5

HIGH-QUALIFIED LABOUR AND SKILLS: THE SUPPLY SIDE

In this chapter, we delve into the supply side of high-qualified labour and skills in Penang. We elaborate on relevant supply side developments and constraints after some general observations on labour force growth and participation rate. An overview of the availability of high-qualified labour is followed by an analysis of skill supply in terms of occupations and skill sets. Through macro-data and findings from the employer survey, we give insight into recruitment patterns and difficulties. The latter allows identification of skill shortages in the market. We end with discussion on labour competition and how firms deal with this issue[46].

[46] Earlier versions of parts of this chapter are included in the project inception report, and Terhorst, J. and T. Verbraeken (2016). *Making the Transition into a High-Income Economy:* The Penang Case. Master Thesis, Department of Human Geography and Planning, Faculty of Geosciences, Utrecht University, The Netherlands.

5.1 Overview of Penang workforce

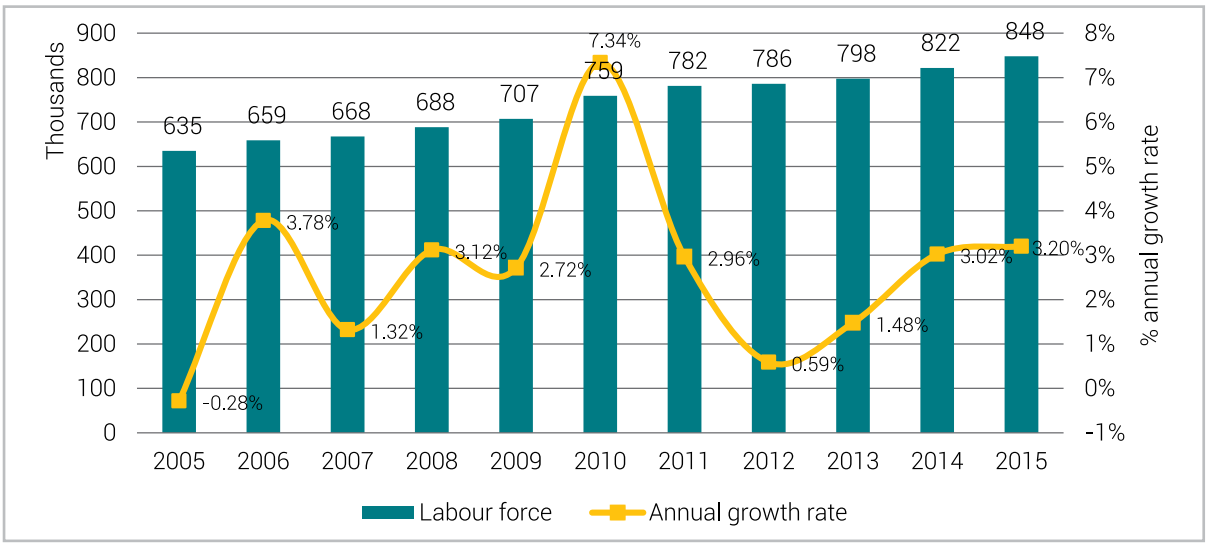
The labour force has steadily increased over the past 10 years, and it is made up of some 848,000 persons in 2015 (Figure 5.1). This means a labour force participation rate of almost 70% in Penang, which is slightly higher than the whole of Malaysia (68%) (Figure 5.2).

This was mainly due to the increased participation rate of women in the workforce. Since 2005, male participation rate has remained stable at about 80% while the female participation rate went up by almost 10 percentage points (from 49% to 59%) (Figure 5.3).

Penang's labour force participation rate is expected to remain steady in the coming years, and it may even show an upward trend as re-entry of women in the labour market is on the rise. It grew steeply during the 1997 Asian Financial Crisis from 60.6% in 1996 to 68.2% a year later (Figure 5.2). Prior to this crisis, Penang's labour force participation rate was below that of Malaysia as a whole. As Penang's economy grew, its rate surpassed the national average rate and moderated to 69.0% in 2016 from 69.9% in 2015; it ranks third after Putrajaya (77.6%) and Selangor (74.2%) respectively despite being the second-smallest state in Malaysia.

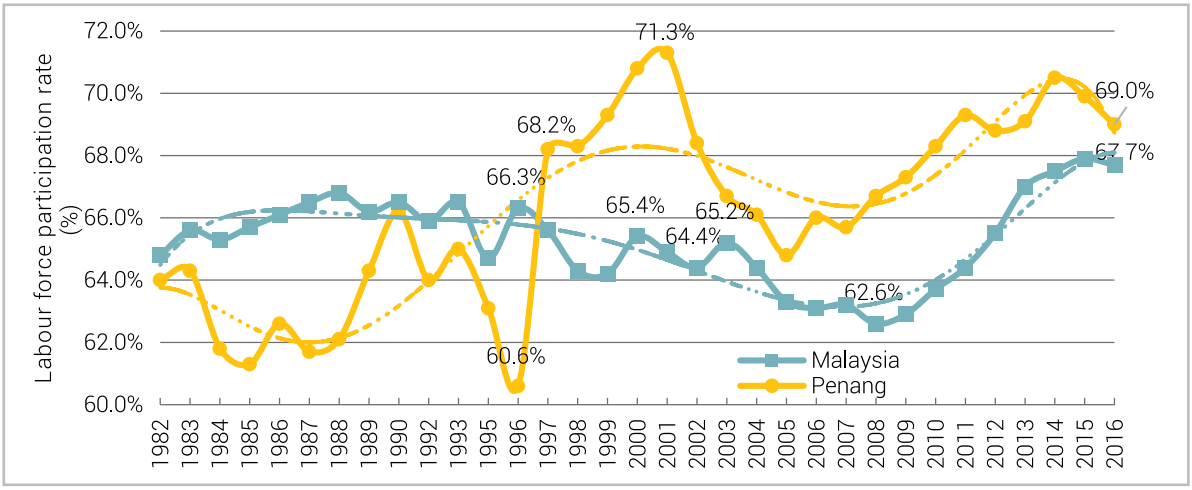
The unemployment rate, on the other hand, has declined steadily after a peak during the global financial crisis in 2008–2009. Both the Malaysian and Penang economies have experienced full employment with unemployment rates dropping to 3.44% and 2.1% respectively in 2016 (Figure 5.4).

Figure 5.1: Labour force growth in Penang, 2005-2015



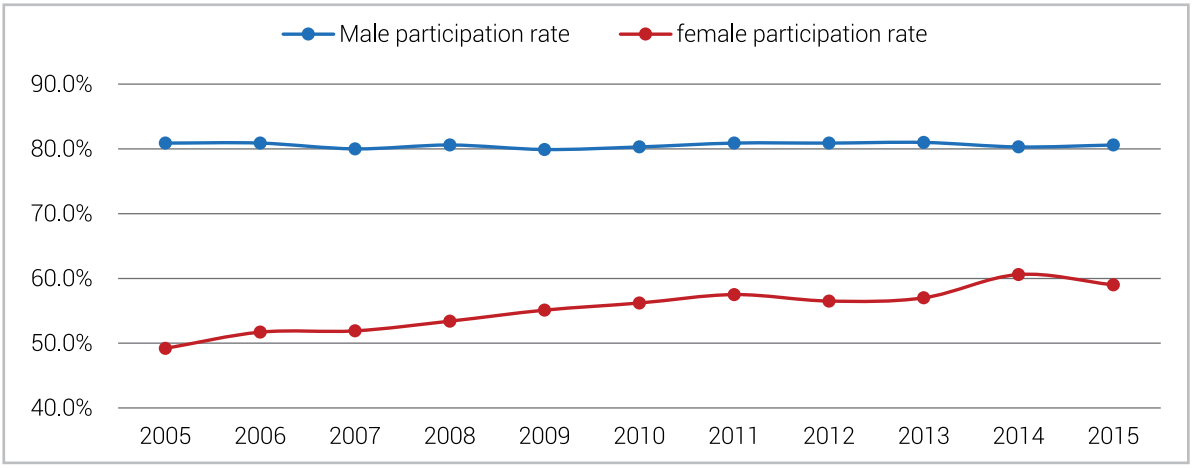
Source: Own calculations based on Labour Force Survey Reports, DOSM

Figure 5.2: Labour force participation rate in Malaysia and Penang, 1982–2016 (%)



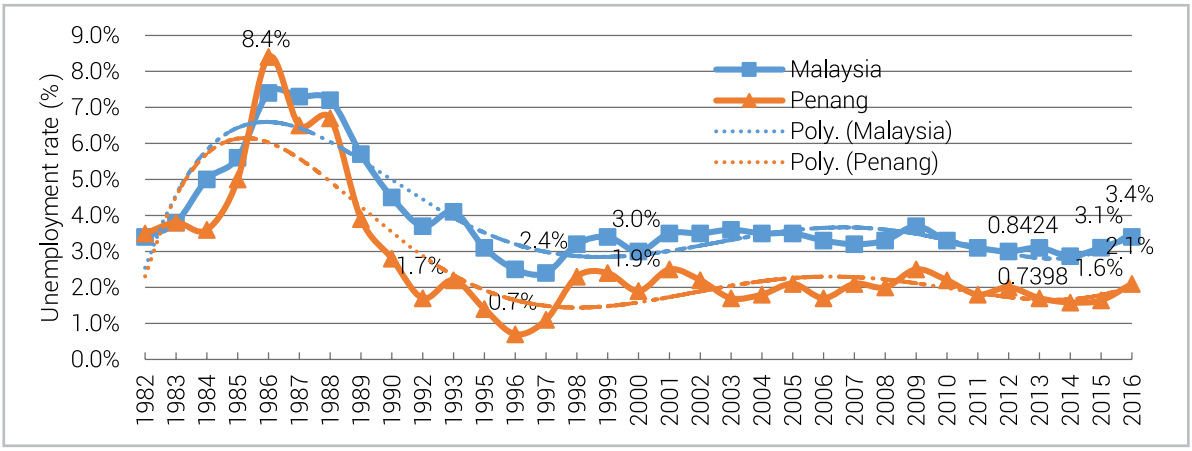
Source: Own calculations based on Labour Force Survey Reports, DOSM
Note: 1992 and 1994 are not available

Figure 5.3: Labour force participation rate by gender in Penang, 2005–2015 (%)



Source: Own calculations based on Labour Force Survey Reports, DOSM

Figure 5.4: Unemployment rate in Penang and Malaysia, 1982–2016



Source: Own calculations based on Labour Force Survey Reports, DOSM
Note: 1992 and 1994 are not available

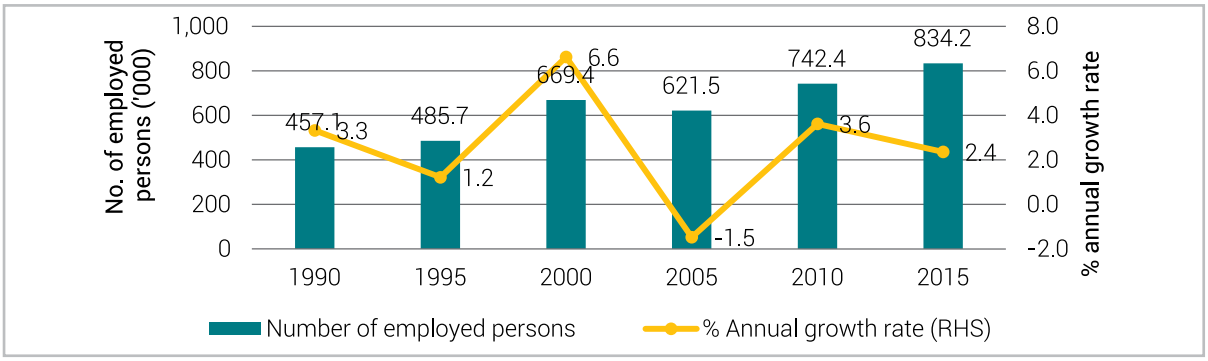
Employment has also seen favourable growth. The number of employed persons and annual growth spike in 2000 following a growth rate of 6.6% annually from 1995 to 2000 (Figure 5.5). In 2015, employment hit a new high despite a lower rate of growth over the past 10 years and is predicted to grow further with more influx of foreign and domestic investments in the manufacturing and services sectors. This will attract more people to the state, as reported in the 2016 Migration Survey Report by the Department of Statistics Malaysia.

The growth in employment along with low unemployment rate indicate a continuous robust labour demand, which the supply has difficulty keeping pace with despite more people entering the labour force. Over the period from mid-2013 to mid-2015, there have been about 21,000 advertisements for higher-qualified positions posted annually on the online job portal. Representing substantially less unique vacancies, more than half of these have been in the manufacturing sector while the electronics/semiconductor/wafer fabrication industries accounted for approximately 40% of vacancies in manufacturing sector.

Nonetheless, Penang's largest share of employment is now in the services sector, where its share has increased by about 10% from 49.2% in 1990 to 58.8% in 2015 (Figure 5.6). In particular, wholesale and retail trade, restaurants, and hotels activities accounted for the largest share of employment in this sector. Meanwhile, the manufacturing sector consistently made up more than one-third of the entire employment even though the number of employed people shrank gradually during the 2000s. The latter likely reflects the manufacturing landscape moving towards more technology- and knowledge-intensive operations, and also activities such as R&D, business management, outsourcing and software development.

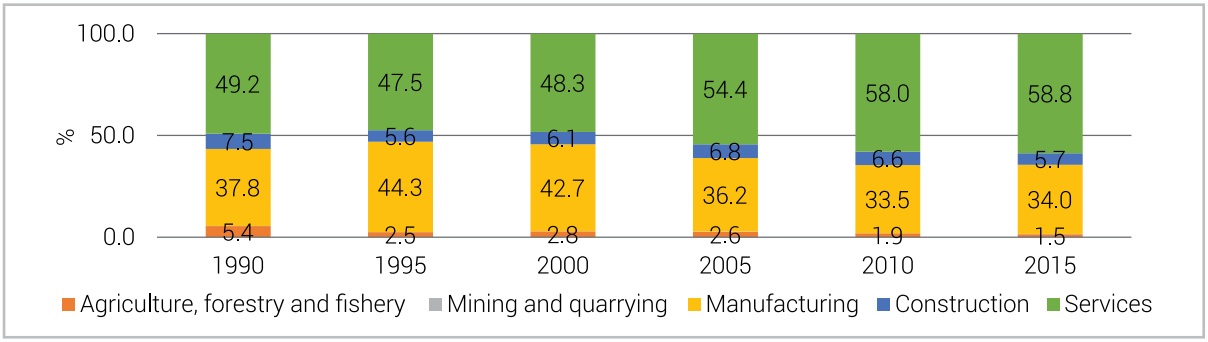
It should be noted that the services sector is heterogeneous, including lower level services such as community, social and personal services, administrative and support service activities. Between 2000 and 2015, the manufacturing sector's share of employment has declined by almost 9%. This corroborates a shift in labour demand towards the services sector.

Figure 5.5: Number and annual growth rate of employed persons in Penang, 1990–2015



Source: Own calculations based on Labour Force Survey Reports, DOSM

Figure 5.6: Share of employed persons by economic sector in Penang, 1990-2015



Source: Own calculations based on Labour Force Survey Reports, DOSM

5.2 Availability of high-qualified labour

On the demand side, skill needs have been expanding and evolving as the economy progresses. This demand has been increasingly directed to the availability of higher-qualified and skilled workforce. The sources of high-qualified labour supply include:-

i. Primary supply
   New entrants from educational institutions; retired persons exit the labour force;
ii. Secondary supply
   Existing workforce moves in the labour market, including in-migration and out-migration (regionally and internationally);
iii. Tertiary supply
   Unconventional workforce re-enters the labour market, including housewives, disabled persons, etc; and
iv. Quaternary supply
   Human talent is sourced from abroad to complement skills that are not available in the local market.

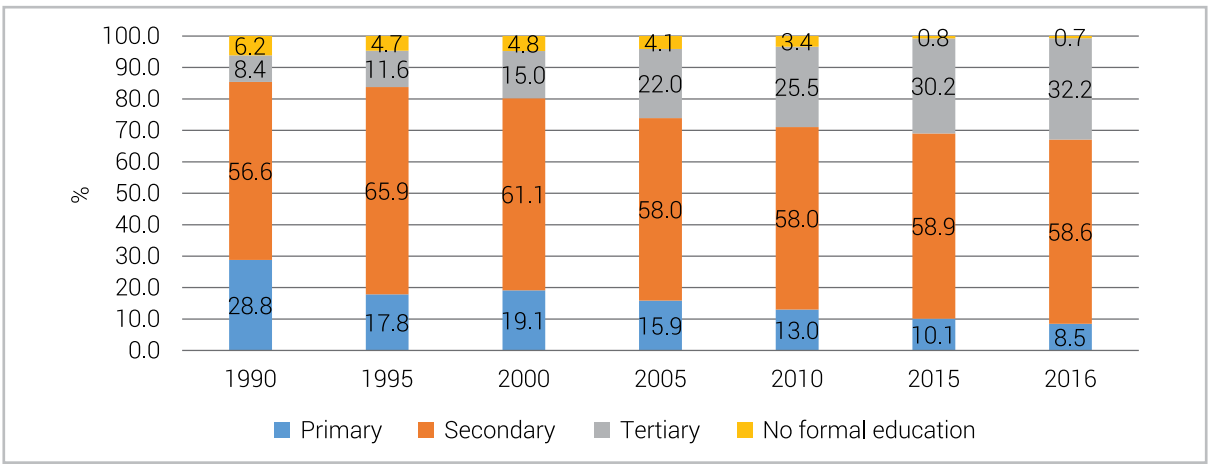
We focus here on primary and secondary supply sources.

5.2.1 Primary supply

The primary source of labour supply makes a fundamental contribution to high-qualified labour and skill competences in the job market, regardless of industry needs in all economic sectors. Malaysia's public institutions produced an average of about 113,682 graduates yearly from 2008 to 2015, with an increase rate of 3.8% annually. Social Sciences, Business and Law consistently constituted about one-third of the total graduates, followed by Engineering, Manufacturing and Construction, Science, Mathematics and Computer.

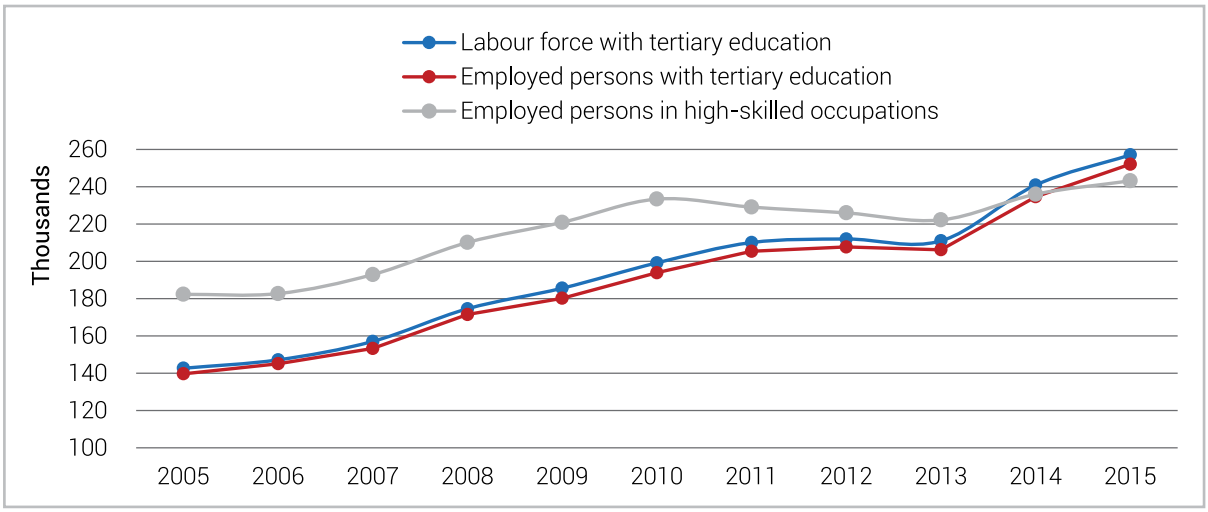
An increase in enrolment in tertiary education has translated into a relative increase of tertiary-educated labour force. After a steep rise between 1995 and 2005, tertiary education student enrolment has moderated in the past decade. Its share of employment has expanded by more than three-fold from 8.4% in 1990 to 32.2% in 2016 (Figure 5.7). While secondary-educated hires have not been varied significantly, primary-educated – and formally uneducated – hires have declined sharply during this period. This shows that Penang's employment market is progressing towards tertiary-educated hires. Furthermore, Penang ranked the fourth largest labour force with higher education in Malaysia (Table 4.1).

Figure 5.7: Share of employed persons by educational attainment in Penang, 2005-2016 (%)



Source: Own calculations based on Labour Force Survey Reports, DOSM

Figure 5.8: Employment numbers of tertiary-educated and high-skilled[47] occupations in Penang, 2005–2015



Source: Own calculations based on Labour Force Survey Reports, DOSM

Table 5.1: Top five states with tertiary-educated labour force in Malaysia, 2016

State	Labour force ('000)	State labour force (%)	Tertiary-educated labour force ('000)	State tertiary-educated labour force (%)
W.P. Putrajaya	38.9	0.3	26.4	67.9
W.P. Kuala Lumpur	855.4	5.8	365.2	42.7
Selangor	3, 325.0	22.7	1,250.2	37.6
Penang	845.5	5.8	273.7	32.4
W.P. Labuan	43.6	0.3	13.1	30.0
Terengganu	447.2	3.0	134.1	30.0
Malaysia	14,667.8	100.0	4,065.1	27.7

Source: Own calculations based on Labour Force Survey Reports, DOSM

It appears that the absolute number of employed persons in high-skilled occupations have increased over the past decade, aside from the aftermath of the financial crisis (2010–2013). The aggregate supply of tertiary-educated persons has kept pace with the increase in demand for high-skilled labour, and the gap between the two has gradually closed, without necessarily engaging all tertiary-educated persons in high-skilled occupations. Since 2014, the supply of tertiary-educated persons, as well as the number of employed people with tertiary education exceed the number of those employed in high-skilled occupations. In fact, considering the entire decade, the number of employments with tertiary education have doubled that of high-skilled occupations. It appears that an increasing share of tertiary-educated hires has not been absorbed in high-skilled work.

[47] There are differences on the skill classes employed by the World Bank and the Department of Statistics Malaysia. The World Bank defines high-skilled as legislators, senior officials, managers, professionals, technicians, and associate professionals. Mid-skilled includes clerical workers, service, and sales workers. Low-skilled includes agricultural, forestry, and fishery workers, craft and trade workers, plant and machine operators and assemblers and elementary occupations. The Department of Statistics Malaysia categorises elementary occupations as low-skilled, and the rest of the low-skilled categories are mid-skilled. This graph follows the World Bank's skill positions classification.

5.2.2 Secondary supply

The secondary supply of labour consists of experienced workers who change jobs. This includes local shifts among experienced workers, as well as those moving from other states into Penang due to career opportunities and family matters. Impinging on both primary and secondary supply is a well-known phenomenon of brain drain.

a) Internal migration

Many employers opined that high-qualified workers with relevant work experience are not always easy to source. When there are insufficient experienced workers locally, employers may recruit workers outside Penang. For example, Penang faces a scarcity of IT professionals, and this has resulted in employers sourcing candidates from Kuala Lumpur or Singapore. Given the attractive fringe benefits, some workers are willing to move to Penang.

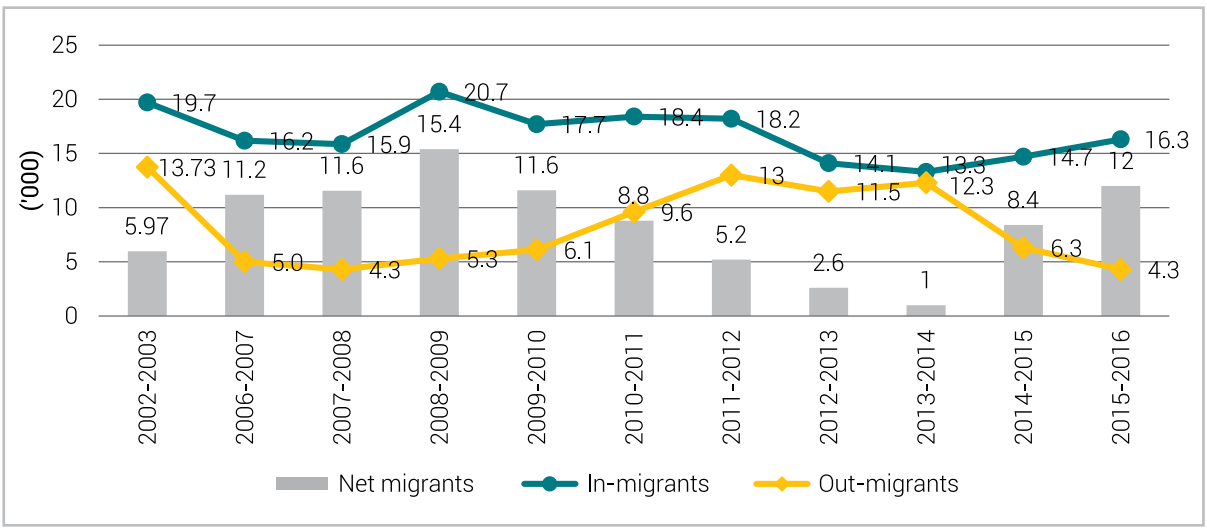
Labour in-migration thus constitutes part of the secondary supply. While Penang's net migration has been dawdled since the period of 2008–2009, it gained momentum again from 2014–2015; and grew at about 43% in 2015–2016 (Figure 5.9). This was mainly attributed to the sharp drop in the number of people moving out of the state.

In 2014-2015, about half of migrants aged 15–64 years who had moved to Penang were tertiary educated; about one-fourth of the in-migrants worked in sales and services occupations, followed by plant and machine-operators and assemblers, and professionals; nearly two-thirds of them employed in the services sector.

b) Local job mobility

A significant part of the secondary supply becomes available, or operates through labour mobility internal to the local labour market. As noted in Chapter 2, the Penang's labour market appears at a high level of mobility as indicated by applications to vacancies. Specialisations that receive a multiplier of more than 100 applications are engineering, manufacturing, accounting and finance, human resource, and education and training. This is far higher than expected if job applicants were mainly new entrants or unemployed. Although unemployment has become a source of labour supply, and the jobseeker ratio has eased as shown in Figure 4.8, unemployment level is still too low to be a significant factor in supply.

Figure 5.9: In-, out- and net migrants in Penang, 2002–2016



Source: Migration Survey Reports, DOSM

It should be noted again that the number of unique job applicants are far fewer than vacancies given the widespread practice of jobseekers applying multiple times. We have reasoned earlier that the anomaly implied in these data actually reveals a high level of labour mobility for those who are employed, as well as a prevalence of generic skills in the market. High mobility inclination implies the opportunity for firms to recruit more experienced workers through the channel of secondary supply. In fact, employers seemingly enjoyan abundant labour supply, while in actual fact the market is constrained. We surmise that the actual surplus should be sought in generic skill sets. This condition contributes partly to workers in unemployment (which is likely to explain the upward trend of jobseeker ratio, Chapter 6).

The application pattern appears to apply even more to the public sector. Reportedly, the Public Service Commission (PSC) received 1.56 million applications in 2016 to fill 25,046 vacancies in the public sector. If each applicant concurrently applied for 10 positions, this means that the job vacancies in the public sector each had more than 600 responses. It is a known fact that jobseekers are attracted to the public sector because of its attractive remuneration package – long-term security, pension scheme, affordable healthcare and housing loans – some of which are not limited to the entitlement of family members.

The tendency of high worker mobility appears ingrained in employees as they continue to seek a better position after a short period of employment. This situation resembles an 'employment carousel' where job-hopping can be seen to speed career advancement and ascend up the corporate ladder.

c) Brain drain

When a supply-demand misalignment occurs in a growing number of tertiary-educated graduates, which is attributed to less attractive salary and not on the par with earnings that can be obtained by employment, high-qualified labour may choose to remain outside the labour force, opt for more lucrative self-employment opportunities, or move outside the local labour market. All three scenarios appear to occur in Malaysia. The latter is definitely the case: there is ample documentation that Malaysia is experiencing significant brain drain, meaning that talent (high-qualified labour) moves out of the labour market to seek better opportunities overseas[48].

A survey conducted by Hays (Mar 2015) revealed that among 2,553 job applicants, 93% of them would contemplate leaving Malaysia to work overseas. According to World Bank (2011a), the main factors attracting Malaysian talents to move abroad include differences in earning potential, career prospects, quality of life and quality of education. Discontent with Malaysia's inclusiveness policies also plays a role; particularly among non-Malays who make up the majority of the diaspora. Following this, 'Loss of Young Talent Thwarts Malaysia's Growth' published by the New York Times stated that skilled workers or teenagers believe that Singapore provides better education systems, and offers higher salaries and opportunities to develop their fullest potential, which leads to better career advancement[49]. World Bank (2011) shows that the number of Malaysian diaspora[50] and brain drain[51] have escalated in 2000–2010 (Table 5.2). Brain drain from Malaysia to Singapore increased by more than 80% in the 10-year period.

48 See Choong et al. (2013); Jauhar et al. (2011, 2015, 2016); World Bank (2011)
49 See Gooch (2010)
50 Diaspora refers to the stock of Malaysian-born migrants, regardless of skill profile. Table 5.2 shows the diaspora numbers and percentage change between 2000 and 2010 for those aged 0+.
51 Brain drain here refers to the stock of tertiary-educated Malaysian-born migrants, aged 25 and above.

Table 5.2: Size of the Malaysian diaspora (age 0+) and brain drain (age 25+), by country of destination over time in numbers and % difference

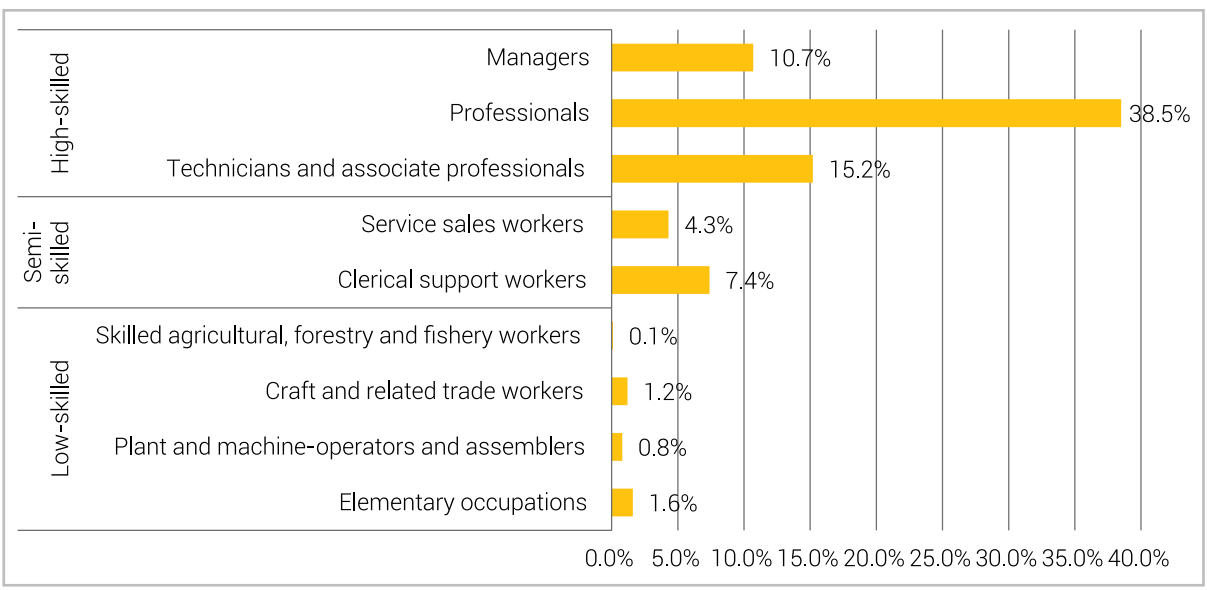
Country	Malaysian Diaspora (age 0+)			Malaysian Brain Drain (age 25+)		
	2000	2010	% Change	2000	2010	% Change
1. Singapore	303,828	385,979	27.0	66,452	121,662	83.1
2. Australia	78,858	101,552	28.7	38,620	51,556	33.5
3. United States	51,510	61,160	18.7	24,085	34,045	41.4
4. United Kingdom	49,886	65,498	31.3	12,898	16,609	28.8
5. Canada	20,420	24,063	17.8	12,170	12,807	5.2

Source: World Bank (2011a)

Brain drain in Malaysia is most critical in occupations classified as high-skilled (managers, professionals, technicians and associate professionals). According to a research undertaken by Penang Institute, high-skilled occupations accounted for more than 64% of the brain drain in Malaysia (Figure 5.10).

Just like Malaysia as a whole, Penang has been experiencing brain drain and difficulties in retaining talent. Although this can be to some extent compensated by hiring high-qualified labour from abroad – a practice companies have resorted to given the less inflow of talent into Malaysia – such drainage has negatively impacted quantitative and qualitative availability of higher-qualified labour and skills[52]. Unfortunately, available data do not allow disaggregation to Penang state level. But the data presented in Figure 5.10 can still serve as an indication of the patterns of labour outflow from Penang. Since the concept of brain drain mainly applies to tertiary-educated labour, it is conceivable that the results of brain drain studies in Malaysia are to a larger extent relevant to states that include large numbers of tertiary-educated persons. Penang is one of those states.

Figure 5.10: Brain drain by occupation in Malaysia, 2014



Source: World Bank (2011a)

52 See Kharas et al.(2010)

5.3 Skill supply

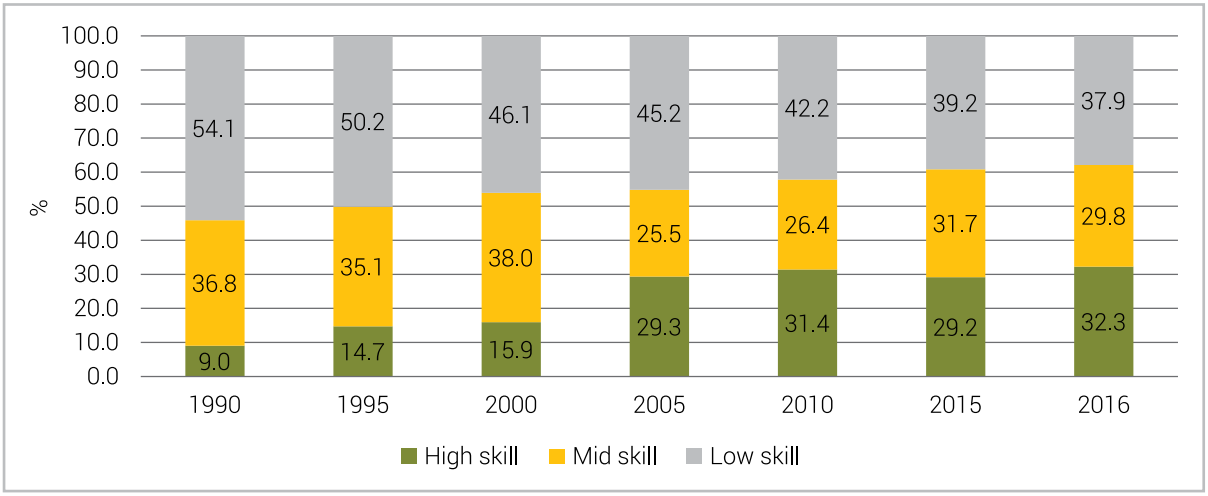
On the supply side, high-qualified workforce has expanded in absolute terms and proportionately in comparison with other categories. However, this is hardly a measure of sufficient higher-qualified labour skills availability. In Chapter 2, we have reasoned that while the overall workforce has been growing, employment growth induced by growing demand for labour, as well as demand shifts, results in a ***constrained*** labour market situation from a higher-qualified skills perspective.

Earlier, we observed a discrepancy between the increase in tertiary-educated employees and the number of employees in high-skilled occupations. While the number of employed persons in high-skilled occupations has increased in absolute terms, it is striking that the share of employment in high-skilled occupations has remained the same over the past decade (Figure 5.11). A significant surge occurred in the 2000–2005 period, but the upward trend did not sustain. Combining these facts, several developments are suggested. First, the trends may have contributed to brain drain. Second, the overall upgrade of the economy (in part moving up the value chain) shown in the first half of the last decade appears to have been halted. The major cause is not attributed to lack of high-qualified labour per se, but rather qualitative skill issues.

There seems to be a qualitative misalignment between the demand and supply of skills in the Penang labour market[53]. When high-qualified labour leave, a considerable share of the remaining labour appears to show deficiencies in qualifications and skills, and as a result, employability suffers. Despite its constrained labour market situation, this is only reflected in higher unemployment among relevant groups (See Chapter 6).

It becomes evident that there exists a mismatch between demand and supply in terms of high-qualified skills. When high-skilled workers leave the labour market, companies face difficulty filling gaps in critical areas where they most need to attract and keep labour. As a result of skills deficiency, part of the tertiary-educated pool would have to take up lower level jobs. These findings – which lend evidence of a middle-income trap – can be supported by the initiatives done by the state government in recent years, industry collaborations and a growing number of private institutions providing skill training.

Figure 5.11: Percentage of employed persons by skills spectrum in Penang, 1990-2016



Source: Own calculations based on Labour Force Survey Reports, DoSM

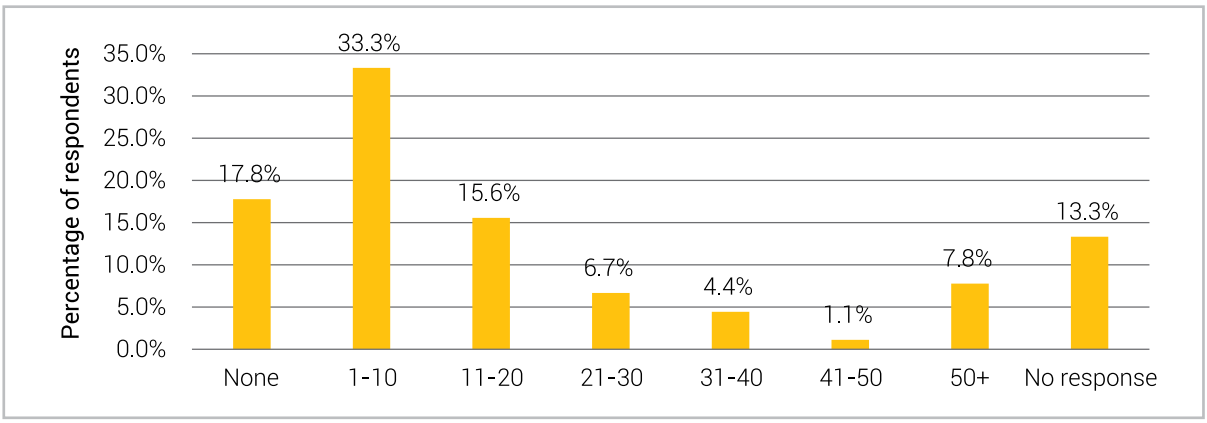
[53] As noted in the general introduction of this report, a range of studies and reports have documented and discussed this issue for Malaysia as a whole, different sectors in the economy, and different regions. See Fleming and Søborg (2012), Jimenez et al. (2012), Junaimah and Yusliza (2011), ILMIA & UPM (2016), IPSOS Business Consulting (2012, 2014a), KPMG (2012), MCMC & ILMIA (2015), PwC (2013a, 2013b), World Bank (2011a), World Bank & ILMIA (2014). PwC (2013b) and Penang Skills Development Centre (PSDC, 2012) are recent reports pertaining to Penang.

5.3.1 Skill supply at firm level: Recruitment patterns

To understand the employers' labour recruitment strategy and hiring characteristics, a number of questions were included in the employer survey. Nearly 70% of responding firms use JobStreet.com as a recruitment platform (Figure 5.14). To put recruitment in perspective, 56% of the companies did not advertise vacancies more than 30 times during the first six months of 2016.

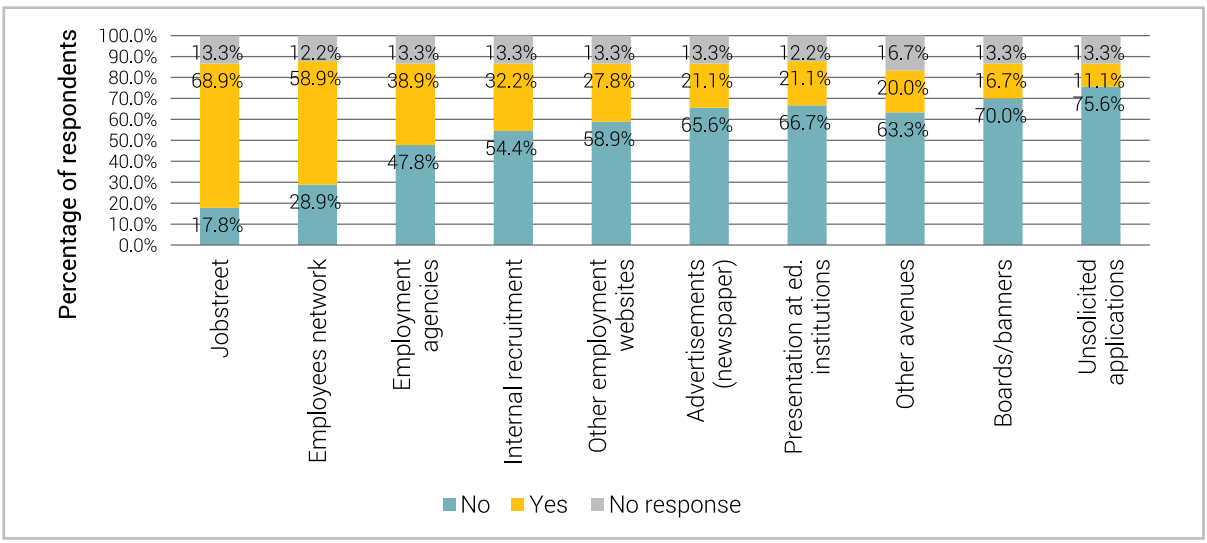
Some companies engage other recruitment channels such as employee network, employment agencies and internal recruitment to fill job openings. Apart from JobStreet.com (which is used as the prime recruitment platform), employee network is the next most favoured recruitment channel, followed by employment agencies and internal recruitment (Figure 5.13). Some recruitment agencies indicated that companies have a tendency to engage them for positions requiring experience as well as managerial positions. Nonetheless, some 11.1% of employers accepted unsolicited applications.

Figure 5.12: Number of times high-skilled positions have been advertised by employers from December 2015 to June 2016



Source: Employer survey

Figure 5.13: Responses on recruitment channels

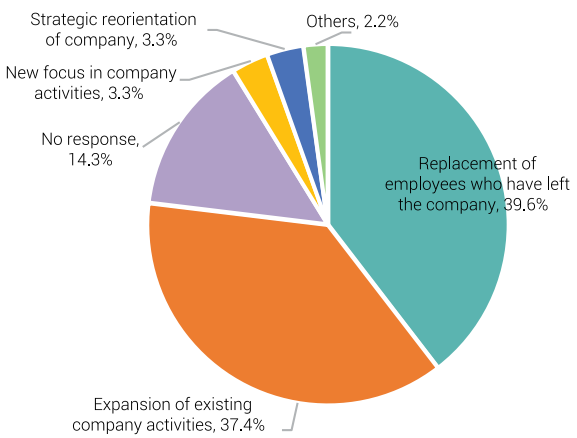


Source: Employer survey

If vacant positions are filled from the secondary supply, chain effects occur necessitating a range of employers placing job advertisements to recruit employees for positions that have been vacated. Companies hire employees to fill new positions created in the companies. From the employer survey, job openings were mainly attributed to replacement of employees who have left the company. Nearly 40% of the respondents stated this as the main reason for advertising job vacancies (Figure 5.14). Expansion of company activities came next with about 37% of firms stating this as the main reason for job openings.

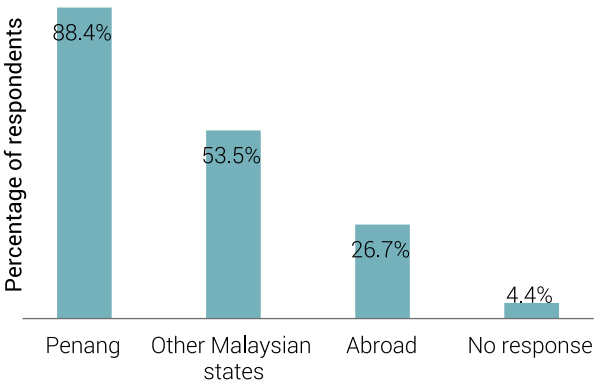
Labour recruitment primarily focused on Penang, followed by other states in Malaysia (Figure 5.15). Firms expand their recruitment reach to overseas job markets especially if they cannot find suitable persons locally to fit their precise needs. As stated by recruitment agencies, software developers specialising in SAP, Oracle, Java and .Net programming, as well as semiconductor circuit designers, are scarce in the local market, leading employers to import employees with these specific skills from abroad (e.g. India).

Figure 5.14: Main reason for advertising high-qualified positions



Source: Employer survey

Figure 5.15: Where do firms recruit labour for high-qualified positions?



Source: Employer survey

As information can be rather sensitive, firms were not keen to disclose responses to advertisements. For those that shared this information, most firms received an average of over 50 applications for each vacancy advertised (Table 5.3). This includes only 'eligible' ones. Several recruitment agencies stated that on average, 80% of job applications are irrelevant to the vacancies. Only 20% of applications are considered by employers for further evaluation. Not surprisingly, GBS firms receive far more than 50 applications on average for each vacancy. What contributes to this is the fact that skills required by GBS companies are widely available in the Penang market (in other words, they are related to a range of occupational skills). Although these companies are largely buyers in the market, job seekers are well-informed about their presence and growth and thus, are considered attractive employers.

Applications vary somewhat between positions. For instance, finance positions would receive far more applications than software development. The number of job applications tend to narrow down as the level of position becomes higher. Senior positions have a lower number of applications than fresh or junior positions.

Table 5.3: Employers' responses towards average number of applicants for advertised vacancies

Type of industry	Less than 50	51-100	101-200	201-300	More than 300	No response	Total
High-tech manufacturing	5	0	2	2	0	2	11
Other high-tech manufacturing	5	3	0	1	0	1	10
Precision Engineering & Automation	2	0	0	1	0	2	5
Medical Devices & Life Sciences	0	1	0	0	0	2	3
Advanced Producer Services & Financial Services	7	6	0	0	1	5	19
Global Business Services	2	4	3	1	0	1	11
Hospitality Services	3	0	1	0	0	5	9
Information Technology	5	2	1	0	0	4	12
Transport & Logistics	2	0	1	0	0	1	4
Education & Training Services	1	1	0	0	0	2	4
Medical Tourism	3	0	0	0	0	1	4
Total	**35**	**17**	**8**	**5**	**1**	**26**	**92**
% share	38.0	18.5	8.7	5.4	1.1	28.3	100.0

Source: Employer survey

A majority of firms offer candidates permanent positions as part of the employment terms except for precision engineering & automation and medical tourism industries. In some situations, companies hire candidates on contract or temporary basis due to budget constraints and other considerations. The duration of the contract is generally not longer than a year.

5.3.2 Recruitment difficulties

The employer survey also asked employers to state their success in recruitment; reasons for vacancies left unfilled; and whether job requirements have been fully met. Only a small majority of firms succeeded in filling all vacant high-qualified positions. Firms in other high-tech manufacturing, hospitality services and medical tourism clearly did not achieve the desired result (Table 5.4). Across industries, a large number of firms did not manage to fill high-qualified positions except medical devices and transport & logistics. GBS emerged again as the industry with the highest success rate (apart from medical devices). In terms of firm size, small and medium enterprises (SMEs) and multinational corporations (MNCs) recorded a higher share of filling the vacant positions compared with local large companies (LLC)[54]. This seems to suggest that at least some SMEs do not face problems in hiring.

[54] In this study, we use the number of headcount to define SMEs. A manufacturing firm is categorised as an SME if its total full-time employees do not exceed 200 headcounts while a firm from services sector is regarded as SME if its full-time employees do not exceed 75 headcounts. Firms that have more than these headcounts, are deemed as LLCs (Bank Negara Malaysia, 2013).

Table 5.4: Success rate in filling vacant high-qualified positions

Types of industry	Yes		No		No response
	No.	%	No.	%	
High-tech manufacturing	7	63.6	4	36.4	0
Other high-tech manufacturing	4	40.0	6	60.0	0
Precision Engineering & Automation	2	50.0	2	50.0	1
Medical Devices & Life Sciences	2	100.0	0	0.0	1
Advanced Producer Services & Financial Services	9	52.9	8	47.1	2
Global Business Services (GBS)	7	70.0	3	30.0	1
Hospitality Services	2	22.2	7	77.3	0
Information Technology	6	54.5	5	45.5	1
Trans port & Logistics	3	100.0	0	0.0	1
Education & Training Services	2	66.6	1	33.7	1
Medical Tourism	0	0.0	3	100.0	1
Total	**44**	**53.0**	**39**	**47.0**	**9**

Source: Employer survey

Advertising vacancies through traditional advertising channels plays an important role in attracting a slate of qualified candidates to meet the required criteria, and ultimately enhance the quality of the workforce. Overall, only 11% of firms stated that the majority of applicants (81–100%) meet most of the requirements. In this category, MNCs fared better than SMEs (Table 5.5). For all categories, about half of the firms indicated that less than 60% of applicants met the mark. Firms in services sector generally have a better rating compared with manufacturing firms. Clearly, meeting requirements is an uphill battle, especially for firms in manufacturing sector. Employers might not be willing to compromise, showing a strong preference to recruit only the perfect candidates. Both manufacturing and services sectors shared similar findings (Table 5.6).

Generally, MNCs should not encounter major issues in regard to skills availability as, on the whole, they are buyers in the market, are best informed, and have

Table 5.5: Firms' opinion on applicants for high-qualified positions meeting most of the stipulated requirements

Sector	Firm size	Percentage of applicants meeting most of the requirements stipulated in advertisements (% of firms)						
		0-20	21-40	41-60	61-80	81-100	No response (n)	Total (n)
Manufacturing	Local SME	33.3	0.0	16.7	50.0	0.0	0	6
	LLC	50.0	0.0	50.0	0.0	0.0	3	5
	MNC	18.8	25.0	31.2	25.0	0.0	2	18
Total		*25.0*	*16.6*	*29.2*	*29.2*	*0.0*	*5*	*29*
Services	Local SME	5.5	0.0	33.3	55.5	5.5	10	28
	LLC	0.0	10.0	50.0	30.0	10.0	2	12
	MNC	5.5	11.1	16.7	33.3	33.3	2	20
	N.A.	50.0	0.0	0.0	50.0	0.0	1	3
Total		*6.3*	*6.3*	*29.2*	*41.7*	*16.7*	*15*	*63*
Total	*Local SME*	12.0	0.0	28.0	56.0	4.0	10	34
	LLC	8.3	8.3	50.0	25.0	8.3	5	17
	MNC	11.8	17.6	23.5	29.4	17.6	4	38
	N.A.	50.0	0.0	0.0	50.0	0.0	1	3
Total		**12.3**	**9.5**	**28.8**	**38.3**	**11.0**	**20**	**92**

Note: N.A. firm size not given
Source: Employer survey

Table 5.6: Over the past two years, has this establishment hired applicants that actually fail to meet requirements (in full)?

Responses	Firm size	Manufacturing			Services			Total	
		No.	%		No.	%		No.	%
Yes	Local SME	3	3.3		11	12.0		14	15.2
	LLC	1	1.1		7	7.6		8	8.7
	MNC	9	9.8		16	17.4		25	27.2
Total		*13*	*14.2*	*46.4*	*34*	*37.0*	*61.8*	*47*	*51.1*
No	Local SME	3	3.3		13	14.1		16	17.4
	LLC	3	3.3		5	5.4		8	8.7
	MNC	9	9.8		3	3.3		12	13.0
Total		*15*	*16.4*	*53.6*	*21*	*22.8*	*38.2*	*36*	*39.1*
No response		1	1.1		8	8.7		9	9.8
Total		**29**	**31.5**	**100.0**	**63**	**68.5**	**100.0**	**92**	**100.0**

Source: Employer survey

the hiring power. MNC status is a pull factor for many qualified job seekers. MNCs continue to dominate in attracting the best talent pool. SMEs and, perhaps LLCs, on the other hand, may face recruiting challenges as they are left with the remaining pool of labour, most often the lower qualified. However, the picture is not quite evident. MNCs and SMEs alike are confronted with a significant number of applicants that do not meet hiring requirements. All have opportunities to attract but at the same time, are also faced with skill deficiencies as they hire applicants who do not meet requirements (Table 5.6). It is even more prevalent among MNC establishments, especially in services activities.

Failure in filling vacant high-qualified positions is primarily due to qualitative issues (77.7%) rather than quantitative shortage (22.3%). This result corroborates with the earlier finding that shortage is not due to insufficient number of graduates in the labour market. Rather, the market is faced with critical qualitative deficiencies in the high-qualified workforce. Specifically, there is inadequate supply of applicants for positions that require specialised knowledge/skills, as marked by high skill-specificity. As shown in Table 5.7, skill specialisation ranks as the top reason for unsuccessful recruitment. This is evident in positions within IT/ software, cloud & web, and product development. Another obstacle is applicants are too demanding in terms of salary and employment terms. This applies especially to applicants in technical positions. Evidently, lack of soft skills is not a major handicap in hiring persons. In terms of quantitative reasons, firms are concerned with the level of the competition in the market. This applies in particular to positions such as hotel officers, IT/software-related positions and technical support.

It is interesting to relate reasons for failing to fill vacant positions with the type of firm. Differences are quite evident, with a pattern that is not unexpected. Almost all SMEs stated intense competition in the market as main reason, despite scaling down their requirements. MNCs overwhelmingly gave qualitative reasons. This finding corroborates the idea that MNCs attract graduates from good universities, and hardly face competition as they can offer better wages, comprehensive fringe benefits, and at times, a better career path. Because of their reputation, they are also a magnet for top talent. On the other hand, inability to fill vacant high-qualified positions, especially technical positions rather than accounts, finance & administration, and hospitality, also represents one of the biggest challenges for MNCs.

Table 5.7: Reasons for vacant high-qualified positions not being filled (%)

Reasons not being filled	Accounts & Finance	Hospitality	IT/Software, Cloud &Web	Technical Support	Product Development	Others*	Misc.^	Total
Qualitative								
Too specialised skills	17.6	0.0	46.2	25.0	44.4	25.0	22.2	24.5
Applicants lack of experience	11.8	28.6	7.7	8.3	0.0	5.0	33.3	12.8
Applicants lack of qualifications	5.9	28.6	0.0	16.7	11.1	0.0	11.1	9.6
Applicants lack of soft skills	11.8	0.0	0.0	0.0	0.0	0.0	0.0	2.1
Applicants too demanding	11.8	7.1	23.1	25.0	22.2	15.0	22.2	17.0
Applicants do not fit the establishment	11.8	0.0	0.0	8.3	0.0	0.0	11.1	4.3
Applicants lack generic skills (hard)	5.9	0.0	7.7	0.0	11.1	5.0	0.0	4.3
Applicants lack the right attitude	5.9	0.0	0.0	0.0	0.0	10.0	0.0	3.2
Quantitative								
Too much competition	0.0	21.4	15.4	16.7	11.1	40.0	0.0	17.0
Reasons not specified	17.6	14.3	0.0	0.0	0.0	0.0	0.0	5.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Other positions include manufacturing process, medical professionals, supply chain, tooling & machining, and design & art.
^Miscellaneous comprises reasons with unspecified positions.
Source: Employer survey

Although lack of soft skills is generally not stated as the reason for not being able to fill positions, many firms still express dissatisfaction about this. Overall, skill requirements that are commonly not met include: technical and firm-specific competencies, forward-looking attitude, communication and problem-solving skills, and industry-specific knowledge.

As requirements vary across job positions, the length of time taken to fill vacancies also varies by type of vacancies. This is confirmed by over half of the firms where irrespective of sector (manufacturing or services), MNCs (especially the larger ones) experience differences more profoundly than SMEs. MNCs' pattern may reflect higher skill-specificity of job positions. The employer survey shows that positions taking the least time to fill are technicians, finance, accounts & audit, human resources, and sales & marketing. Those taking the longest time to fill are engineers (Embedded Software, IT, Software, NPI, Test, Product, R&D), IC Designers, CNC machinist/programmers and management positions. Vacancies for technical positions appear to take a longer time to fill than vacancies for non-technical positions.

Companies also encounter a hard time retaining their best talent. Firms' responses generally confirmed this, and frequently indicated multiple impacts as evident in Table 5.8, which gives the frequency of mention of specific impacts by sector and type of firm, rather than combinations of impacts given by the 92 firms. Manufacturing and services firms do not show significant differences, neither do SMEs nor MNCs. Significantly, recruitment difficulties resulted in increased workload for other staff, delayed development of new products and services, and impact on quality. Loss of business appears to be a minor impact, but is more prevalent in MNCs than in SMEs. Cases where failing to win new projects from headquarters overseas happens when there is a lack of talented human resources. Overall, the picture is somewhat bleak.

Table 5.8: Impacts of labour recruitment difficulties (in % of firms)

Impacts	Manufacturing								Services									
	SME		LLC		MNC		Total		SME		LLC		MNC		Other		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Loss of Business	1	3.3	1	6.3	9	12.9	11	9.5	8	7.0	3	7.3	6	7.1	0	0.0	17	6.9
Delay in developing new products	5	16.7	2	12.5	10	14.3	17	14.7	12	10.5	5	12.2	11	13.1	2	22.2	30	12.1
Difficulties in meeting quality standards	5	16.7	1	6.3	8	11.4	14	12.1	13	11.4	7	17.1	10	11.9	1	11.1	31	12.5
Increase in operating cost	3	10.0	1	6.3	8	11.4	12	10.3	11	9.6	5	12.2	13	15.5	1	11.1	30	12.1
Difficulties with new working practices	2	6.7	1	6.3	3	4.3	6	5.2	9	7.9	3	7.3	7	8.3	0	0.0	19	7.7
Increased workload for other staff	5	16.7	3	18.8	10	14.3	18	15.5	16	14.0	7	17.1	12	14.3	2	22.2	37	14.9
Outsource work	3	10.0	3	18.8	5	7.1	11	9.5	8	7.0	1	2.4	6	7.1	1	11.1	16	6.5
Withdraw from offering certain product	0	0.0	1	6.3	4	5.7	5	4.3	10	8.8	1	2.4	4	4.8	1	11.1	16	6.5
Difficulties in meeting customer service objectives	3	10.0	2	12.5	6	8.6	11	9.5	10	8.8	5	12.2	9	10.7	1	11.1	25	10.1
Difficulties introducing technological change	3	10.0	1	6.3	7	10.0	11	9.5	17	14.9	4	9.8	6	7.1	0	0.0	27	10.9
Total	30	100.0	16	100.0	70	100.0	116	100.0	114	100.0	41	100.0	84	100.0	9	100.0	248	100.0

The biggest challenges in recruiting suitable persons for high-qualified positions as indicated by participants of focus group discussions include:

- Skills required are too specialised in relative to what is available in Penang. As some skills and tasks are firm- and industry-specific, employers have to give substantial training to employees to perform such tasks.
- High expectations on salary and benefit packages, not in tandem with the skills they possess.
- Poor communication and language skills as part of hard skills.

5.4 Skill shortages

Apart from the duration taken for vacancies to be filled, and whether or not stipulated requirements are met, the success in filling vacancies is also suggested through the hard-to-fill indicator. This was measured in three ways. First, vacancies are examined for persistency, defined on the basis of frequency of advertisements for the same vacancy. The measurement technique used in this study to identify persistency is explained in Annex 7 of the Technical Report. The second method was to ask recruitment companies and other well-informed stakeholders to indicate on a provided COL listing,

Table 5.9: Summary statistics of characteristics of job positions

	All		Persistent*		High demand**	
	Sum	%	Sum	%	Sum	%
Unique job positions	4,455	-	590	13.2	485	10.9
Job position levels						
Entry-level	471	10.6	57	9.7	50	10.3
Junior executives	1,639	36.8	213	36.1	188	38.8
Senior executives	1,718	38.6	258	43.7	199	41.0
Managers	459	10.3	49	8.3	38	7.8
Senior managers	84	1.9	13	2.2	10	2.1
No. job positions available	84	1.9	0	0.0	0	0.0
Company size						
1–50 employees	461	10.3	44	7.5	29	6.0
51–200 employees	633	14.2	62	10.5	50	10.3
201–500 employees	563	12.6	43	7.3	43	8.9
501–1,000 employees	473	10.6	44	7.5	41	8.5
1,001–2,000 employees	551	12.4	101	17.1	89	18.4
2,001–5,000 employees	626	14.1	81	13.7	64	13.2
more than 5,000 employees	1,096	24.6	209	35.4	167	34.4
Years of work experience						
Below 2 years	1,419	31.9	185	31.4	160	33.0
2–5 years	1,002	22.5	135	22.9	121	24.9
5 years and above	1,561	35.0	226	38.3	175	36.1
Broad skill classes						
Hard generic skills	2,363	53.0	298	50.5	237	48.9
Specific hard skills	3,314	74.4	457	77.5	369	76.1
Soft skills	3,396	76.2	482	81.7	403	83.1
Hard generic skills						
Environmental awareness	249	5.6	26	4.4	21	4.3
Legislative and regulatory awareness	720	16.2	81	13.7	64	13.2
ICT skills/E-skills	658	14.8	86	14.6	64	13.2
English language	1,132	25.4	145	24.6	109	22.5
Foreign language	1,172	26.3	128	21.7	105	21.6
Soft skills						
Personal effectiveness	807	18.1	111	18.8	94	19.4
Relationship and service	2,144	48.1	330	55.9	276	56.9
Impact and influence	908	20.4	119	20.2	93	19.2
Achievement skills	2,272	51.0	330	55.9	283	58.4
Cognitive skills	910	20.4	134	22.7	110	22.7
Measure of hard-to-fill						
Persistence	590	13.2	-	-	375	77.3
Measure of high demand						
Number of periods for which each unique job position appears	11,499	19.5	3,451	5.8	3,185	6.6

* At least 4 vacancies with the same job title, company name, and job position.
** Top 10% by frequency of occurrence of a unique job position.
Note: Summation for each characteristic is not necessarily equivalent to the total job vacancies.
Source: Vacancy database

not only the relevance to Penang, but also whether or not the vacancies are hard-to-fill. The third method is to identify hard-to-fill vacancies by gauging firms' experiences with regard to the presence of hard-to-fill vacancies in the past two years.

As for the first method, apart from showing the overall unique vacancies, Table 5.9 also examines the results of unique vacancies for persistency, equivalent to hard-to-fill. In quite a few instances, persistency outweighed frequency of high demand. Persistent vacancies constituted 13.2% or 590 positions while high-demand positions constituted 10.9% or 485 of the total vacancies.

Recalling Table 4.10 and 4.11 in Chapter 4, where vacancies have been grouped into 10 categories based on common titles of positions advertised by companies; these also exert information on persistency. Among the major job positions, the duration of advertising for software design, quality management and manufacturing process was slightly longer than other job openings. For example, these positions posted an average of 2.8 periods, which were equivalent to 5.4 weeks. This means that the openings were technically filled after 5.4 weeks as the advertisements did not appear in the next mining. Software design ranked high in persistency for the first half of 2016. This result is consistent with the input shared by employment agencies where supply of IT programmers, network engineers, and software engineers was indicated as problematic (with vacancies taking up to three to six months to fill).

Besides junior positions for which fresh graduates with at least a Diploma in Computer Science, Information Technology or Computer Engineering are recruited, many software design positions involve senior executive positions. These require at least five years' related experience. A similar pattern is observed in Information Technology positions, in particular business system analysts, IT business analysts and program administrators. Recruitment difficulties may undermine the growth of high-tech operations in the Penang's economy. In contrast, human resources management positions take the least amount of time to fill, and persistency is not prevalent. The majority of the openings are for junior and senior executive positions. In the case of the latter, at least five years of work experience is required. Furthermore, employers prefer to recruit a person who has at least a Diploma in the field of either Human Resource Management or Business Studies. Low persistency is thought to be related to high skills transferability impacting also employee turnover. This implies that firms have to continue to invest in recruitment and skilling.

As for the second method, interestingly, three categories can be identified from the hard-to-fill results. First, critical occupations that are relevant to Penang are also hard to fill. This category is evident in the E&E sector where *Software Developers, Manufacturing Professionals, Electronic Engineers*, and *Mechanical Engineers* are highly relevant occupations, and at the same time, they are the most hard to fill. (compared with other occupations in the industry).

Table 5.10: The Penang COL in terms of relevance of occupations and hard-to-fill occupations*

Industry	Broad critical occupation	Relevant to Penang (%)	Hard-to-fill (%)
1. Electrical & Electronics Sector			
	Software Developers	62.1	62.5
	Manufacturing professionals	65.5	58.3
	Electronic Engineers	72.4	54.2
	Mechanical Engineers	65.5	50.0
	Information and Communications Technology (ICT) Services Managers	27.6	45.8
	Electrical Engineers	79.3	41.7
	Mathematicians, Actuaries, and Statisticians	13.8	41.7
	Industrial and Production Engineers	65.5	41.7
	Applications Programmers	55.2	41.7
	Engineering Professionals not elsewhere classified	24.1	37.5
	Policy and Planning Managers	62.1	29.2
	Mechanical Engineering Technicians	51.7	29.2
	Business Services Managers	44.8	29.2
	Electronics Engineering Technicians	62.1	20.8
	System Analysts	62.1	16.7

2. Telco & Multimedia Sector		
Information and Communications Technology (ICT) Services Managers	17.2	50.0
System Administrators	48.3	37.5
Database Designers and Administrators	20.7	33.3
Applications Programmers	41.4	33.3
Telecommunications Engineers	34.5	33.3
Database and Network professionals not elsewhere classified	13.8	29.2
Mathematicians, Actuaries, and Statisticians	17.2	29.2
Financial Analysts	37.9	29.2
System Analysts	41.4	29.2
Computer Network professionals	27.6	25.0
Management and Organisation Analysts	41.4	16.7
Business Services Managers	41.4	4.2
3. ICT, Global Business Services, Creative Industry		
Software Developers	37.9	62.5
Applications Programmers	37.9	54.2
Electronic Engineers	44.8	37.5
System Analysts	37.9	37.5
Mathematicians, Actuaries, and Statisticians	10.3	33.3
Accountants	58.6	29.2
Financial Analysts	44.8	29.2
Graphic and Multimedia Designers	37.9	25.0
Computer Network professionals	41.4	20.8
Information and Communications Technology Services Managers	37.9	20.8
Manufacturing Professionals	58.6	20.8
Software and Application Developers and Analysts not elsewhere classified	37.9	16.7
Accounting Associate professionals	48.3	12.5
Information and Communications Technology (ICT) User Support Technicians	41.4	12.5
Personnel and Career professionals	58.6	12.5
System Administrators	48.3	12.5
Administrative Managers	31.0	4.2
4. Financial Services Sector		
Financial Analysts	48.3	41.7
Finance Managers	48.3	33.3
Lawyers	44.8	33.3
Accountants	62.1	29.2
Financial and Investment Advisers	51.7	29.2
Application Programmers	48.3	29.2
Securities and Finance Dealers and Brokers	27.6	29.2
System Analysts	48.3	25.0
Mathematicians, Actuaries, and Statisticians	13.8	25.0
Information and Communications Technology (ICT) Services Managers	27.6	20.8
Business Services Managers	34.5	16.7
Personnel and Career professionals	62.1	12.5
Credit and Loans Officers	44.8	12.5
Advertising and Marketing professionals	48.3	12.5
Research and Development Managers	34.5	12.5
Insurance Underwriters	24.1	8.3
5. Accounting Sector		
Financial Analysts	48.3	37.5
Finance Managers	69.0	29.2
Accountants	69.0	29.2

*The critical occupations in each sector are sorted in descending order based on the highest percentage of hard-to-fill occupations responded by the focus group members.

The second category concerns occupations that have a relatively high relevance to the state, but are not hard to fill. Despite substantial demand, the length of time taken to fill is relatively short, indicating less prevalence of skill issues. In Penang, *Electronics Engineering Technicians* and *System Analysts* in the E&E sector; *Business Services Managers* in the Telco & Multimedia sector; and *Finance Managers and Accountants* in the Accountancy sector fall under this category. The last category comprises occupations that may not be very relevant to Penang's economy, yet are likely hard to fill. Despite the fact that the relevance of *ICT Service Managers* in Telco & Multimedia sector; *Software Developers, Applications Programmers and Mathematicians, Actuaries and Statisticians* in ICT, Global Business Services (GBS) & Creative industry & Creative industry is limited, factors such as high-demand and hard-to-fill go hand-in-hand for these occupations.

Detailed COLs completed by focus group participants and MIDA representatives are included as shown in Appendix C and Technical Report: Annex 16. Table 5.11 shows the top 10 hard-to-fill job titles within five industry groups. The prominence of E&E sector-related occupations is evident. Following these, *SAP Consultants* and *Java Programmers* are frequently indicated as hard-to-fill occupations within the ICT, GBS and Creative industry.

Table 5.11: Specific job titles within top hard-to-fill occupations* in Penang

Industry	Broad critical occupations	Critical Sub-occupations/Specific job titles
1. Electrical & Electronic Sector		
	Electrical Engineers	*IC Design Engineers*
	Electronic Engineers	*IC Design Engineers*
	Electronic Engineers	*R&D Engineers (includes Product Design)*
	System Analysts	*Software Design Engineers*
	Electrical Engineers	*Embedded System/Firmware Engineers*
	Electrical Engineers	*R&D Engineers (includes Product Design)*
	Electronic Engineers	*Embedded System/Firmware Engineers*
	System Analysts	*SAP IT and Finance Applications Developers*
	Industrial and Production Engineers	*R&D Engineers*
	Electrical Engineers	RF Engineers
2. Telco & Multimedia Sector		
	Information and Technology (IT) Services Managers	Data Architects
	System Administrators	IT Architects
	Application Programmers	Software Developers
	Information and Technology (IT) Services Managers	Chief Information Security Officers
	Database and Network professionals not elsewhere classified	Security Technology Specialists
	Database Designers and Administrators	Data Scientists
	Mathematicians, Actuaries and Statisticians	Data Scientists
	Applications Programmers	System Programmers
	System Administrators	Enterprise Applications Architects
	System Administrators	System Administrators
3. ICT, Global Business Services, and Creative Industry		
	Financial Analysts	*SAP Consultants*
	Application Programmers	*Java Programmers*
	Application Programmers	PHP Programmers
	System Analysts	JD-Edwards (JDE) Consultants
	Software Developers	SAP Application Developers
	Application Programmers	.NET Programmers
	Graphic and Multimedia Designers	3D Artists
	Graphic and Multimedia Designers	Animation Directors

4. Financial Services Sector	
Finance Managers	*Financial Controllers*
Accountants	Accountants/Chartered Accountants
Accountants	Tax Consultants
Finance Managers	Tax Managers
Lawyers	Legal Managers
Accountants	Tax Managers
Finance Managers	Financial Reporting Analysts
Finance Managers	Credit Risk Managements
Finance Managers	Anti-Money Laundering Specialists
Financial Analysts	Research Analysts (Foreign language)
5. Accounting Sector	
Accountants	Tax Managers
Financial Analysts	Fraud Specialists
Finance Managers	Finance Directors
Finance Managers	Financial Controllers
Accountants	Tax Consultants
Financial Analysts	Fraud and Investigation Consultants
Accountants	Accountants

* Job titles in italics means 50% and above of respondents as hard-to-fill occupations.

As a third method to identify hard-to-fill vacancies, responses from the employer survey coincide to a large extent with the findings of the other two methods. Some 44% or 40 firms indicated that they experienced such hard-to-fill vacancies. Over half of these are in the services sector. In manufacturing, the majority are international companies while in the services sector the distribution is more even (Table 5.12). This again confirms that MNCs – despite their attractiveness – still experience qualitative skill shortages.

Hard-to-fill vacancies are prevalent in high-tech manufacturing, precision engineering & automation, hospitality services and GBS (Table 5.13). The emergence of GBS appears inconsistent with the earlier observation of success rate in filling high-qualified vacancies. However, companies experiencing rapid expansion have trouble meeting recruiting needs when there is substantial turnover as new establishments start to recruit. Thus, hiring the right candidates becomes a lot more difficult.

In terms of occupations, established hard-to-fill vacancies can be classified as engineering, accounts and finance, software/information software development, management and academic. Specific occupations are listed in Table 5.14. Some of the skill sets involved are relatively niche and specialised, stretching the duration taken to fill the available positions.

Table 5.12: Over the past two years, has your company experienced vacant high-qualified positions that proved to be hard to fill? (in % by firm size)

		SME		LLC		MNC		N.A.	
Sector	N	n	%	n	%	n	%	n	N.A.
Manufacturing	17	5	29.4	1	5.91	1	64.7	0	0.0
Services	23	6	26.1	6	26.1	10	43.5	1	4.3

Note: N=40 stated "Yes" to this question
Source: Employer survey

Table 5.13: Over the past two years, has your company experienced vacant high-qualified positions that proved to be hard to fill?

Industry	Yes	No	N.A.	Total
High-tech manufacturing	5	6	0	11
Other high-tech manufacturing	6	3	1	10
Precision Engineering & Automation	4	0	1	5
Medical Devices & Life Sciences	2	1	0	3
Advanced Producer Services & Financial Services	6	6	7	19
Global Business Services	7	2	2	11
Hospitality Services	3	6	0	9
Information Technology	3	6	3	12
Transport & Logistics	1	2	1	4
Education & Training Services	0	2	2	4
Medical Tourism	3	1	0	4
Total	40	35	17	92

Source: Employer survey

Table 5.14: Hard-to-fill job titles and position levels obtained from employer survey

Job title	Position level
Engineering IC Design, Product Developer/Product Development Engineers, Materials Engineers, RF Design Engineers, Circuit Design Engineers, NPI Engineers, Debugging Engineers, Robotics and Automation, R&D Hardware, R&D Engineers, Electrical Engineers, Reliability Engineers, Product Optimisation Engineers, Process Engineers, Microwave Hybrid Engineers, Epitaxy Engineers, PCB Design Engineers, Electrical Design Engineers, Mechanical Design Engineers, Tool & Die Engineers, Supply Quality Engineers.	Mid-level, Senior level, Managers, Senior Managers, Directors.
Accounts and Finance Account Services, Cash Management, Auditors, SAP-FICO (Financial Accounting and Controlling), Accounts, Finance, Accountant, Financial report, Trade finance, Tax, Advisory.	Junior Executives, Senior Executives, Managers.
Software/Information System Development Programmers, Software Engineers, System Analysts, Software Development, Programmer Analysts, Embedded Software Engineers, Google App Engineer (GAE) Development, Portal & Java Development, Process Integration Consultant, IT Engineers, Senior SQL Server Database/SSIS Developers, Senior Oracle ADF/Fusion 11g Web Application Developers, Web Application Programmers.	Non-Executive (Junior and Senior), Junior Executives, Mid-Level, Senior Executives.
Management Duty Managers, Clinical Operations, Front Office Managers, Hotel Managers, R&D Managers, Regulatory Compliance Officers, Program Directors.	Senior, Manager, Director.
Academic Lecturers, Senior Lecturers, Dean, Professors, Deputy Vice-chancellors, Vice-chancellors	Executives, Senior Executives, Managers.

Source: Employer survey

5.5 Competition for skills

Given the current labour market condition in Penang, the war for talent is inevitable. At times, hiring incentives can be a key to success in attracting highly qualified candidates. These may be in the form of wages above the market rate, attractive packages or perks.

The findings of the employer survey show that in Penang, over half of the firms provide special incentives to lure proficient candidates; this also applies to the manufacturing and services categories. Manufacturing firms offering incentives are largely MNCs (Table 5.15). For services firms, the distribution is more level. While only a small number of manufacturing firms relenting to the demands of candidates are SMEs, the proportion is higher in services. As depicted in Figure 5.16, a large majority of MNC companies sometimes accede to the demands of candidates. Interestingly, a substantial share (almost half) of SMEs in the services industries accede to the talented candidates' demands.

Employers use different strategies to resolve skill shortages. Three strategies frequently invoked are labour poaching, under-hiring, and employee retention. Among these strategies, retention is recorded to be favourably employed by most respondents (73.9%), followed by hiring of under-skilled candidates (52.2%). Labour poaching – hiring competitors' top performing candidates - is the last strategy used (26.1%).

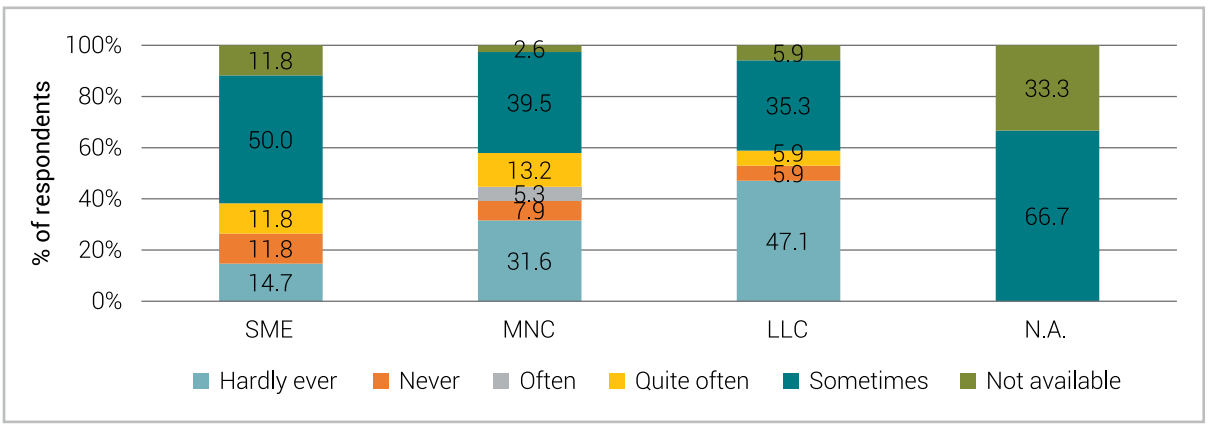
Unlike SMEs, MNCs tend to remain stringent on the requirements of academic qualifications and soft skills (language/communication). In view of this, MNCs and SMEs resort to hiring under-skilled persons to fill vacant high-qualified positions (Table 5.3). On the other hand, smaller companies do not necessarily have the tendency to hire less qualified candidates compared with multinational companies. It should be noted though, SMEs tend to adjust their demands downward more often by hiring candidates with Diploma alongside relevant experience and multi-tasking skills. SMEs focus considerably on hands-on experience. Hiring of under-skilled candidates by MNCs goes principally to those in the services sector.

Table 5.15: Do these establishments provide special incentives to hire a candidate who is proficient in the required skills (e.g. salary above the market rate)?

Sector	N	SME	LLC	MNC	Total
Manufacturing	15	13.3	0.0	86.7	100.00
Services	34	47.1	14.7	38.2	100.00

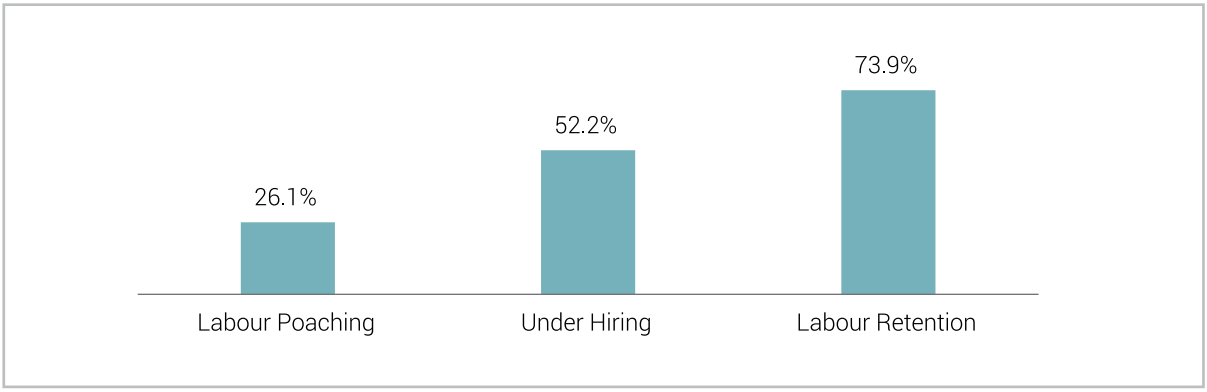
Note: N=49 stated "Yes" to this question
Source: Employer survey

Figure 5.16: How often does this establishment accede to candidates' demands? (%)



Note: N=3 did not disclose firms' headcounts. Hence, the size of firms is unidentified.
Source: Employer survey

Figure 5.17: Strategies used by firms to overcome skill shortages (% of firms)



Note: Respondents who did not respond: N=10 (labour poaching); N=7 (under hiring) and N=12 (labour retention).
Source: Employer survey

Table 5.16: Strategies to overcome skill shortages by sectors and firms size

Sector	Labour Poaching		Under-Hiring		Labour Retention	
	Yes (n)	No (n)	Yes (n)	No (n)	Yes (n)	No (n)
Manufacturing						
SMEs	2	3	3	3	6	0
MNCs	9	9	9	9	12	6
LLCs	1	3	1	3	2	1
Not available	0	0	0	0	0	0
Services						
SMEs	4	19	10	13	18	5
MNCs	4	14	15	3	18	0
LLCs	4	8	7	5	11	1
Not available	1	1	1	1	1	1

Note: Respondents who did not respond: N=10 (labour poaching); N=7 (under-hiring) and N=12 (labour retention).
Source: Employer survey

All SMEs in manufacturing industries favour retention, and likewise, all MNCs in services industries. Among some of the retention measures are conducive working conditions, attractive fringe benefits, career development and skill development. One of the respondents stated, "Incentives can be in the form of project-based bonus and/or profit sharing on top of yearly performance-based bonus." Employee retention also targets the prevention of poaching by other employers. Thus, it is also a defensive measure.

Labour poaching is the least favoured method used by firms to overcome skill shortages. It occurs though, in areas such as R&D, product design/solution design, and IT & software development. Larger companies seem to engage in labour poaching more often by providing rich compensation packages to lure employees with suitable qualifications, skills and experience. Six out of 10 participants in the focus group felt that labour poaching is prevalent in Penang. It is more likely to happen in manufacturing and GBS firms (including due

diligence companies). Not only does this potentially lead to fatter paycheques in the short-term, but in the long-term, it might also benefit workers by providing them chances to learn new skills, earn promotions that lead to better job titles, and acquire better brand-name on their resume, which is not always guaranteed in job-hopping. However, it is an unhealthy practice (wage inflation), yet not a critical issue in the Penang's labour market.

In regard to under-hiring, employers often have to 'compensate' this by internal upskilling and/or on-the-job training. Many MNCs have also started to employ fresh graduates and provide them with training. Upskilling is the topic of the next part of this report.