despite proper training, appraisal, and wage alignment, if there was no room for growth within the organization, it would be hard to retain keep the pool of talents and skills. Career development starts from the beginning of the post-recruitment period. Employees perceive their career development through being offered vocational adjustment training during the probationary period. This not only enhances the quality of the job match for the new recruits, but also signals that these firms cared about the careers of their employees. In addition, after the probationary period, firms apply whatever HR mechanisms to identify and adjust their workers' competences and skills. This creates information on the pool of skills within the organization and helps in planning for further recruitment, or even dismissal, to reduce the mismatch.

Moreover, career development is possible only when both employer and employee had set up formal contractual arrangements. Therefore, the HR management had to reconsider the benefits and costs of *non-permanent contractual arrangements*. In the past, the non-permanent arrangement increased flexibility in

terms of cost control. However, in this era, it is conducive to skill mismatch since it diminished incentives for firms to invest in training and thereby reduced the loyalty of employees. Lastly, given the reality of *ageing societies*, career development for older employees has become more important and is receiving greater attention in contemporary HR practice. The investment in training older employees is beneficial in retaining them as well as in updating the organization's knowledge and technology in order to lower the incidence of both quantitative and qualitative mismatch.

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