تقييم إحتياجات سوق العمل في لبنان

Mind the Gap

A Labour Needs Assessment for Lebanon

2016

LAB/16/3

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UNDP

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Mind the Gap

A Labour Needs Assessment for Lebanon (2016)

EXECUTIVE SUMMARY

Since the crisis erupted in Syria back in 2011, the Lebanese economy has witnessed an unprecedented slowdown in economic growth, stretching over a long period of six consecutive years. One of the impacts of this slowdown, coupled with the massive refugee influx, is the heavily congested market that struggles to provide people or businesses with the economic opportunities they need. In addition to the often-quoted figure that the Lebanese economy needs to create six times as many jobs simply to absorb regular market entrants, there is a particular problem with youth employment. This is a product of inequality of the education system, which affects labour supply, and a lack of economic reforms that impacts on labour demand. Taken together, competition for jobs and inadequate economic opportunities for young people have a detrimental impact on social relations.

A major obstacle to economic growth and job creation stems from the existence of a 'skills gap' in the Lebanese marketplace. Despite high levels of tertiary education, Lebanese companies complain about not finding the skilled labour they need. Moreover, among those who are already employed, 41 percent believe that their education is not relevant to their current occupation.

To help address this situation and to better target interventions aimed at improving labour skills, UNDP commissioned a survey of 595 companies of which 240 companies responded. These companies operate in three strategic sectors: agro-food production, residential construction, and ICT. These sectors were chosen for different reasons. The agro-food industry is Lebanon's most productive industrial sector, the construction industry employs a large number of non-nationals and has traditionally served as a driver of growth, and ICT represents a promising industry which is central to government plans for transitioning into a high-value economy.

The major findings of the 2016 UNDP Assessment of Labour Needs were as follows:

- There is pronounced gender asymmetry in these sectors. Female employees made up 20 percent of those employed by the companies who completed the survey. They worked primarily as managerial and support staff, but also made up a significant portion (33 percent) of the semi-skilled workforce in the agro-food sector.

  This situation represents both a constraint and an opportunity. Agro-food companies report that their semi-skilled workers lack

an understanding of new technologies (60 percent), quality control (42 percent), cost control (50 percent), and monitoring and evaluation (50 percent). Yet, by providing training to women in these areas, it is possible both to improve their participation in the workforce and enhance the overall productivity of the sector.

- Of the total employees covered, 73 percent were Lebanese. For the most part, non-Lebanese are employed only as semi-skilled and unskilled workers. While they are predominantly excluded from the ranks of management and support staff (and from the ICT industry as a whole), they make up 55 percent of the semi-skilled workers in construction and 48 percent in agro-food production.

  Among all the companies surveyed, the most acute skill gaps were reported within this segment of the workforce. By providing semi-skilled workers with vocational training it should be possible to address pressing livelihood issues (among both Lebanese and non-Lebanese) while also strengthening the performance of Lebanese industry at large.

- Policy-makers cannot afford to overlook the role played by microenterprises, which employ less than 10 workers, in the Lebanese economy. These entities represent 80 percent of all companies, with a further 16 percent being made up of small businesses. It is particularly important that these enterprises scale-up over time, and that their needs are addressed. In our survey, the majority of enterprises (45 percent) are based in Mount Lebanon followed by the Bekaa, which houses 20 percent of businesses working in these sectors.

- Across the three sectors, companies tend to embody a 'skills hierarchy'. Limitations in training or knowledge that are encountered the managerial level, such as with site-development for construction companies or legal compliance for ICT, tend to become more acute among professional and semi-skilled workers. This suggests the need for more interlinked approaches to management and professional development, where information is shared between different groups of employees.

WITHIN THE AGRO-FOOD INDUSTRY:

- The recruitment and retention of qualified staff is problematic for 40 percent of companies. Hiring is often done on an *ad hoc* or informal basis.

- There is a pronounced shortage of marketing and retail skills among management and support staff in this sector. Fifty-four percent of agro-food companies want to employ people with a better understanding of market research, 52 percent state a need for better advertising, and 46 percent seek employees with a better understanding of the principles of marketing.

  Lebanon produces a large number of university graduates who possess these skills but they are not integrated into the labour market, largely because MSMEs cannot afford to employ people with the level of training they require.

- Among food scientists and other professionals, a major obstacle is language and communication skills (particularly in English). Seventy percent of companies reported this to be a problem, noting that it limited their ability to benefit from laboratory research (48 percent of companies) and the latest research and developments (44 percent).

- For semi-skilled workers the major challenge companies face is training them to use new technologies, as well as quality control techniques and monitoring and evaluation methods. This is particularly important if Lebanese agro-food production is to meet international standards, suitable for export to external markets.

WITHIN THE CONSTRUCTION INDUSTRY:

- More than half the companies surveyed in this sector encounter weaknesses among their engineers and skilled professionals. Specific gaps include: knowledge of waste management (67 percent), environmental impact (62 percent), and the use of scientific methods (58 percent) and applied mathematics (55 percent).

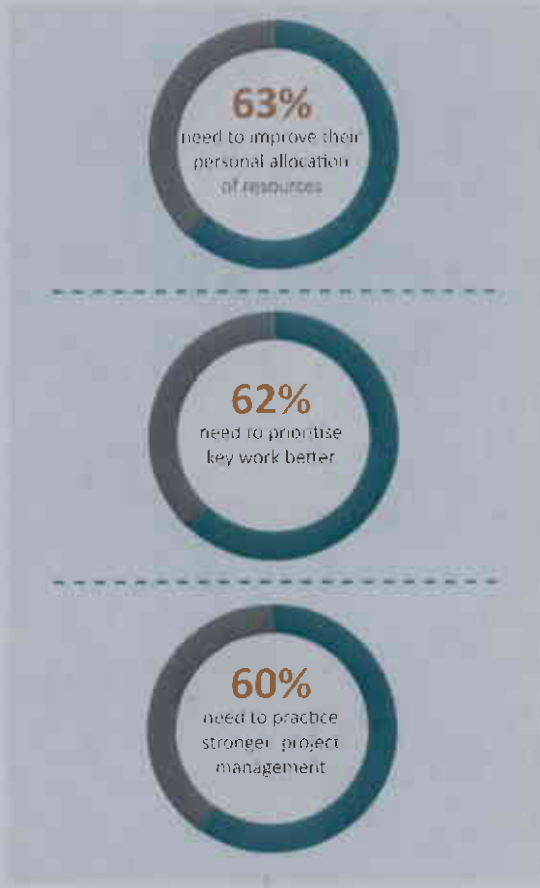
- With regard to semi-skilled labourers, construction companies identified a shortage of industry-specific skills. Most significant in this regard is the demand for: skilled plumbers (75 percent), heating ventilation and air-conditioning specialists (71 percent), carpenters (67 percent) and health and safety experts (64 percent), all of which represent promising areas for livelihood interventions.

- Across all levels of employment in the construction industry, there is limited knowledge of siting, green building practices, and waste disposal.

WITHIN THE ICT INDUSTRY:

- Generally, there were strong performance indicators coming from managerial and support staff. Among this group of employees, no single problem was encountered by more than one-third of companies, suggesting a good match with labour market supply. Limitations that did exist tended to concern the ability of staff to partake in the kind of 'blue sky thinking' and entrepreneurship that is integral to the sector. Thirty-four percent of ICT companies wanted their staff to show a greater appetite for learning and 31 percent wanted them to show greater initiative and creativity when thinking about different options.

- However, it is harder for the industry to recruit skilled software engineers, website developers, programmers and other technical positions. On the technical side of things, skill gaps concern virtualization and cloud computing (52 percent), use of the latest technologies (49 percent) and management of risk and security (49 percent). Yet the greatest shortfall was in professional conduct. As the industry scales up in size, employees will need to improve their personal allocation of resources (63 percent), prioritise key work better (62 percent) and practice stronger project management (60 percent).



RECOMMENDATIONS

1. **Help companies understand user needs and market dynamics**

   Across all three sectors companies found it difficult to grasp user needs and market dynamics in a timely and effective manner. Lebanon has many university graduates who are trained in marketing. This skill-set needs to be better integrated into the labour market. Workshops and training programmes could be used to help MSMEs improve their marketing abilities.

2. **Address the need for green building and waste disposal skills in the construction sector**

   The construction sector is looking to employ people with knowledge of green building practices, waste disposal, electrical engineering, and ventilation systems. It also needs qualified foremen who can administer construction sites. These skills should therefore be at the heart of technical training programs.

3. **Provide agro-food sector employees with knowledge of the latest technologies and practices**

   The agro-food sector needs skilled technicians who are informed about the latest research and development practices in the field. These skills can be used to raise the quality of produce and improve the productivity of the sector. They also have the potential to benefit women, given that they make up a large share of the semi-skilled workforce in the agro-food sector.

4. **Strengthen management practices and promote effective vocational training for ICT**

   The ICT sector needs to focus on strengthening management practices so that companies can scale-up effectively. It would benefit from the use of incubators, in addition to the financial support the industry already receives. The government can encourage the establishment of multidisciplinary programs at the Lebanese University or at vocational public institutes. It can also assist universities and studies to access knowledge-exchange programmes.

5. **Invest in language training schemes particularly for skilled professionals**

   Employers noted that weak language and communication skills (in English) serve as barrier to learning, research and development, particularly among professionals. These capacities – and the skills needed for active learning – would ideally become part of their routine education and professional development.

6. **Match between what students education and the demands of the labor market**

   Ministries and industrial associations should provide universities with information about the labor market and encourage them to modify their courses accordingly. Ultimately, skills must match employer needs.

7. **Develop and launch a labor market information website**

   This online platform would make information about skills and certifications publicly available and help match labour supply and demand. This national labour market website would allow job seekers and employers to apply for, or post, job opportunities that match nationally recognized skills and qualifications.

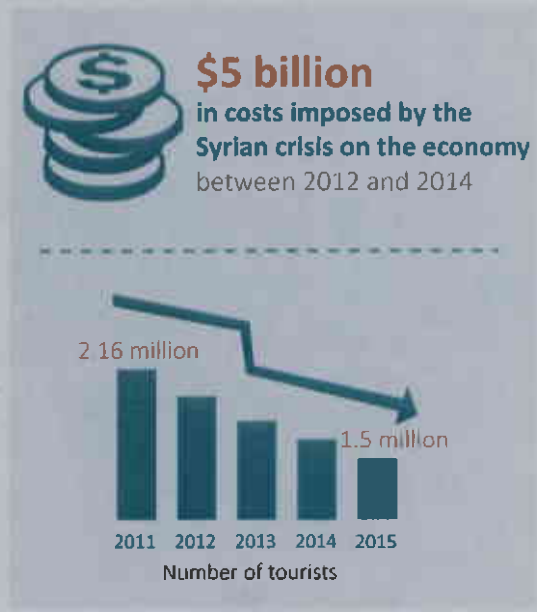
8. **Create public-private partnerships such as skills councils**

   At a national level the government must focus on developing public-private partnerships that enable stakeholders to coordinate and share resources, ensuring comprehensive dialogue on skills issue. Government agencies, businesses and industry associations, educational and training institutions, and community based organizations should all be involved in this process.

I. LABOUR NEEDS IN LEBANON

SOCIAL AND ECONOMIC CONTEXT

The labour market in Lebanon suffers from a number of structural weaknesses that have been exacerbated by the Syrian crisis, placing considerable stress on household income, employment, and social relations. The closure of trade routes, and added pressure on public services arising from the massive displacement of people into Lebanon, cost the economy $5 billion between 2012 and 2014 alone.[1] These events are also estimated to have pushed a further 170,000 Lebanese into poverty.[2] Trade, tourism and the service sector, have all been negatively affected by the crisis, with even construction and real estate (which are traditional drivers growth in Lebanon) slowing considerably in this period. After years of dropping from a high of 2.16 million tourists in 2011, tourist numbers started to shyly pick up in 2014, continuing in 2015, to reach 1.5 million tourists, well below their 2011 level.[3] While the past year has seen the security situation improve, and tourists return to the country at the highest level since 2011[4], political instability and deadlock have led to declining confidence in the economy, with a growth rate of 1 percent[5] predicted for 2016.



These factors have placed considerable strain on the labour market and consequently on social relations and cohesion. However, they have also tended to amplify a number of long-term challenges that the Lebanese economy was already facing such as the weak macroeconomic environment, and frail infrastructure. These factors represent the country's most serious economic constraint, both in absolute terms and compared to other countries.[6]

Another major challenge is posed by the structural composition of the Lebanese economy, which has struggled to create jobs even during periods of pre-crisis growth. Over the past two decades there has been a long-term drift away from agriculture and industry into low-productivity service sectors (i.e. wholesale and retail, repair of motor vehicles, transportation and storage, accommodation and food services etc.) that now employ large numbers of people. Indeed, between 2004 and 2009, sectors such as ICT, finance and insurance, and other professionalised industries, actually shed jobs. As a result of these dynamics, a 2009 study found that 35 percent of waged employees work in low-productivity sectors compared to 14 percent who are employed in high-productivity activities.[7]

1. According to UNDP internal estimates; previous estimates in the Economic and Social Impact Assessment of September 2013 put the loss in economic activity at $7.5BN, based on estimated growth rates of 1.4%, 1.5%, and 1.5% in each of 2012, 2013, and 2014 respectively. They turned out to be better than anticipated at 2.8%, 2.5%, and 2% for the same years. As a result, the loss in economic activity was smaller.
2. The World Bank & United Nations, ***Lebanon Economic and Social Impact Assessment of the Syrian Conflict*** (September 2013)
3. 2015: Another Recovery Year for the Lebanese Tourism Sector. BLOM Bank
4. BLOM Invest, 'Agro-Industry in Lebanon: Looming Potential Restrained by Numerous Deficiencies, June 2014
5. International Monetary Fund, World Economic Outlook, October 2016.
6. On one metric, the Global Competitiveness Index, Lebanon has the second worse macroeconomic environment out of 140 countries. Overall, the country ranks 101st in the index, due to strong performance in higher education (58th place) and market efficiency (56th place) (Klaus Schwab, ***The Global Competitiveness Report 2015-16*** (The World Economic Forum, 2015); World Bank Country Partnership Framework 2017-2020
7. Republic of Lebanon, Good Jobs Needed: The Role of Macro, Investment, Education, Labor and Social Protection Policies ("Miles"), World Bank, December 2012, p 15

This imbalance was even greater among the self-employed for whom the figures were 61 percent and 3 percent respectively.[8]

Taken together, slow growth combined with weak job creation mean that Lebanon now faces a significant unemployment challenge. On the eve of the Syria crisis, the unemployment rate was high in Lebanon at about 9 percent.[9] There were also substantial differences between employment rates among men and women (which widened further after the age of 34), and participation in the labour market was closely correlated with the education level. As a consequence, even without the added pressure created by the presence of refugees – which have swollen the labour market by a further 20 percent[10]- the Lebanese economy would need to create six times more jobs to absorb the 23,000 people who enter the labour market annually.[11]

The social consequences of a heavily congested labour market are far-reaching. There is evidence of rising unemployment rates among new market entrants, higher rates of informality, and widespread social anxiety about the potential of Syrian workers to undercut the socio-economic position of host communities.[12] Among more affluent Lebanese, there is also concern that young people are not able to receive an adequate return on their education, and a propensity to try and find work overseas. Taking these points in turn, a 2015 study by UNDP leant credence to concerns about low returns accruing to those with higher education. It found that while young people with a primary school education could expect to earn $600 month, this figure was only $33 more for those with a secondary education, and $133 more for those with a university degree.[13] Meanwhile, Lebanon ranks 113 out of 144 countries in the world for the degree of 'brain drain' it experiences, something that contributes further to the shortage of semi-skilled labour.[14]

To address this situation, action is needed on multiple fronts. Political instability and electricity outages continue to be listed by firms as the two largest barriers to doing business.[15] Another serious problem, which forms the basis of this report, concerns the existence of a 'skills gap' between what employers demand and employees are able to provide.[16] These gaps can be of various kinds. According to research by the European Union, 'qualitative discrepancies occur where there are both sufficient supply of labour and a sufficient number of vacancies, but where the demands and wishes of potential employees and employers regarding skills, job requirements, working conditions or work content diverge.[17] They also note that a second kind of skill mismatch can 'exist without imbalances between skill supply and demand, as a result of information asymmetries or other matching frictions on the labour market.[18]

Based on the current report, the Lebanese labour market encounters both types of obstacles. Despite high levels of tertiary education (compared to other countries in the region), employers in Lebanon complain about not finding the skilled labour they need at a rate almost ***double*** the world average.[19] Furthermore, among those who are already employed, 41 percent believe that their

8. ibid.
9. Central Administration of Statistics and World Bank, Snapshot of Poverty and Labour Market Outcomes in Lebanon based on Household Budget Survey 2011-12
10. According to "Snapshot of Poverty and Labour Market Outcomes in Lebanon", dated December 2015, the active population was 1,462,609 in 2011-12. It becomes 1,948,683 when the working age Syrian refugees are added from the Lebanon Crisis Response Plan 2017-20.
11. International Bank for Reconstruction And Development, International Finance Corporation, and Multilateral Investment Guarantee Agency Country Partnership Framework For The Lebanese Republic For The Period Fy17-Fy22, □June 15 2016, P.11
12. AKTIS, *Impact Evaluation Report: Lebanon Host Communities Support Project* (12 May 2016)
13. UNDP, *Spotlight on Youth in Lebanon* (December 2015) p.12
14. According to Kasparian (2010) one quarter of Lebanese youth want to migrate abroad, with 40% of youth in Mount Lebanon holding this aspiration. *See* also the Global Competitiveness Index 2015
15. Enterprise Surveys, *Lebanon Country Profile in 2013* (World Bank, 2013), p 4
16. A skill mismatch is 'a particular outcome of the complex interplay between skill supply and demand within a market economy, both of which are constantly affected by adjustment lags and market failures and are shaped by the prevailing contextual conditions (demographics, technological progress, institutional settings)' (CEDEFOP, 'Skills supply and demand in Europe: methodological framework' (Research paper, No. 25), 2012, p. 352
17. CEDEFOP, 'Tackling Unemployment While Addressing Skills Mismatch: Lessons from Policy and Practice in European Union Countries' (Research paper, No. 46), 2015, p.13
18. Ibid.
19. UNDP, *Spotlight on Youth in Lebanon* (2015) p.12

education is not relevant to their current occupation. And young people are particularly dissatisfied with existing opportunities, citing the poor job climate as a bigger obstacle than education, healthcare or housing, when it comes to their life prospects.[20] Indeed, preliminary research suggest that there is a particular difficulty in recruiting trained professionals, and people to occupy middle-management positions, as university graduates are often unwilling to accept jobs at the level of remuneration that MSEs can provide.[21] The most difficult positions to fill are generally thought to be skilled technicians, good engineers, and managers.[22]

To address this situation, the Ministry of Trade and Investment ***Lebanon SME Strategy: A Roadmap to 2020*** contains a number of measures designed to support small enterprises. It aims to address the 'middle management gap' that produces weak managerial pyramids, an 'ephemeral system of capabilities' that are underdeveloped, and the 'mismatch in the demand and supply of capabilities', with greater emphasis being placed on technical expertise and vocational training programs. By investing in human capital, moving curricula away from purely theoretical education and towards skills calibrated for the marketplace, and targeting specific labour needs, the ministry aims to help companies grow in a sustainable way, supporting Lebanon's transition to a high-value economy that is competitive on the global stage.

To support this process, the current report focuses on labour needs in Lebanon across three important economic sectors. The first is ICT, which has recently been singled out by the Central Bank of Lebanon and World Bank as a growth industry that has considerable economic potential.[23] High levels of tertiary education, the cosmopolitan composition of Lebanese society, and the success of recent start-ups all point towards the possibility of growth in this area. The second is agro-food production. This sector has also experienced growth in recent years and is a priority for the government who want to help producers meet quality standards needed to access external markets. The third sector is construction. This industry has traditionally been a bulwark of the Lebanese economy but struggled in recent years.[24] Because of its potential to absorb labour, productive investment in this sector holds out particular promise for job creation. Collectively, these three sectors account for 10.3 percent of Lebanon's GDP and also employ a significant portion of the labourforce.[25]

To get a clearer understanding of the existing gaps in these sub-sectors, and how they can be addressed, UNDP commissioned a survey of MSMEs in Lebanon[26]. Sectoral analysis and the results of this survey are presented below. Ultimately, our analysis recognizes the need for a dual strategy that focuses both on investment in high-productivity sectors and the provision of support to sectors that employ large numbers of people. The latter steps are needed to deliver the kind of inclusive growth that is important for Lebanon's long-term development and stability.

20. Gallup World Survey (2006-13) cited in UNDP, ***Spotlight on Youth in Lebanon*** (2015), p 42
21. 24 percent of the working age population have completed secondary school (Central Administration for Statistic, 'Education Statistics' (2009).
22. Republic of Lebanon, Good Jobs Needed: The Role of Macro, Investment, Education, Labor and Social Protection Policies ("Miles"), World Bank, December 2012, p 28
23. The World Bank, ***Lebanon Economic Monitor***, Spring 2016
24. ibid., p 6
25. Central Administration for Statistic (CAS), ***Lebanese National Accounts: Comments and Tables, 2004-2013***, (2014), p 33
26. Lebanon SME Strategy, A Roadmap to 2020, Ministry of Economy and Trade 2014

II. SECTOR ANALYSIS AND RESULTS

This study relied on different sources of information. Interviews were conducted with eight key business informants, ranging from university lecturers to established professionals in the fields of residential construction, agro food, and ICT. A survey was also conducted with 595 Lebanese companies which was designed to inquire about their labour needs. The team received complete data from 240 companies, with an active response rate[27] of 84 percent.

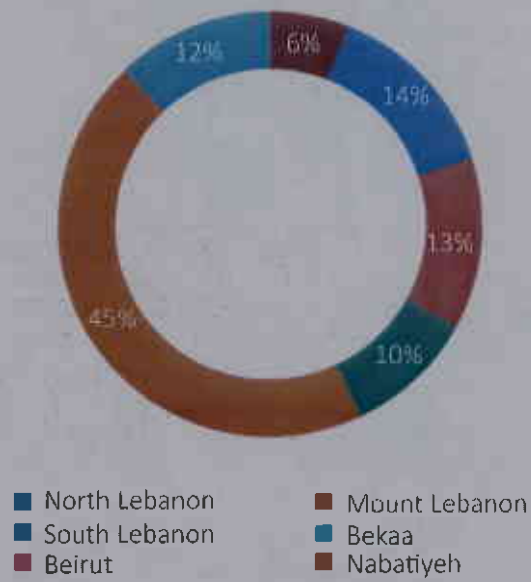
Among those who replied in full, 52 percent were in the construction industry, 27 percent were in ICT and 21 percent were involved in agro-food production. Together, these companies report to employ 5,999 people out of which 5,790 employees were covered as part of the survey.[28]

The companies were also representative in terms of their size and geographical location.

With regard to their geographical distribution (figure 2), slightly less than half of the surveyed companies (45 percent) were located in Mount Lebanon, followed by Bekaa covering 20 percent of the companies. Companies located in North Lebanon constituted 14 percent of the sample, followed by 12.5 percent in Beirut.

To get a better idea of the labour needs in each sector, the assessment focused on three categories of employees: (a) managerial and secretarial staff, (b) trained professionals, and (c) semi-skilled workers.

Figure 1. Geographical Distribution of Companies Across Lebanon



The difference between managerial staff and professionals is functional, pertaining to the role they play in the business and the kind of sector-specific expertise they possess. For example, managerial staff provide leadership, human resources and communications support, whereas professional staff include food scientists, engineers and software developers (according to the relevant industry).

Both catagories include semi-skilled workers who have tertiary education. This is not true for the class of semi-skilled workers. These employees lack higher education but possess skills and experience that enable them to perform specific tasks within their industries. As with professional workers, their precise skill set varies by industry but includes positions such as such as foreman at construction sites, electricians, carpenters, and those conducting quality control checks on production supply lines. Given that the purpose of the study is to help identify and address skill gaps within the Lebanese labourforce, the survey did not cover unskilled workers.

Having separated employees into these groupings, the team then asked companies about employee competency across four areas:

27. This entails dividing the total number of responses by the total sample excluding those who were ineligible and unreachable. The methodology for this calculation is taken from Saunders et al., ***Research Methods for Business Students, 5th Edition, Pearson Education Limited, England*** (2010) Chapter 7: Selecting Samples, p. 220

28. In the ‹General Information› section of the survey template) the surveyed person is asked about the 'Total Number of Employees' in the company. This number is intended only to define the size of the company and has no other effect on the results and the analysis. The next part of the survey template asks again about the breakdown of employees by segment (occupational levels, gender, nationality, etc.). When reporting about the number of employees surveyed, we have adopted the summation of the three occupational levels (Managerial & Support, Professionals, Skilled labour). Thus, the total number of employees surveyed is 5790. This number includes only the labour from the three occupational levels and does not reflect the total number of employees in the surveyed companies.

a. Personal effectiveness understood as general skills needed in professional and non-professional settings;
b. Academic competencies which are learned first-and-foremost in an academic setting but also include cognitive abilities and styles of thought;
c. Workplace competencies that are skills and abilities that allow individuals to function effectively in the workplace;
d. Industry-specific technical skills that are knowledge and abilities needed by all positions within a specific industry.

The gender and nationality of employees was also covered as part of the study. With regard to gender, the study confirmed the widely reported problem of low female participation in the workforce. Among our sample of MSMEs, women made up only 20 percent of the labour force. Rates of female participation were highest for managerial and secretarial staff (reaching 37 percent in the ICT industry). At the professional level, approximately one-in-five employees were women – something that held true across the three sectors. And at the level of semi-skilled worker, women play a significant role in agro-food production but are more-or-less excluded from the construction industry. Efforts to empower women economically might therefore focus on their contribution to semi-skilled work in the agro-food industry. The ICT sector does not employ semi-skilled workers.

Table 1. Gender Composition of Employees

	All Employees		
Sector	Total	Female Employees	% of Females
Agro-Food	1486	451	30%
Construction	2994	347	12%
ICT	1310	338	26%
All Sectors	5790	1136	20%

Source: Authors' calculations based on the conducted survey

Table 2. Distribution of Female Employees by Category

	Managerial & Support	Professionals	Semi-skilled Workers
Sector	% of Females	% of Females	% of Females
Agro-Food	30%	20%	33%
Construction	33%	19%	2%

Source: Authors' calculations based on the conducted survey

With regard to nationality, both the construction industry and the agro-food industry employ a significant number of non-Lebanese workers. The survey found that 35 percent of people working in construction, and 35 percent of those working in agro-food production, are non-nationals. However, in both cases, non-nationals are largely excluded from managerial and secretarial positions, contributing primarily to the ranks of semi-skilled labour. While foreign nationals have almost no presence in the ICT sector, in the construction industry, non-nationals make up more than half (55 percent) of the semi-skilled workforce.

Table 3. Nationality of Employees

	All Employees		
Sector	Total	Non- Lebanese Employees	% of non Lebanese
Agro-Food	1486	524	35%
Construction	2994	1037	35%
ICT	1310	30	2%
All Sectors	5790	1591	27%

Source: Authors' calculations based on the conducted survey

Table 4. Distribution of Non-Lebanese Employees by Category

	Managerial & Support	Professionals	Semi-skilled Workers
Sector	% of non Lebanese	% of non Lebanese	% of non Lebanese
Agro-Food	4%	17%	49%
Construction	5%	10%	55%

Source: Authors' calculations based on the conducted survey

1. THE AGRO-FOOD INDUSTRY IN LEBANON

SECTOR OVERVIEW

The agro-food industry is the largest industrial sector in Lebanon. It is predominantly composed of small family owned enterprises. Presently, the agro-food industry has over 736 registered companies in Lebanon, representing 18.2 percent of industrial activity in the country.[29] In 2012, the industry added USD 144 million to the Lebanese economy, making it the most productive agricultural subsector.[30] It is also fairly labour intensive, employing 20,600 people-or around one quarter of the industrial labourforce.[31]

As a result of the Syrian crisis, Lebanon's internal market for agro-food products has increased dramatically in recent years and now accounts for 54 percent of consumption.[32] The remaining 46 percent is exported overseas, with Lebanese 'Beverages, Spirits & Vinegar' leading the way. This category of goods made up 30.2 percent of total agro-food exports in 2015, worth an estimated USD 497.2 million.[33] Sugars and Sugar Confectionary' represent the second largest share of food exports, at 19.6 percent, closely followed by 'Prepared Vegetables, Fruits, and Nuts', which make up 18.1 percent of the food exported overseas.[34]

736
registered companies in Lebanon

144 million USD
added to the Lebanese Economy from the agro-food industry in 2012.

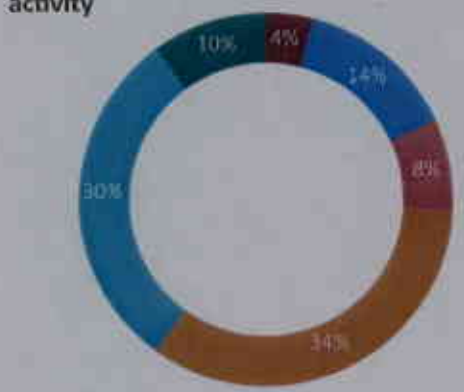
20,600
employees

29. Investment Development Authority in Lebanon (IDAL), Agrofood Factbook, (2015)
30. Ministry of Industry, The Lebanese Industrial Sector – Facts and Findings (2012)
31. The Lebanese Industrial Sector, Facts and Findings – 2007, Ministry of Industry
32. BLOM Invest , 'Agro-Industry in Lebanon: Looming Potential Restrained by Numerous Deficiencies , (June 2014), P.2
33. Investment Development Authority in Lebanon (IDAL), Agrofood Factbook (2015), p 4
34. ibid.

DISTRIBUTION OF AGRO-FOOD ACTIVITY

With regard to the geographical distribution of the agro-food industry, the largest numbers of businesses operate in Mount Lebanon (34 percent). This region includes higher lands that are suitable for fruit production, olive oil, pine nuts and carob.[35] The second most productive region is Bekaa where 30 percent of MSMEs are based. It has long been considered a reservoir of agricultural produce in Lebanon, producing wine, dairy and meat products, stone fruits and vegetables. Northern Lebanon and Akkar is the third most important region (accounting for 14 percent of business), producing plumbs and prunes, alongside various vegetables.

Figure 3. Regional distribution of agro-food activity



Source: Authors' Calculations from the conducted survey

Key challenges faced by the sector include high production costs and the difficulty of developing economies of scale in a small market, low levels of investment in research and development, lack of strategic development and management within the sector, and restricted access to water and electricity.

MAPPING THE AGRO-FOOD INDUSTRY SECTOR ECOSYSTEM

While the agro-food industry is predominantly composed of small family owned enterprises, government ministries have played a central role in developing the sector. The Ministry of Industry focuses on maintaining quality standards and promoting better production practices, the Ministry of Agriculture works on facilitating linkages between agricultural activities and the Agro-Food industries, and the Ministry of Economy and Trade has played an important role in developing partnerships with the European Commission. This last initiative led to the establishment of the Association Agripole, which is a business development centre that aims to develop agricultural and agro-industrial enterprises.

In addition to these branches of government, the Investment Development Authority of Lebanon (IDAL) is mandated by Law to assist in the support, promotion and marketing of Lebanese products, especially agricultural and agro-industrial products. Efforts made by public institutions have also been amplified through the contributions of private entities like the Syndicate of Lebanese Food (SLF) Industrialists. The SLF guides its members to relevant sources of market information, organizes Lebanese national pavilions at international food fairs, and advocates for the sector's interest with concerned authorities and international organizations.

On the local level, the Chambers of Commerce, Industry, & Agriculture provide marketing facilitation and services to support the MSMEs. Furthermore, several stakeholders influence the growth and development of the sector. Key enablers include: Food Safety Laboratories that can provide national and international certifications, Machinery Providers, and Raw Material Suppliers. The diagram below highlights the key stakeholders in the sector, the MSMEs (Figure 4), and key initiatives implemented to develop the agro-food industry (Table 5).

35 ibid.

Figure 4: Key stakeholders in the Agro-food industry sector[36]

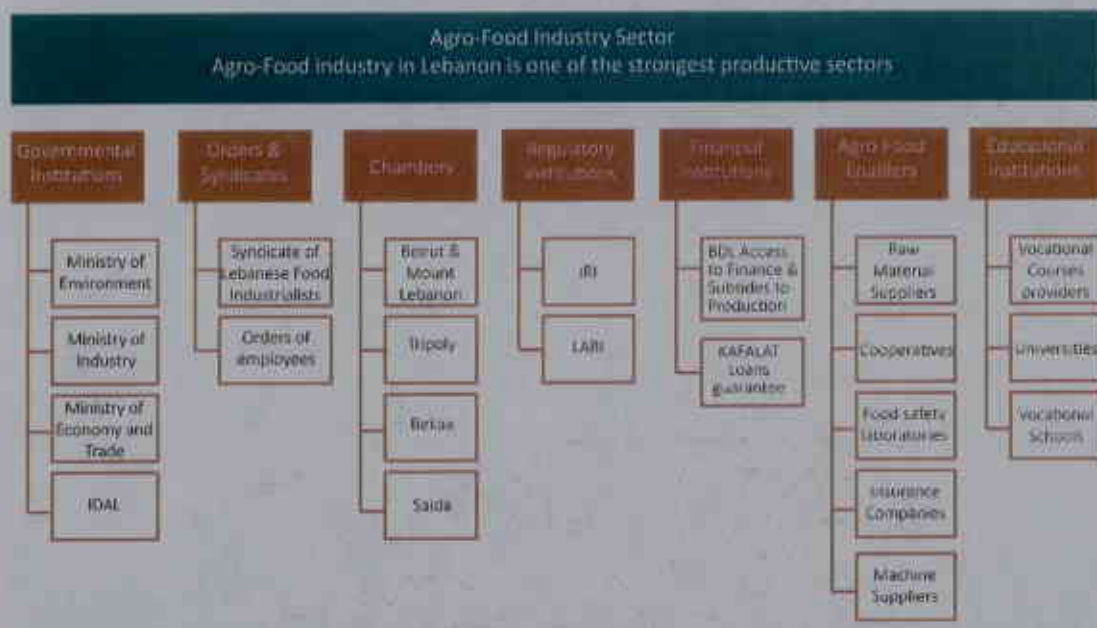


Table 5: Initiatives in the Agro-Food Industry

Initiatives in the Agro-Food Sector	Description
QUALEB	An EU-funded Quality Programme at the Ministry of Economy and Trade-QUALEB, implemented by the Quality Unit at the Ministry. The main purpose of this website is to provide those accessing the site, whether in Lebanon or abroad, with all the updates concerning quality and excellence processes.
ENPARD Lebanon Initiative	Supports the Ministry of Agriculture in the formulation of the agricultural and rural policy 2015 – 2019
SIFOHR	Supports Small Initiatives of Traditional Food Production and Handicraft in Rural Areas of the Jabal Moussa Biosphere Reserve.
Lebanese Organic Cooperative Exports- BioCoop Lubnan	Facilitates participation in local and international exhibitions, posting marketing opportunities, providing training and capacity building, extending services and access to credit to its farmers, as well as providing packaging equipment and machinery. This initiative falls within the U.S. Government-funded Sustainable Agribusiness Initiative for Lebanon (SAIL) program.
Agro-food school at Qab Elias	Supported by an EU initiative, the Syndicate of Lebanese Food Industries formed a partnership with VTE and opened an agro-food vocational school in Qab Elias. It offers an apprenticeship-training program that leads to direct interaction between schools and businesses.
National Observatory for Women in Agriculture and Rural Areas (NOWARA)	Aims to promote land development by encouraging female entrepreneurship and the creation of innovative dynamics related to the work and employment of Lebanese women in the agricultural, agro-food and rural sectors. Nowara also aims to support rural women by spreading knowledge and good practices.
TASDIER	The Agro-products Directory for International Export (TASDIER), developed by CCIA, is a public database of technical requirements for export. It is linked to the countries that are most often targeted by Lebanese SMEs.

36 Vocational schools are the certified technical schools (formal education system) while the vocational courses providers offer training on specific topics or technical skills.

SURVEY RESULTS AND ANALYSIS FOR THE AGRO-FOOD INDUSTRY

Within the field of agro-food production the survey uncovered a number of important trends. To start with, 40 percent of MSMEs working in this area report that the 'identification and recruitment of qualified staff' is a problem they encounter which impacts on productivity. They also identify a number of difficulties that are specific to certain categories of employees within the agro-food sector.

For managerial and support staff, the major deficit concerns knowledge of marketing and market research. Fifty-four percent of companies reported suffering from a lack of market research, 52 percent identified knowledge of advertising as an issue, and 46 percent stated that the use of effective marketing techniques was an obstacle to their business.[37] A secondary concern for these employees was that they lack strong written communication abilities, something that was highlighted by 40 percent of employers.

Among professionals, such as food scientists and engineers, the major barriers were different. For this class of employees, 'academic competencies' are the major challenge. Seventy percent of companies state that written and oral communication skills among their professional employees are a problem, partly because it prevents them from using up-to-date research and development. With regard to technical skills themselves, the priority is to find people with good laboratory research and technical skills (48 percent of companies) and good Research and Development aptitude (44 percent of companies).[38]

Many of these problems were most serious for semi-skilled labour. In addition to the predictable shortage of writing and communication skills (identified as a problem by over 90 percent of respondents), these workers often struggle to use new technologies (60 percent of companies), conduct quality control (60 percent), undertake effective monitoring and evaluation (50 percent) and employ techniques of cost control (50 percent).[39] There are also concerns about weak workplace competencies: 76 percent of companies report concerns about timekeeping among employees.

In general, there seems to be a correlation between the level of language skills employees have and the other technical competencies they possess. Yet, there is also considerable variation in the skills needed according to worker category: for management and support staff training in marketing skills are needed, for professionals the focus should be on improving communication and ability to use scientific research, and among semi-skilled labour the focus should be on improving everyday competencies including quality control and the use of new machinery.

Finally, we should note that the severity of the skills shortage encountered in each employment category is not the same across all categories of workers. The most pervasive shortages of skills are reported among semi-skilled workers, followed by professional, then managerial staff. This suggests that it is important to focus on industry-specific technical skills for professional and semi-skilled workers.

37. The survey ranked the skills of employees from 1 (low) to 5 (high). The mean score for these three competencies were 3.2, 3.3 and 3.4 respectively. These are the lowest scores reports among managerial and support staff across all issue areas.
38. The average (mean) skill scores for professionals were: lab skills 3.5; R&D 3.7; new technologies 3.8; and pricing decisions 3.9.
39. The average skill scores for semi-skilled workers were: use of new machinery 3; controlling use of raw materials 3.4; production and processing 3.8; and operating existing technologies 3.9.

2. THE CONSTRUCTION INDUSTRY IN LEBANON

SECTOR OVERVIEW

The construction sector is an important element of the Lebanese economy, accounting for 5.8 percent of GDP in 2011, and employing a larger share of the labour force. In total over 110,600 Lebanese people work in this field.[40] Yet despite the plentiful supply of labour, the construction industry has struggled in recent years. For example registration fees for construction contracted in 2015 by 9.4 percent[41], and more recently, Construction Permits recorded a 2.3 percent[42] year-on-year decrease in the first 8 months of 2016.

Furthermore, outside of managerial and professional positions, a large percentage of people working in this sector come from Syria and overseas.[43] The centrality of this sector, and its labour force composition, make its development crucial for Lebanon's socio-economic stability and something deserving of particular attention at this time.

5.8 % of GDP in 2011

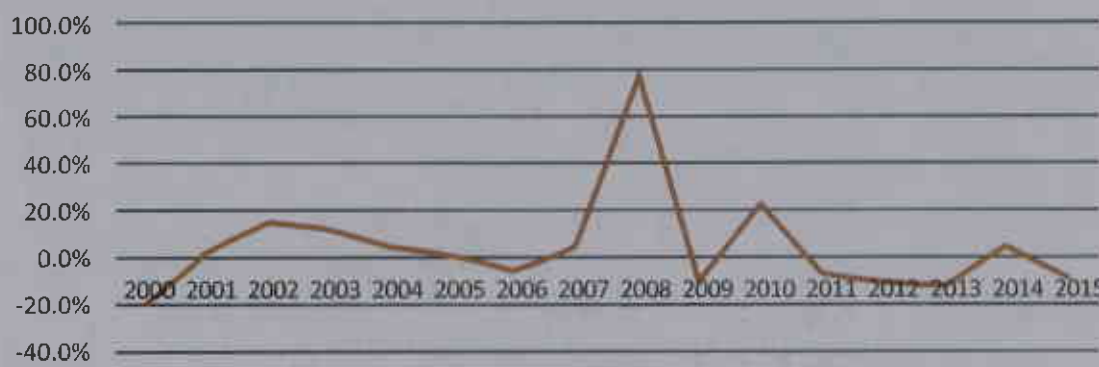
110,600 Lebanese people work in construction

9.4 % contraction in registration fees for construction in 2015

2.3 % year on year decrease in registration fees in the first 8 months of 2016

A large percentage of people working in this sector come from Syria and overseas

Figure 4. Annual Growth Rate of Construction Permits granted in Lebanon for the period 2000-2015



Source: Order of Engineers & Architects report

40. According to the Lebanese Contractors' Union and Syndicates of Construction Contractors, the construction and infrastructure sector employs about 350,000 Syrian workers, distributed among 3,400 companies. Lebanese make up 24% of the total construction sector (110,600 +350,000 = 460,600). This number (460,600) includes all occupational levels including the unskilled.
41. The World Bank, Lebanon Economic Monitor, (Spring 2016), p.6
42. Order of Engineers of Beirut and Tripoli
43. Note that this figure includes unskilled labour that fall outside the scope of this report. Our companies reported that 55 percent of semi-skilled labour in the construction industry is performed by non-nationals.

MAPPING THE CONSTRUCTION SECTOR ECOSYSTEM

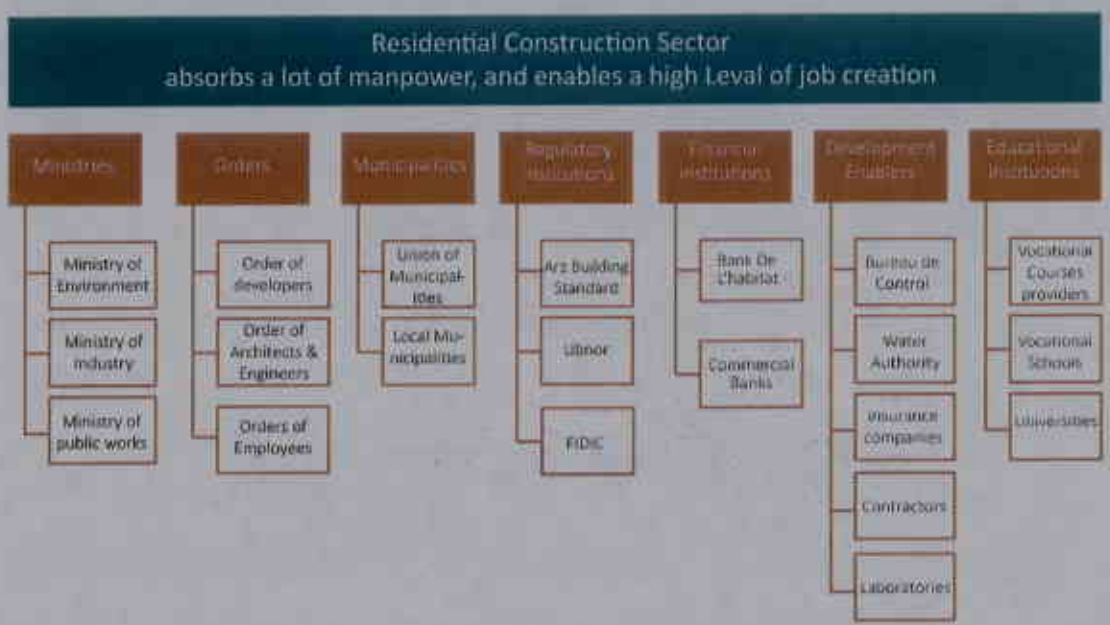
The residential construction industry has a large ecosystem with several stakeholders involved. At its heart are MSMEs, who take most of the initiative when it comes to investing and developing the sector.

At the regulatory level, the sector is governed by multiple entities, operating at different level. Ministries such as the Ministry of Public Works and the Ministry of Environment provide national-level governance for the industry as well as technical support services. Rules and regulations are then either enforced directly by the Ministries or indirectly through attached regulatory institutions. These include 'LIBNOR' which is attached the Ministry of Industry, 'Urban Planning & Topography' for the Ministry of Public Works, and the Real Estate Department which is attached to the Ministry of Finance. Lastly, there are independent regulatory bodies that seek to apply international standards, such as the International Federation for Consulting Engineers (FIDIC). Municipality governments, who issue construction permits, also provide oversight at the local level.

A separate relationship, between building developers and engineers, is governed by the Order of Architects and Engineers, who issue general guidance, administer a code of conduct, provide engineer work permits, and contribute to discussion around amendments to construction laws.

Finally, financial institutions, such as banks that provide residential housing loans and financial support to MSMEs, play a catalytic role in the growth of the sector. Other enablers include: Electricity of Lebanon, Bureau de Control (for big construction projects), the National Water Authority, Insurance Companies, and educational institutions (universities, vocational schools, and vocational courses providers) that provide the construction sectors with human capital it needs. The diagrams below highlight the key stakeholders in this sector, in addition to the MSMEs (Figure7).

Figure 5: Key stakeholders in the Residential Construction Sector



SURVEY RESULTS AND ANALYSIS FOR THE CONSTRUCTION INDUSTRY

The assessment of labour needs in the construction industry parallels findings for the agro-food industry in interesting ways. Most clearly, difficulties that exist among management and support staff, for example in siting construction projects, resonate and become greater at the level of the professional and semi-skilled workforce. Among the companies surveyed, 43 percent said that knowledge of siting was a problem for management, 59 percent encountered this problem among professionals, and 76 percent encountered this problem among their semi-skilled workforce.[44] Given the knowledge hierarchy that tends to exist within companies, this result is not necessarily surprising. However, it does speak to the need for better in-company training and the diffusion of knowledge within existing frameworks.

Within the construction industry, the fewest difficulties are encountered with management and support staff. The main concern in this area is that this class of employees are unable to communicate effectively, particularly in English (41 percent of companies), and also that management lacks specific industry-specific knowledge about siting (see above), waste management (54 percent of companies) and efficient business practices (38 percent).[45]

The problem posed by inadequate training is more serious for professionals such as engineers and surveyors. Among this group of employees difficulties were noted on several fronts: waste management (67 percent), awareness of environmental impact (62 percent), use of scientific methods (58 percent), knowledge of green building practices (57 percent) communication skills (55 percent), and applied mathematics (55 percent).[46]More than half the construction companies in Lebanon struggle to find professionals who have these aptitudes.

Finally, the largest skills gaps, defined in terms of the percentage of companies encountering problems in these areas, occurred among the ranks of semi-skilled professionals. In addition to very weak academic competencies across the board, there is a troubling lack of general workplace competencies, with companies reporting challenges with the ability of employees to: solve problems (81 percent), check and record their work (80 percent), select, use and maintain tools (78 percent).

Moreover, semi-skilled workers lack industry-specific skills that could form the focus of vocational training.[47] For example, in addition to citing, 75 percent of companies struggle to find skilled plumbers, 71 percent need people trained in heating, ventilation and air conditioning, 69 percent need experts in electrical wiring, 67 percent need skilled carpenters, and 64 percent need health and safety experts. The development of these vocational skills represents an important area for labour market interventions.[48]

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44. The average skill scores for 'siting' were: Management and Support staff 3.4, Professionals 3.2, Semi-skilled workers 2.8.
45. The average skill scores for management and support were: communication 3.7, waste management 3.2, efficient business practices 3.6.
46. The average skill scores for professionals were: waste management 2.9, awareness of environmental impact 3.3, use of scientific method 3.4, green building practices 3.4, communications skills 3.3, and applied mathematics 3.4.
47. The average skill scores for semi-skilled workers in these areas were: problem solving 2.7, checking and recording work 2.5, selection and maintenance of tools 2.6.
48. The average skill scores for semi-skilled workers with regard to these specializations were: plumbers 2.4, ventilation, heating and air conditioning 2.4, electricians 2.6, carpenters 2.5, health and safety experts 3.2.

3. THE ICT SECTOR IN LEBANON

SECTOR OVERVIEW

The ICT industry in Lebanon consists of over 800 companies, which account for around 2.8 percent of GDP and employ close to ten thousand people.[49] Investments in the sector can be expected to bear fruit for three reasons. First, the market for these goods and services grew rapidly, at a compounded growth rate of 7.9 percent, between 2009 and 2014. Backed by new investment, this trend looks set to continue, with recent estimates suggesting the market will grow from USD 381 million in 2014 to USD 530 million by 2017.[50] Second, there are a number of powerful enablers who have identified ICT as a priority. Lebanon already has a number of successful technology incubators, who can help catalyse innovation, and the Central Bank of Lebanon has agreed to guarantee up to 75 percent of deposits for this industry.[51] Third, there are supportive general trends such as the jump in internet use from 52 per cent in 2011 to 74.7 per cent in 2014. Broadband subscriptions trebled in the same period to reach over 1.1 million persons.[52]

The ICT industry market in Lebanon

Combined with Lebanon's good rates of tertiary education, these factors have led the World Bank to conclude that Lebanon has 'an opportunity to develop a 'tech start-up ecosystem' where communities of entrepreneurs interact, becoming a viable source for high-skilled job creation.'[53] Ultimately, the hope is that this sector will create more than 2,000 new jobs for university graduates each year.

The Lebanese software sector is mostly comprised of small and medium sized entities. Eighty-two percent of companies in this sector have less than 25 employees, and only 4 percent employ over 100 staff members. On average ICT companies employ 21 people, with larger

49. Sawaya, Leila, 'The Lebanese IT Sector: Overview and Investment Opportunities' (Presentation by an economic advisor at IDAL), 2016

50. Investment Development Authority in Lebanon (IDAL), Invest in Lebanon: ICT Sector Statistics (2015) p.2

51. Banque du Liban Circular 331: In August 2013, BDL issued Circular 331, guaranteeing 75% of commercial banks' investments in the knowledge economy through direct startup equity investment or indirect startup support entities. Through this circular, local banks receive a seven-year interest-free credit from BDL, which can be invested in treasury bonds with an interest rate of 7%. In return, the commercial bank commits to investing in the knowledge economy. Local banks can invest up to 3% of their capital in startup support entities, funds or directly into startups. BDL guarantees 75% of the investment, de-risking it by mitigating the potential losses and reducing them to a mere 25%. Circular 331 is designed to diminish risk for the conservative local banks and does so by dictating the banks' portfolio diversification. A bank can invest up to 10 % (of its 3%) in any one startup, thus spreading the risk. BDL takes on 75% of the risk and only 50% of any profit made. In order to qualify, the company should be a Lebanese joint-stock company with nominal shares; its work should rely on knowledge economy, support creative intellectual skills, and have an enriching impact on the economic and social growth and on job creation in the Lebanese market.

52. World Bank Economic Monitor (Spring 2016)

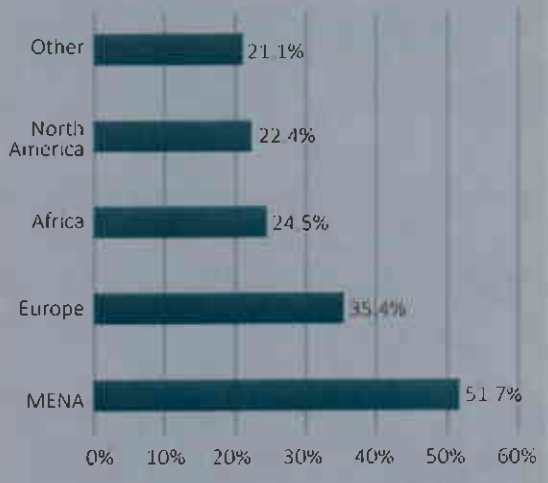
53. World Bank, Economic Monitor (Spring 2016)

companies existing primarily as subsidiaries of multinational corporations.[54] Geographically, these companies are heavily concentrated in Beirut and Mount Lebanon where 94 percent of them reside. Outside of these areas, the Special Economic Zone in Tripoli[55] will offer incentives that make it an appealing place for ICT companies to reside.[56]

According to a 2011 report[57], 74 percent of ICT companies in Lebanon work in the software development industry that performs three major functions: provision of software for vertical industries such as healthcare, education and banking sectors (48 percent of the business), website hosting, design and development, as well as the provision of e-services (37 percent), and the development of mobile services and apps (14 percent).

Viewed in the context of global trends and markets, the Lebanese ICT sector is well-placed to benefit from a labor-cost advantage. The average wage of a software engineer is 50 percent lower than in developed economies and 37 percent lower than GCC countries.[58] Most of these firms produce products for export, with 76 percent of software development companies, 67 percent of web development companies, and 66 percent of app development companies selling products to one or more international market. More than half of these companies currently sell to markets in the MENA region, and 35 percent have customers in Europe (with French consumers topping the list).

Figure 6. Top export markets for ICT companies in Lebanon (2015)



Source: Sawaya, Leila, 'The Lebanese IT Sector: Overview and Investment Opportunities' (Presentation by an economic advisor at IDAL), 2016

54. World Intellectual Property Organization, Study on the Economic Contribution of the Software Industry in Lebanon (2008)
55 The Tripoli Special Economic Zone (TSEZ) is a project that entails drafting a feasibility study and master plan for a Special Economic Zone in Lebanon's northern city of Tripoli, with the intent of facilitating job creation in an important part of the country outside the capital city. The TSEZ seeks to reduce barriers to doing business and to enhance collaborative opportunities for investment and export-led growth.
56. Ibid
57. Investment Development Authority in Lebanon (IDAL)
58 . Sawaya, Leila, 'The Lebanese IT Sector: Overview and Investment Opportunities' (Presentation by an economic advisor at IDAL), 2016

MAPPING THE ICT SECTOR ECOSYSTEM

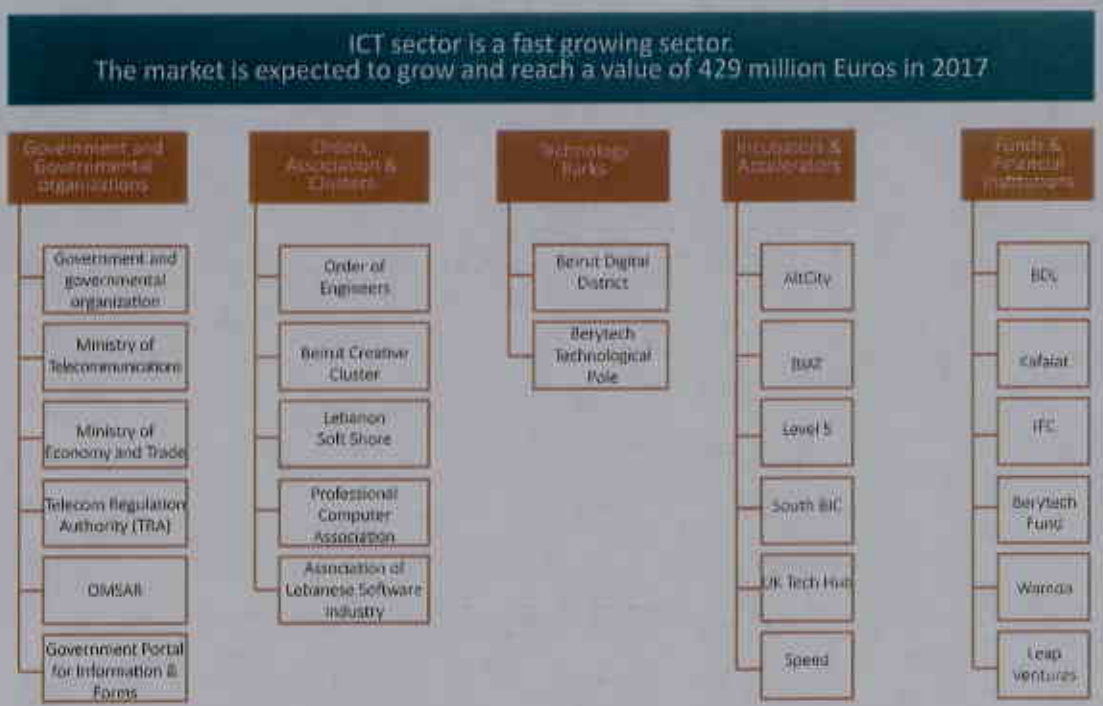
The Government and governmental organizations play a key role in setting the right environment, infrastructure, and policies for the flourishing of this sector. They set ICT investment policies, tariffs & tax policies, issue licenses, develop national level strategies, and regulate the implementation process. Financial institutions are also one of the key enablers of the growth of the sector. Banque Du Liban, Kafalat, other banks, and private investment funds provide the necessary capital and financial support to young enterprises through a variety of programs and initiatives.

Accelerators and Incubators such as Berytech, UK Lebanon Tech Hub, Speed, and others provide hosting, coaching, access to finance, access to markets, and training in business management for newly established ICT companies. They promote the required culture and provide a hub for events, networks, and communities to form.

In the recent years, several institutional and private initiatives were instigated to support the growth of ICT in Lebanon, such as: BDL Circular 331, BDL Accelerate,[59] iSME Kafalat,[60] the Tripoli Special Economic Zone, and others. The diagrams below highlight the key stakeholders in this sector ecosystem, in addition to the MSMEs (Figure 9) as well as some initiatives to promote the growth of the sector and ensure its development (Figure 10).

Cooperation between MSMEs and support organizations will undoubtedly play a key role in the evolution of this ecosystem by connecting entrepreneurs with the types of support they need.

Figure 7: Key Stakeholders in the ICT Sectors



59. Banque du Liban (BDL) Accelerate is an annual international conference organized by The Central Bank of Lebanon, Banque du Liban. The event began in November 2014, as a celebration of the first anniversary of Banque du Liban's Circular 331. This innovation and startup conference is inclusive in that it is free so that anyone may be able to attend, benefit, and engage with industry experts and investors.

60. The iSME Programme is an initiative funded by the Government of Lebanon through a loan from the World Bank, that aims at encouraging the equity investment market to increase early stage investment finance for financially viable, new, and existing innovative firms.

Figure 8: Initiatives to promote the growth of the ICT Sector

Institutional Initiatives	Private Initiatives	Competitions
• iSME Kafalat • BDL Accelerate • Beirut Digital District • ELCIM • TSEZ • Programme Cedre • The Grant Research Program (GRP)	• SE Factory • Torch Academy • Launch Summit • Startup Weekend	• Hackathons • Startup Weekends • MIT Business Plan Competition • Abillama Eco-entrepreneruship Award

SURVEY RESULTS AND ANALYSIS FOR THE ICT INDUSTRY

The ICT sector tended to perform strongly with regard to the managerial and support staff. While there are some difficulties in this area, no single problem was encountered by more than a third of companies, something that indicates a strong match of labour supply and demand in this area. In general, the skills that were identified as impediments among these staff concerned their ability to partake in 'blue sky thinking' of the kind that leads to success in the creative industries. For example, 34 percent of companies said that they wanted their managerial and support staff to show greater appetite for learning, 31 percent wanted them to take the initiative more often and 31 percent encountered problems when it came to generating and implementing alternatives.[61]

A larger number of obstacles were encountered when it came to recruiting skilled professionals who could work as software engineers, website developers, programmers and other technical positions. In these areas, companies reported that there was room for personal development with 51 percent asking staff to show more initiative, 46 percent identifying dependability as an issue, and 43 percent stating that there was a need for greater commitment to lifelong learning.[62] ICT companies also believed that their professional staff could benefit from general training in management practices to improve their personal allocation of resources (63 percent), prioritisation of key work (62 percent) and project management skills (60 percent).[63]

Finally, there are a number of technical capabilities that the industry will need to develop if it is to fulfil its potential. The greatest priority is 'understanding the needs of different user groups' which 55 percent of companies identified as a priority. This was closely followed by a need to gain skills in the field of virtualization and cloud computing (52 percent), conduct training about the latest technologies (49 percent), and manage internet security and risk effectively (49 percent).[64]

Taken together, these findings suggest that the ICT industry is in a strong overall position but will need to professionalise and develop additional expertise as company size increases. Curiously, while management and support staff report good awareness of compliance issues, this is not true of professionals with 57 percent of companies stating that it was a problem among this group of employees. This finding indicates the need for more joined-up management practices, and the sharing of information across specialist boundaries.

61. Skill scores: appetite for learning 3.8; taking the initiative 3.9; generating alternatives 3.9; implementing alternatives 3.9.
62. Skill scores: personal initiative 3.5, dependability 3.8, lifelong learning 3.8
63. Skill scores: resource allocation 3.2, prioritisation 3.4, project management 3.3
64. Skill scores: understanding user groups 3.6, virtualization and cloud computing 3.4, latest technologies 3.6, risk and security 3.7.

III. GENERAL RECOMMENDATIONS

1. **Help companies understand user needs and market dynamics**

   Across all three sectors companies found it difficult to grasp user needs and market dynamics in a timely and effective manger. Lebanon has many many university graduates who are trained in marketing. This skill-set needs to be better integrated into the labour market. Workshops and training programmes could be used to help MSMEs improve their marketing abilities.

2. **Address the need for green building and waste disposal skills in the construction sector**

   The construction sector is looking to employ people with knowledge of green building practices, waste disposal, electrical engineering, and ventilation systems. It also needs qualified foremen who can administer construction sites. These skills should therefore be at the heart of technical training programs.

   Among other things, these courses could be operated through the NEEREA scheme, which is a BDL scheme dedicated to promote the financing of energy efficiency and renewable energy projects all over Lebanon.

3. **Provide agro-food sector employees with knowledge of the latest technologies and practices**

   The agro-food sector needs skilled technicians who are informed about the latest research and development practices in the field. These skills can be used to raise the quality of produce and improve the productivity of the sector. They also have the potential to benefit women, given that they make up a large share of the semi-skilled workforce in the agro-food sector.

4. **Strengthen management practices and promote effective vocational training for ICT**

   The ICT sector needs to focus on strengthening management practices so that companies can scale-up effectively. In addition to the financial support the industry already receives, it would benefit from the use of incubators and knowledge-exchange programmes. As an example, the Government can encourage the establishment of multidisciplinary programs at the Lebanese University or in public vocational institutes, starting from engineering to design, to cloud computing and coding. The quality of vocational training also needs to be significantly improved so that firms can hire those who graduate from these programmes, something that is not currently the case.

5. **Invest in language training schemes particularly for skilled professionals**

   Employers noted that weak language and communication skills (in English) serve as barrier to learning, research and development, particularly among professionals. These capacities – and the skills needed for active learning – would ideally become part of their routine education and professional development.

6. **Match between what students education and the demands of the labor market**

   Ministries and industrial associations should provide universities with information about the labor market and encourage them to modify their courses accordingly. Ultimately, skills must match employer needs. Students should also be assigned real case studies to work on, gaining knowledge about local markets, different industries, sectors, and value chains, in the various regions

7. **Develop and launch a labor market information website**

   This online platform would make information about skills and certifications publicly available and help match labour supply and demand. This national labour

market website would allow job seekers and employers to apply for, or post, job opportunities that match nationally recognized skills and qualifications. 'Lebanon Ta3mal' is an example of an initiative launched by Microsoft that provides some of these services. However, greater awareness among employers and prospective employees is needed.

8. **Create public-private partnerships such as skills councils**

At a national level the government must focus on developing public-private partnerships that enable stakeholders to coordinate and share resources, ensuring comprehensive dialogue on skills issue. Government agencies, businesses and industry associations, educational and training institutions, and community based organizations should all be involved in this process.

In particular, the private sector could support apprenticeship programmes, provide on-the-job training for employees, contribute to long-term development plans, provide information about the labour market, and raise awareness about opportunities and employment schemes.

The skills councils could also feed into the development of sector strategies (with a particular focus on human capital), and support the education sector in its transition away from purely theoretical training and towards competency-based approaches that are responsive to market demands.

ANNEX A - Methodology

1. Survey Preparation

To support the development of the survey and identify the key questions it would address the research team undertook three kinds of investigation:

i. **Literature Review** of reports and studies about the Lebanese labour market, including analysis by the Central Administration for Statistics, World Bank, UNDP, International Labor Organization and the Ministry of Economy and Trade.

ii. **Sectorial Mapping** of value chains and stakeholders. Value chain analysis identifies all enterprises involved in a sector, while stakeholder mapping uses a collaborative process (involving research, debate, and discussion) to identify other key stakeholders in a sector, and make sure they are included.

iii. **Elite-level interviews** with experts in the selected sectors, including representatives of the government, private sector, and educational institutions, to discuss the proposal. Questions centred upon the current workforce characteristics within each sector, major barriers to growth and skills gaps, and analysis of the draft questionnaire.

2. Survey Sampling

The survey sought to develop a more detailed picture of current workforce characteristics within the three priority sectors. To define the minimum number of surveyed companies or sample size, the researchers first established the formal population size of each sector. The results were found to be the following:

Agro food:	ICT	Construction:
1354[65]	800[66]	3080[67]

Once the population size was set, researchers used a number of further assumptions to calculate the sample size for each sector.

Confidence level	Margin of error	Percentage value (p):
95%	10%	0.5

The team was also keen to ensure that the survey reached an even geographical spread of companies. To achieve this goal they looked at the distribution of construction permits (collected from the order of engineers in Beirut and Tripoli), at the 2014 IDAL Agro-food Factsheet, and at figures provided by the Ministry of Economy and Trade (MoET).

Table 1: Distribution of Construction Permits

	North Lebanon	Beirut	Mount Lebanon	Bekaa	South	Nabatiyeh
Construction Permits	1,936,415	717,968	6,346,787.62	1,013,470	1,518,636	1,021,826
Distribution in %	15%	6%	50%	8%	12%	8%

Source: Order of Engineers in Beirut and Tripoli

65. Ministry of Finance Data
66. IDAL Data
67. Syndicate of Lebanese public works and construction contractors

Table 2: Distribution of Agro-Food Activity

	North Lebanon	Beirut	Mount Lebanon	Bekaa	South	Nabatiyeh
Distribution in %	14%	8%	34%	30%	10%	4%

Source: 2014 IDAL Agro-food Factsheet

Table 3: SME Distribution in Lebanon

	North Lebanon	Beirut	Mount Lebanon	Bekaa	South	Nabatiyeh
Distribution in %	15%	6%	50%	8%	12%	8%

Source: Lebanon SME Strategy, A Roadmap to 2020, Ministry of Economy and Trade 2014

Lastly, the team sought to achieve a sample that was representative of company size. Data provided by the MoET[68] indicate that micro-enterprises (with less than ten employees) make up 80 percent of MSMEs, small enterprises (of 10 to 50 people) make up 16 percent of Lebanese enterprises, Medium enterprises (50 to 100 people) count for 3 percent of Lebanese enterprises, and 1 percent are large enterprises.

Having established these parameters, the team approached a random sample of 595 companies, conforming to the required distribution. Company names and contacts were identified by the Order of Engineers and Architects, the Syndicate of Lebanese Public Works and Construction Contractors Database, the IDAL database for ICT and agro-food, the Association of Lebanese Industrialists, Kompass, and the 5 Index of Lebanon. Of those contacted, 240 completed the survey

Table 4: Collected Data by Regional Distribution

	Total	North Lebanon	Beirut	South Lebanon	Mount Lebanon	Bekaa	Nabatiyeh
Construction	**125**	20	8	15	62	10	10
Agro-Food	**50**	7	3	6	17	15	2
ICT	**65**	6	19	4	30	4	2
Total	**240**	33	30	25	109	29	14

Overall, the Headway Team interviewed 4.5% of the SMEs in the selected sectors in Lebanon, distributed as follows:

Agro food:	ICT	Construction:
3.69%	8.1%	4.1%

Taking into consideration the geographical distribution adopted in the research team's samples and their sizes, Headway confirmed that the samples were representative of the selected sectors, particularly when compared to other surveys conducted worldwide. (See Box 1)

68. MoET, Lebanon SME Strategy, a Roadmap to 2020 (2014)

Box 1: Comparable Studies

In a 2014 study conducted in the UK, the survey interviewed 5,115 businesses across the country. In the UK there are 5.2 million SMEs, accounting for 60% (15.2 million) of UK private sector employment. This study interviewed less than 0.1% of the total number of SMEs but still provided authorities findings (Department for Business Innovation and Skills (2014)). In another study (OECD 2007 UK) of 171,405 firms in the UK West Midlands region (Wetherill, 2010), the questionnaire was sent to 1,524 SMEs (0.88%) and obtained a 3% (52 SMEs) response rate.

3. Survey Design

Drawing upon techniques pioneered by the ILO, the team developed a survey of employer perceptions, to identify skills gaps and shortages in their companies, asking questions about a range of aptitudes and abilities.[69] It started with a pilot of seven firms and was improved in light of their feedback.

The survey used a key informant approach, collecting information directly from the owners or managers of the surveyed companies. Informants were selected based on criteria relating to their industry expertise, as well as their positions within the company. The results of this report are subject to bias since they are based on subjective opinion of the respondents. Nevertheless, this methodology has been widely used when studying skills gaps. Indeed, the ILO notes that 'in the absence of skills data, discussions of skills mismatch are often informed by surveys of employers' or employees' perceptions regarding skills mismatch, without necessarily clearly defining 'skills.'[70] This is often the best approach to take when fine-grained employment data is not available.

Proceeding in this way key informants, such as the owner, manager, or head of human resources in a company, were asked to evaluate the skills of their employees, for three different occupational groups, ranking them from 1 (not satisfied at all) to 5 (highly satisfied). The questionnaire itself was based on research about existing competency frameworks,[71] which structure and defines individual competencies and skills sets required by people working in an organization adopted in different countries. From this basis the research team extracted a customizable survey draft for each subsector, taking into consideration the relevant skills for these subsectors in the Lebanese context and the variables to be analysed.

The questionnaire started by collecting general information about the company, its name, year founded, location, total number of employees and subsector. The total number of employees were then divided into 3 main occupational levels, which were: (i) management and support staff with university degrees, (b) professionals with university degrees, and (c) semi-skilled workers without degrees, but with experience or technical training. Information was also collected about the number, gender and nationality of employees in each sector. Finally, informants were asked about employees' skills across four broad areas: personal effectiveness, academic competencies, workplace competencies and industry specific technical skills.

To collect this information two processes for data collection were adopted:

One-on-one interviews based on company visits by trained surveyors and the Headway Team.

Phone calls and electronic correspondence. When a firm expressed willingness to complete the questionnaire, the surveyor called to explain how it should be filled out and emailed the owner, or manager, or head of the human resources department.

In total, the team collected 240 complete questionnaires of which 151 questionnaires (63 percent) were completed through field visits and 89 (37 percent) were conducted by phone and email.

Having collected all the completed surveys from different surveyors around Lebanon, data was processed using SurveyMonkey, SPSS and excel. The final results are presented in this report

4. Limitations

The sample size excludes informal businesses which make up an important share of the Lebanese labour market. According to ILO, the level of informality in Lebanon is around 44 percent[22]. Findings are also based on interviews with business owners, to establish the demand perspective, not with individual employees. The latter research also needs to be conducted. Finally, it is possible that some of the businesses overestimated the skills of employees in order to reflect a better company image to surveyors, despite survey anonymity.

ANNEX B – Survey Data

I. Agro-food Industry Average Skill Scores and Percentages

MANAGERIAL & SUPPORT STAFF		Industry Average Skill Score (1-5, low to high)	Percentage of Entities Suffering from Weakness
Personal Effectiveness Competencies	1. Interpersonal Skills: Display skills to work with others from a range of backgrounds.	4.4	8.0%
	2. Integrity: Display accepted social and work behaviours.	4.7	2.0%
	3. Initiative: Demonstrate a willingness to work.	4.3	16.0%
	4. Dependability & Reliability: Display responsible behaviours at work.	4.4	12.0%
	5. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision-making.	4.4	16.0%
	6. Professionalism: Maintain a Professional Demeanour.	4.4	12.0%
Academic Competencies	1. Reading: Read and understand technical and workplace documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices.	4.0	20.0%
	2. Writing: Prepare written professional documents.	3.8	38.0%
	3. Communication—Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.	3.4	40.0%
	4. Speaking & Listening.	4.1	24.0%
	5.Computer Skills:		
	5.1 Use a computer and related applications to input, store, and retrieve information. (Computer Basics)	3.7	36.0%
	5.2 Preparing Documents.	4.1	30.0%

Workplace Competencies	1. Teamwork: Work cooperatively with others to complete work assignments.	4.5	10.0%
	2. Problem Solving & Decision Making: Apply critical-thinking skills to solve problems encountered on the work site; Identify a problem	4.4	8.0%
	3. Working with Tools and Technology: Select, use, and maintain tools and technology to facilitate work activity.	4.1	28.0%
	Keeping Current and Up to date.	3.9	32.0%
	4. Checking, Examining, & Recording: Enter, transcribe, record, store, or maintain information in written or electronic format.	4.2	18.0%
	5. Planning & Scheduling:		
	5.1 Plan, organize, and schedule a project/job to optimize workflow sequence.	4.2	20.0%
	5.2 Time Management.	4.2	18.0%
	5.3 Manage obstacles	4.2	20.0%
Industry Specific Technical Skills	1. Safety and Regulations: Ensuring a lawful workplace	4.4	10.0%
	Managing safe and healthy workplace	4.4	10.0%
	Food safety management.	4.5	8.0%.
	2. Research & Development: Quality Control/Auditing	4.5	4.0%
	3. Processing: Quality Control Processes	4.5	6.0%
	4.Monitoring and Controlling Resources: The importance of cost control.	4.5	4.0%
	Controlling raw material costs in purchasing, receiving, storing, and issuing.	4.4	12.0%
	Raw Material costs and quality control during production, sales, and service.	4.4	10.0%
	5. Purchasing:		
	5.1 Raw Materials purchasing and quality requirements.	4.4	10.0%
	5.2 Pricing decisions.	4.4	10.0%
	6.Financial Management:		
	6.1 Accounting and finance.	4.4	10.0%
	6.2 Forecasting and budgeting.	4.2	18.0%
	6.3 Managing cash, accounts receivable, and accounts payable.	4.3	22.0%

Industry Specific Technical Skills	6.4 Profitable pricing.	4.3	18.0%
	6.5 Assessing actual performance.	4.3	20.0%
	7. Marketing & Sales:		
	7.1 Writing a Marketing Plan.	3.4	46.0%
	7.2 Market Research Skills.	3.2	54.0%
	7.3 Understanding customer behavior.	3.6	38.0%
	7.4 Advertising and sales.	3.3	52.0%
	7.5 Sales promotions, publicity, and public relations.	4.0	30.0%
	8.Staffing:		
	8.1 Recruiting the most qualified employees.	3.6	40.0%
	8.2 Employee orientation and training.	4.1	30.0%

PROFESSIONAL STAFF		Industry Average	Percentage of Entities Suffering from Weakness
Personal Effectiveness Competencies	1. Interpersonal Skills: Display skills to work with others from a range of backgrounds.	4.2	20.0%
	2. Integrity: Display accepted social and work behaviours.	4.4	14.0%
	3. Initiative: Demonstrate a willingness to work.	4.1	30.0%
	4. Dependability & Reliability: Display responsible behaviours at work.	4.3	18.0%
	5. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision-making.	4.2	26.0%
	6. Professionalism: Maintain a Professional Demeanour.	4.2	20.0%
Academic Competencies	1. Reading: Read and understand technical and work-place documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices.	3.5	50.0%
	2. Writing: Prepare written professional documents.	3.2	62.0%
	3. Communication—Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.	2.8	70.0%
	4. Speaking & Listening.	3.9	40.0%
	5.Computer Skills:		
	5.1 Use a computer and related applications to input, store, and retrieve information. (Computer Basics)	3.2	60.0%
	5.2 Preparing Documents.	3.6	52.0%

Workplace Competencies	1. Teamwork: Work cooperatively with others to complete work assignments.	4.3	18.0%
	2. Problem Solving & Decision Making: Apply critical-thinking skills to solve problems encountered on the work site; Identify a problem	4.1	26.0%
	3. Working with Tools and Technology:		
	3.1 Select, use, and maintain tools and technology to facilitate work activity.	3.8	40.0%
	3.2 Keeping Current and Up to date.	3.4	54.0%
	3.3 Troubleshooting	3.8	36.0%
	4. Checking, Examining, & Recording: Enter, transcribe, record, store, or maintain information in written or electronic format.	3.9	36.0%
	5. Planning & Scheduling:		
	5.1 Plan, organize, and schedule a project/job to optimize workflow sequence: Planning and scheduling	3.9	36.0%
	5.2 Time Management.	4.0	30.0%
	5.3 Manage obstacles	4.0	32.0%
Industry Specific Technical Skills	1. Safety and Regulations:		
	1.1 Ensuring a lawful workplace	4.2	20.0%
	1.2 Managing safe and healthy workplace	4.3	16.0%
	1.3 Food safety management	4.4	18.0%
	2. Research & Development:		
	2.1 New Product Development	3.8	44.0%
	2.2 Lab Technician Skills	3.5	48.0%
	2.3 Quality Control/Auditing	4.2	24.0%
	3. Processing:	4.3	18.0%
	3.1 Production Management		
	3.2 Operative Skills with existing tools	4.2	22.0%
	3.3 Operative skills with new technology	3.8	44.0%
	3.4 Quality Control Processes	4.2	22.0%
	4. Monitoring and Controlling Resources:	4.2	22.0%
	4.1 The importance of cost control.		
	4.2 Controlling raw material costs in purchasing, receiving, storing, and issuing.	4.1	30.0%
	4.3 Raw Material costs and quality control during production, sales, and service.	4.2	26.0%
	5. Purchasing:		
	5.1 Raw Materials purchasing and quality requirements.	4.1	28.0%
	5.2 Pricing decisions.	3.9	34.0%

SEMI-SKILLED WORKERS		Industry Average	Percentage of Entities Suffering from Weakness
Personal Effectiveness Competencies	1. Interpersonal Skills: Display skills to work with others from a range of backgrounds.	3.8	50.0%
	2. Integrity: Display accepted social and work behaviours.	4.1	24.0%
	3. Initiative: Demonstrate a willingness to work.	3.9	44.0%
	4. Dependability & Reliability: Display responsible behaviours at work.	4.0	32.0%
	5. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision-making.	3.7	48.0%
	6. Professionalism: Maintain a Professional Demeanour.	3.8	38.0%
Academic Competencies	1. Reading: Read and understand technical and workplace documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices.	2.3	86.0%
	2. Writing: Prepare written professional documents.	1.9	96.0%
	3. Communication—Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.	1.6	94.0%
	4. Speaking & Listening.	3.2	64.0%
	5.Computer Skills:		
	5.1 Use a computer and related applications to input, store, and retrieve information. (Computer Basics)	1.6	96.0%
	5.2 Preparing Documents.	2.2	76.0%
Workplace Competencies	1. Teamwork: Work cooperatively with others to complete work assignments.	4.1	28.0%
	2. Problem Solving & Decision Making: Apply critical-thinking skills to solve problems encountered on the work site; Identify a problem	4.0	34.0%
	3. Working with Tools and Technology: Select, use, and maintain tools and technology to facilitate work activity.	3.5	56.0%
	4. Working with Tools and Technology:		
	4.1 Select, use, and maintain tools and technology to facilitate work activity: Select and Use Tools & Technology.	3.0	62.0%
	4.2 Keeping Current and Up to date.	2.5	76.0%
	5. Checking, Examining, & Recording: Enter, transcribe, record, store, or maintain information in written or electronic format.	2.9	60.0%
	6. Planning & Scheduling: Plan, organize, and schedule a project/job to optimize workflow sequence: Time Management.	3.5	52.0%

Industry Specific Technical Skills	1. Safety and Regulations:	4.0	34.0%
	1.1 Ensuring a lawful workplace		
	1.2 Managing safe and healthy workplace	4.1	28.0%
	1.3 Food safety management.	4.2	28.0%
	3. Processing:	3.8	40.0%
	3.1 Production Management		
	3.2 Operative skills for existing tools	3.8	34.0%
	3.3 Operative skills for new technology	3.0	60.0%
	3.4. Quality Control Processes	3.8	42.0%
	4. Monitoring and Controlling Resources:		
	4.1 The importance of cost control.	3.4	50.0%
	4.2 Controlling raw material costs in purchasing, receiving, storing, and issuing.	3.4	50.0%
	4.3 Raw Material costs and quality control during production, sales, and service.	3.5	48.0%

II. Construction Average Skill Scores and Percentages

MANAGERIAL & SUPPORT STAFF		Industry Average	Percentage of Entities Suffering from Weakness
Personal Effectiveness Competencies	1. Interpersonal Skills: Display skills to work with others from a range of backgrounds.	4.1	18.4%
	2. Integrity: Display accepted social and work behaviours.	4.2	18.4%
	3. Initiative: Demonstrate a willingness to work.	4.0	27.2%
	4. Dependability & Reliability: Display responsible behaviours at work.	4.1	22.4%
	5. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision-making.	3.9	32.0%
	6. Professionalism: Maintain a Professional Demeanour.	4.2	16.0%

Academic Competencies	1. Reading: Read and understand technical and workplace documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices.	4.1	20.0%
	2. Writing: Prepare written professional documents.	3.9	31.2%
	3. Communication—Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.	3.7	40.8%
	4. Speaking & Listening.	4.0	28.8%
	5.Computer Skills:		
	5.1 Use a computer and related applications to input, store, and retrieve information: Computer Basics	3.9	29.6%
	5.2 Preparing Documents.	3.9	33.6%
Workplace Competencies	1. Teamwork: Work cooperatively with others to complete work assignments.	4.1	15.2%
	2. Problem Solving & Decision Making: Apply critical-thinking skills to solve problems encountered on the work site; Identify a problem	4.0	20.8%
	3. Working with Tools and Technology:		
	3.1 Select, use, and maintain tools and technology to facilitate work activity: Select and Use Tools & Technology.	3.9	29.6%
	3.2 Keep Current.	3.8	36.0%
	4. Checking, Examining, & Recording: Enter, transcribe, record, store, or maintain information in written or electronic format.	4.1	26.4%
	5. Planning & Scheduling:		
	5.1 Plan, organize, and schedule a project/job to optimize workflow sequence: Planning & Scheduling.	4.0	26.4%
	5.2 Time Management.	4.0	28.0%

Industry Specific Technical Skills	1. Regulations & Quality Assurance:		
	1.1 Comply with regulations and building codes, and apply industry standards to ensure quality work: Regulations: Be aware of and comply with governmental regulations, local	4.1	20.0%
	1.2 Quality Assurance.	4.2	19.2%
	2. Health & Safety:		
	2.1 Recognize and mitigate safety hazards including hazardous materials, environmental hazards, and accident conditions at any type of construction site: Personal Safety.	4.1	23.2%
	2.2 Safety Procedures.	4.1	24.0%
	2.3 Use Material Safety Data Sheets (MSDS) information to manage, use, and dispose of hazardous materials.	3.8	30.4%
	3. Business Fundamentals:		
	3.1 Apply knowledge of business and management principles involved in residential construction: Contracts & Budgets.	4.1	17.6%
	3.2 Codes & Quality Control.	3.8	34.4%
	3.3 Cash Flow Management	3.9	33.6%
	4.Customer Service & Homeowner Relations:		
	4.1 assess and meet the needs and expectations of the customer (homeowner) while maintaining open communication with key participants in the project: Customer Needs	4.3	12.0%
	4.2 Customer Service.	4.2	12.8%
	5. Green Building Practices:		
	5.1 Knowledge and application of green building practices to the construction or renovation of residential buildings: Construction Trends.	3.6	35.2%
	5.2 Siting.	3.4	43.2%
	5.3 Efficiency	3.6	37.6%
	5.4 Waste Management	3.2	54.4%

PROFESSIONALS IN CONSTRUCTION		Industry Average	Percentage of Entities Suffering from Weakness
Personal Effectiveness Competencies	1. Interpersonal Skills: Display skills to work with others from a range of backgrounds.	3.9	34.4%
	2. Integrity: Display accepted social and work behaviours.	4.1	28.0%
	3. Initiative: Demonstrate a willingness to work.	3.8	42.4%
	4. Dependability & Reliability: Display responsible behaviours at work.	4.0	36.0%
	5. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision-making.	3.8	46.4%
	6. Professionalism: Maintain a Professional Demeanour.	4.0	33.6%
Academic Competencies	1. Reading: Read and understand technical and workplace documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices.	3.9	36.0%
	2. Writing: Prepare written professional documents.	3.6	46.4%
	3. Communication—Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.	3.3	55.2%
	4. Speaking & Listening.	3.7	40.8%
	5.Applied Mathematics.	3.4	55.2%
	6. Science: Use scientific rules and methods to solve problems.	3.4	58.4%
	7. Computer Skills:		
	7.1 Use a computer and related applications to input, store, and retrieve information: Computer Basics.	3.7	37.6%
	7.2 Preparing Documents.	3.6	44.8%
Workplace Competencies	1. Teamwork: Work cooperatively with others to complete work assignments.	4.0	30.4%
	2. Problem Solving & Decision Making: Apply critical-thinking skills to solve problems encountered on the work site: Identify a problem	3.8	40.8%
	3. Working with Tools and Technology: Select, use, and maintain tools and technology to facilitate work activity: Select and Use Tools & Technology.	3.8	40.0%

Workplace Competencies	3.1 Keep Current.	3.6	46.4%
	3.2 Troubleshoot	3.6	48.0%
	4. Checking, Examining, & Recording: Enter, transcribe, record, store, or maintain information in written or electronic format.	3.7	44.8%
	5. Planning & Scheduling: Plan, organize, and schedule a project/job to optimize workflow sequence: Planning & Scheduling.	3.7	50.4%
	5.1 Time Management.	3.7	45.6%
Industry Specific Technical Skills	1.1 Building & Construction Design: Understand the steps involved in designing construction projects (e.g., planning, generating layouts, developing & interpreting drawings): Design.	4.0	28.8%
	1.2 Understanding Technical Drawings.	4.1	24.0%
	1.3 Site Planning.	4.0	31.2%
	2. Material Resources: Identify, move, store, and supply construction and building materials for all types of construction activities: Identification.	4.0	29.6%
	2.1 Selection.	4.0	29.6%
	3. Regulations & Quality Assurance: Comply with regulations and building codes, and apply industry standards to ensure quality work: Regulations	3.9	36.0%
	3.1 Quality Assurance.	3.9	42.4%
	3.2 Environmental Impact Mitigation.	3.3	61.6%
	4. Health & Safety: Recognize and mitigate safety hazards including hazardous materials, environmental hazards, and accident conditions at any type of construction site: Personal Safety.	3.9	33.6%
	4.1 Safety Procedures.	3.9	36.8%
	4.2 Use Material Safety Data Sheets (MSDS) information to manage, use, and dispose of hazardous materials.	3.5	56.0%
	6. Construction of Specific Home Components: Apply knowledge of specific materials and methods for construction of home components: Site Preparation.	3.9	31.2%
	6.1 Building and Installation.	3.8	40.8%
	6.2 Understand roles and responsibilities of various craftspeople.	4.0	33.6%
	7.Customer Service & Homeowner Relations: assess and meet the needs and expectations of the customer (homeowner) while maintaining: Customer Service	3.9	35.2%
Industry Specific Technical Skills	8. Green Building Practices:	3.4	56.8%
	8.1 Knowledge and application of green buildings: Construction Trends.		
	8.2 Siting.	3.2	59.2%
	8.3 Efficiency.	3.4	58.4%
	8.4 Waste Management	2.9	67.2%

SEMI-SKILLED WORKERS		Industry Average	Percentage of Entities Suffering from Weakness
Personal Effectiveness Competencies	1. Interpersonal Skills: Display skills to work with others from a range of backgrounds.	3.2	68.8%
	2. Integrity: Display accepted social and work behaviours.	3.6	49.6%
	3. Initiative: Demonstrate a willingness to work.	2.9	77.6%
	4. Dependability & Reliability: Display responsible behaviours at work.	3.4	64.0%
	5. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision-making.	2.9	74.4%
	6. Professionalism: Maintain a Professional Demeanour.	3.4	58.4%
Academic Competencies	1. Reading: Read and understand technical and workplace documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices.	2.5	88.0%
	2. Writing: Prepare written professional documents.	2.0	92.0%
	3. Communication—Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.	1.7	94.4%
	4. Speaking & Listening.	2.7	76.8%
	5.Mathematics: Use principles of mathematics such as arithmetic, algebra, and geometry to solve problems; Computation, measurement and estimation.	2.2	88.0%
	6. Computer Skills:	1.9	92.8%
	6.1 Use a computer and related applications to input, store, and retrieve information: Computer Basics.		
	6.2 Preparing Documents.	1.9	89.6%
Workplace Competencies	1. Teamwork: Work cooperatively with others to complete work assignments.	3.4	58.4%
	2. Following Directions: Receive, understand and carry out assignments with minimal supervision.	3.3	59.2%
	3. Problem Solving & Decision Making: Apply critical-thinking skills to solve problems encountered on the work site; Identify a problem	2.7	81.6%
	4. Working with Tools and Technology:	2.6	78.4%
	4.1 Select, use, and maintain tools and technology to facilitate work activity: Select and Use Tools & Technology.		
Workplace Competencies	4.2 Keep Current.	2.6	77.6%
	5. Checking, Examining, & Recording: Enter, transcribe, record, store, or maintain information in written or electronic format.	2.5	80.0%
	6. Planning & Scheduling: Plan, organize, and schedule a project/job to optimize workflow sequence: Time Management.	2.9	71.2%

Industry Specific Technical Skills	1. Building & Construction Design:		
	1.1 Understand the steps involved in designing construction projects (e.g., planning, generating layouts, developing & interpreting drawings). Understanding Technical Drawings	3.0	72.8%
	1.2 Site Planning.	2.9	76.0%
	2. Material Resources:		
	2.1 Identify, move, store, and supply construction and building materials for all types of construction activities: Identification.	3.4	60.0%
	2.2 Use of resources	3.3	60.8%
	3.Operation installation & repair:		
	3.1 Operation/installation	3.5	52.8%
	3.2 rigging	3.2	60.0%
	3.3 maintenance/repair	3.2	61.6%
	4. Regulations & Quality Assurance:		
	4.1 Regulations: Be aware of and comply with governmental regulations, local and state building code	3.2	63.2%
	4.2 Quality Assurance.	3.2	60.8%
	5. Health & Safety:		
	5.1 Recognize and mitigate safety hazards including hazardous materials, environmental hazards, and accident conditions at any type of construction site: Personal Safety.	3.2	64.0%
	5.2 Safety Procedures.	3.2	64.8%
	6. Construction of Specific Home Components:		
	6.1 Apply knowledge of specific materials and methods for construction of home components: Site Preparation.	3.2	64.8%
	6.2 Building and Installation.	3.2	60.8%
	7. Specialty Skills:		
	7.1 Carpentry.	2.5	67.2%
	7.1 Masonry.	2.8	64.8%
	7.2 Electrical Wiring.	2.6	68.8%
	7.3 Plumbing.	2.4	75.2%
	7.4 HVAC	2.4	71.2%
	8. Customer Service & Homeowner Relations: Assess and meet the needs and expectations of the customer (homeowner) while maintaining: Customer Service	3.2	62.4%

III. ICT Average Skill Scores and Percentages

MANAGERIAL & SUPPORT		Industry Average	Percentage of Entities Suffering from Weakness
Personal Effectiveness Competencies	1. Interpersonal Skills: Display skills to work with others from a range of backgrounds.	4.2	9.2%
	2. Integrity: Display accepted social and work behaviours.	4.2	12.3%
	3. Initiative: Demonstrate a willingness to work.	3.9	30.8%
	4. Dependability & Reliability: Display responsible behaviours at work.	4.1	23.1%
	5. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision-making.	3.8	33.8%
	6. Professionalism: Maintain a Professional Demeanour.	4.1	9.2%
	7. Lifelong Learning: Displaying a willingness to learn and apply new knowledge and skills.	4.1	13.8%
Academic Competencies	1. Reading: Read and understand technical and workplace documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices.	4.1	13.8%
	2. Writing: Prepare written professional documents.	3.9	29.2%
	3. Communication—Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.	4.1	15.4%
Workplace Competencies	1. Teamwork: Work cooperatively with others to complete work assignments.	4.1	7.7%
	2. Problem Solving & Decision Making:		
	2.1 Planning	4.0	13.8%
	2.2 allocating resources	3.9	29.2%
	2.3 project management	3.9	26.2%
	3. Problem Solving and Decision Making:		
	3.1 Applying critical-thinking (Identifying the Problem)	4.0	18.5%
	3.2 Generating alternatives	3.9	30.8%
	3.3 Implementing the solution	3.9	30.8%
	4.Working with Tools and Technology: Keep Current	4.2	12.3%
	5. Business fundamentals: knowledge of basic business principles, trends.	4.2	9.2%

Industry Specific Technical Skills	1. Principles of Information Technology:		
	1.1 Fundamental IT Concepts	4.0	12.3%
	1.2 The role of IT in Business	4.0	20.0%
	1.3 Testing and quality assurance.	4.0	15.4%
	2.Databases and Applications: The use of technology to control and safeguard the collection	4.1	9.2%
Industry Specific Technical Skills	2.2 Software Development and Management: the process of designing ...	3.8	20.0%
	3.User and Customer support:	4.0	15.4%
	3.1 Describe the importance of understanding different user groups	4.0	16.9%
	4.Compliance: The standards, processes, and procedures in place to ensure products, services	4.0	23.1%

PROFESSIONALS		Industry Average	Percentage of Entities Suffering from Weakness
Personal Effectiveness Competencies	1. Interpersonal Skills: Display skills to work with others from a range of backgrounds.	3.8	35.4%
	2. Integrity: Display accepted social and work behaviours.	4.1	26.2%
	3. Initiative: Demonstrate a willingness to work.	3.6	50.8%
	4. Dependability & Reliability: Display responsible behaviours at work.	3.8	46.2%
	5. Willingness to Learn: Understand the importance of learning new information for both current and future problem solving and decision-making.	3.8	44.6%
	6. Professionalism: Maintain a Professional Demeanour.	3.9	32.3%
	7. Lifelong Learning: Displaying a willingness to learn and apply new knowledge and skills.	3.8	43.1%
Academic Competencies	1. Reading: Read and understand technical and workplace documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs, and notices.	4.0	32.3%
	2. Writing: Prepare written professional documents.	3.6	46.2%
	3. Communication—Verbal: Listen, speak, and signal so others can understand. Communicate in spoken English well enough to be understood by others.	3.8	43.1%
	4. Science: Use scientific rules and methods to solve problems.	3.8	38.5%

Workplace Competencies	1. Teamwork: Work cooperatively with others to complete work assignments.	3.9	27.7%
	2. Planning and organizing: Planning	3.5	52.3%
	2.1 prioritizing	3.4	61.5%
	2.2 allocating resources	3.2	63.1%
	2.3 project management	3.3	60.0%
	3. Innovative thinking: generating new ideas	3.9	32.3%
Workplace Competencies	4. Problem solving: Identifying the problem	3.6	50.8%
	4.1 Generating alternatives	3.6	50.8%
	4.2 choosing a solution	3.6	47.7%
	4.3 implementing the solution	3.7	49.2%
	5. Working with tools and technology: Select and use Tools & technology.	4.0	26.2%
	5.1 keep current	3.9	36.9%
Industry Specific Technical Skills	1. Principles of Information Technology:		
	1.1The role of IT in business	3.7	40.0%
	1.2 Information processing Cycle	3.9	30.8%
	1.3 Types of information processing.	3.8	36.9%
	1.4 Systems Administration and Maintenance	3.8	36.9%
	1.5 Testing and quality assurance	3.7	49.2%
	2. Databases and Applications:		
	2.1 the use of technology to control safeguard...	4.1	20.0%
	2.2 technical Content Areas: data administration	4.0	24.6%
	3. Networks, Telecommunication, Wireless, and Mobility:		
	3.1 Fundamentals of Networking and Telecommunication	3.8	35.4%
	3.2 Wireless and Mobility.	3.7	41.5%
	3.3 Network Security	3.7	43.1%
	3.4 Virtualization and Cloud Computing	3.4	52.3%
	3.5 Data Storage Systems	3.8	41.5%
	3.6 Technical Content Areas: Foundations of networking, Architectures, Network Models, components, internet services,	3.9	27.7%
	4. Software Development and Management:		
	4.1 The process of designing, writing	3.8	30.8%
	4.2 Software Development.	3.9	33.8%
	4.3 Programming.	3.8	36.9%
	4.4 Technical Content Areas: Application Architecture, Configuration and adaptation	3.7	46.2%
	5. User and Customer Support:		
	5.1 The range of services providing	3.7	43.1%

Industry Specific Technical Skills	5.2 Describe the importance of understanding different user groups	3.6	55.4%
	5.3 Provide training on new hardware/software	3.7	49.2%
	5.4Understands the importance of identifying and classifying incident types and service interruptions	3.7	46.2%
	5.5 Technical Content Areas: Applications (Apps), Helpdesk Functions	3.7	44.6%
	6. Digital Media and Visualization:		
	6.1 Understand the general requirements and impacts on IT systems	3.7	38.5%
	6.2 Understand the business importance of different kinds of digital media	3.8	36.9%
	6.3 Technical Content Areas: Alternate text presentations and audio	3.7	44.6%
	7.Compliance: The standards, processes, and procedures in place to ensure products,	3.6	56.9%
	8.Risk Management, Security, and Information Assurance: The standards, issues, and applications used to protect the	3.7	49.2%

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