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Future of Work in Egypt
Joining Forces for Tomorrow and Beyond

Growing and Shrinking Occupations and the Demand for Skills in Egypt

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General Abbreviations and Acronyms

EC	Egypt Economic Census
EPP	Employment Promotion Project
ELMPS	Egyptian Labour Market Panel Survey
FGDs	Focus Group Discussions (FGDs)
GIZ	Deutsch Gesellschaft für Internationale Zusammenarbeit (GmbH)
IDI	In-depth Interview
ILO	International Labour Organization
LFS	Labour Force Survey
MoETE	Ministry of Education and Technical Education

Executive Summary

Lately there are certain global trends that are shaping the future of work. While global data that discusses growing and shrinking occupations does exist, there is a gap on the Egyptian national level. Accordingly, this report seeks to provide policymakers, employers, and employees with needed information to make evidence-based decisions and navigate the future of work. The report adopts a mixed method approach and uses nationally representative surveys of the Egyptian labour market to analyze growing and shrinking occupations.

Ultimately, this report provides an overview of growing and shrinking jobs in the Egyptian labour market. Firstly, it examines growing occupations in terms of employment and real wage growth. Moreover, the analysis explores jobs' skill requirements, as well as skills acquisition methods. It is seen that occupations with fast employment growth tend to have more wage growth. Some occupations were shrinking due to the evolving nature of several industries, following progressing technological advancement. Additionally, workers reported that some jobs (52% in 2012) do not require formal education and that they are often over-educated for their jobs. **The most required skill is physical fitness**, **followed by literacy and numeracy skills**, with needed skills varying by industry. Less educated workers mainly learn skills on the job, whereas more educated workers rely more on education and training.

There has been an increase in the role of automation in labour; where technological advancements created a gap for needed skills between the supply and demand in the labour force; and that state policies have led to growth in certain sectors due to the state's encouragement of employers to invest in those sectors.

Key recommendations are outlined for policymakers to consider when creating legislation or adopting policies for growing and shrinking occupations include: promoting internet access and enhancing digital skills of the labour force, in addition to the need to equip students with basic and soft skills (reading and writing, math, and soft skills (such as teamwork, customer service, and communication); this focus applies not only to primary education but also to preparatory and secondary education. As a result of earlier waves of technological advancements which led to the shrinking of some occupations, reskilling programmes for workers transitioning from those occupations need to be developed. to account for global trends, specifically, technological advancements and automation; and taking into consideration Egypt's number of unskilled labour and the country's reliance on labour intensive technology when viewing automation and/or automatable jobs.

CHAPTER 1 Introduction

While the future of work was already being affected by technological developments, climate change and demographic shifts, the emergence of COVID-19 further exacerbated the landscape of the future of work (World Employment and Social Outlook Trends*, 2022*). In Egypt, new jobs are being formed while others are either growing or shrinking. With these new global trends, policymakers, employers, employees, and researchers have been trying to understand the new paths and the challenges that we need to overcome.

For several decades, Egypt's economic policies have placed an added emphasis on **"price stability, controlling fiscal deficits and reducing the role of the State and achieving high economic growth**". This was further supported by Egypt's agreement, in 2016, with the IMF with the objective of implementing a program that aided the Egyptian economy's ability to improve its macroeconomic aggregates (Assaad & Marouani, 2020,19). In 2019, there was a noticeable improvement of said aggregates. Most notably, unemployment decreased to 7.9 percent and the fiscal deficit became 8 percent, having been 16.5 in 2014. While these are meaningful improvements, the main indicators of the Egyptian labour market have deteriorated and despite Egypt's economic growth patterns, labour market performance did not improve (Assaad & Marouani, 2020,20). According to the International Labour Organization (ILO), there were several reasons for said lack of improvement, most notably: **(I) foreign direct investment was predominately focused on oil and other extractive sectors (II) the private sector's productivity decreased,** despite its increase in the share of the economy (III) the increase in shares of low value-added and non-tradable sectors in Egypt's GDP has aided in creating vulnerable, low-skilled forms of employment (Assaad & Marouani, 2020,20).

By considering these global trends and the changes in the Egyptian labour market, this report seeks to provide an overview about the labour market, equipping them with the needed insight pertaining the future of work, specifically with regards to growing and shrinking occupations and the demand for skills in Egypt. Furthermore, this report seeks to address the existing literary gap in the domestic level.

The report is divided into the following chapters: The **introduction chapter** provides an overview of the report**. Chapter 2** reviews the literature on the emerging, growing and shrinking occupations around the world, in general, and in Egypt, in particular. **Chapter 3** provides a description of the mixed method approach adopted in this report, specifically the data and methodology employed. **Chapter 4** presents a detailed analysis of growing and shrinking jobs in the Egyptian labour Market. **Chapter 5** concludes with providing key recommendations for policymakers, employers and employees on the growing and shrinking occupations and the demand for skills in Egypt based on the report findings.

CHAPTER 2 Background and Literature Review

When assessing growing and shrinking occupations in Egypt, it is of paramount importance to consider global labour trends, especially since there have been serious efforts to try to cluster these growing trends to better understand their effects on labour markets, specifically when it comes to job creation and job destruction (Fossen & Sorgner, 2019; Balliester & Elsheikhi, 2018). Examples of these trends include (1) **digitalization, technology and innovation** (2) **demographics, migration and labour mobility** (3) **Climate change and the green economy** (4) **globalization of financial markets and supply chains** (Hendy 4).

When assessing the trend of digitalization, technology and innovation and its impact on growing and shrinking occupations, recent literature indicates that it is more likely for automation to change human work, as opposed to completely replacing it. Furthermore, it has been estimated that until 2030, automation will add to the world economy between 0.3 to 2.2 percent in compound productivity growth (Peter et al, 2018) (Moore et al.). Technical automation is of particular relevance to Egypt as at 48%, Egypt is considered to be the Middle East country with the highest potential share for technical automation (Jan Peter et al, 2018).

As expanded on below, when expecting what kinds of occupations would flourish, emerge or be destroyed, it is of importance to look at the factors, next to technology, that would affect future changes. These factors would include **the increasing levels of income for new and emerging economies, aging populations, green economy, and renewable energy, shifts towards previously unpaid jobs, and investments and expansions of infrastructures.**

A secondary trend that is also impacting shrinking and growing occupations in Egypt is **demographics, migration, and labour mobility**. Despite the expected increase in the global population by approximately 1.4 billion people per year since 2020, where it is estimated to reach 9.2 billion by 2040, “the rate of population growth will slow in all regions” (National Intelligence Council, 2021).

A third trend that can also affect shrinking and growing occupations in Egypt is climate change and the green economy. According to ILO, there will undoubtedly be a shrinkage in occupations in carbon and resource-intensive industries globally (approx. 6 million) as countries and establishments seek to transition towards a green economy (ILO, 2018). However, the ILO report estimates that approximately 24 million jobs will be created as a result of “the adoption of sustainable practices, including changes in the energy mix, the projected growth in the use of electric vehicles, and increases in energy efficiency in existing and future buildings” thus creating a net of 18 million jobs globally.”

(ILO, 2018, p.1). More specifically, in Canada and the USA, the adoption of clean energy policies and the growth in renewables has led to a net gain in jobs (Ge et al, 2016). However, in Spain, for each new green job that was created, 2.2 jobs were destroyed (Ge et al, 2016).

As a consequence of the aforementioned changes, **new skills will be required and new ways of getting the job done should be the focus of labour today**. **Educational attainment** will also become an important factor in strengthening one's resilience against these changes (McKinsey Global Institute, 2017). Polarization between labour is what researchers expect to prevail in the future. With already troubling percentages of the working-age population being underutilized[1] (around 30 to 45 percent), encouraged rethinking on the issue should be taken into account, or the world will suffer more inequality as the years go by (McKinsey Global Institute, 2017).

Transformative vs Destructive Effects of Technology

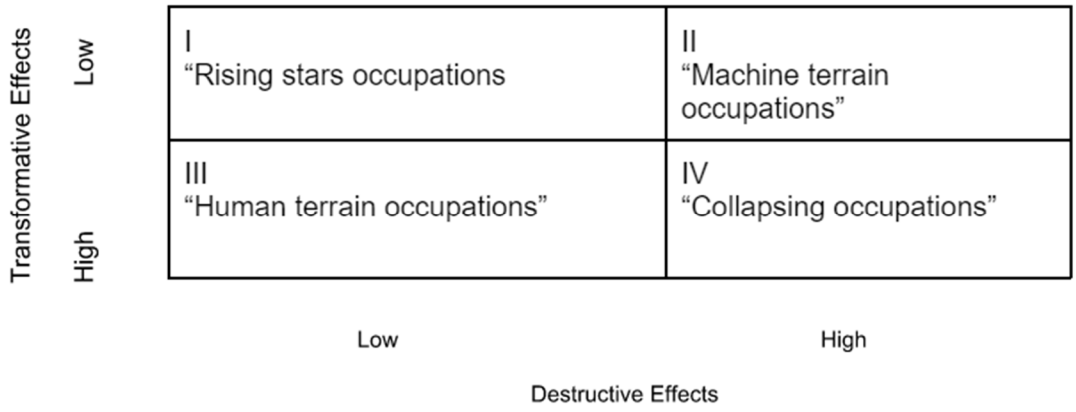
Transformative effects: refers to where the job might change but does not mean human capital will be replaced.

Destructive effects: refers to where occupations do not necessarily change but humans are no longer needed to perform the job.

Looking at the impact of technology as either positive or negative is not accurate, rather it is argued that the change is incremental and "two-dimensional." Technological advances could be seen **as transformative or destructive or both.** According to these assumptions, four categories were developed based on how transformative or destructive technology is to the job (Fossen & Sorgner, 2019). These categories are described in **Figure 1**.

[1] Unemployed, inactive, or underemployed.

Figure 1 Determinants of Transformative versus Destructive Effects of Technological Change



Source: Fossen & Sorgner (2019)

As illustrated in **Figure 1, "Collapsing" occupations** would include those who work at restaurants or manufacturing among other occupations. On the other hand, **"human terrain"** occupations like caring and helping others are not expected to be highly affected. Lastly, there are the "machine terrain" occupations such as self-driving cars, personal assistants (Fossen & Sorgner, 2019).

Regarding wages, more than one factor plays a role. In light of the decline in unions powers and the rise in the domination of the internet-based hiring process, people are being rewarded with lesser amounts. Moreover, the digital divide is on the rise while the world is also witnessing shrinking middle classes and higher economic gaps inside every country (Balliester & Elsheikhi, 2018).

In addition to global trends, by looking at the Egyptian landscape in particular, we are capable of viewing the ups and downs of the Egyptian labour market throughout the last decade and accordingly, draw inferences towards growing and shrinking occupations. In light of state policies, most notably the shift in focus from providing labour opportunities in the public sector to the implementation of more free market policies and structural reforms, the economy has been trying to cope with said shifts. As a result, the labour supply witnessed important changes as the youth are getting older implying lesser supply in the market over time. However, considering this is a temporary phenomenon caused by a substantial increase of the child population resulting from the substantial youth bulge, the labour market supply is expected to increase between the period 2025-2035 (Assaad et al., 2019).

With fewer available job opportunities in the public sector, the Egyptian labour market witnesses lower labour supply pressures over time. Additionally, this is scaled up by the need for higher qualifications in the private sector (Krafft et al., 2019). As evidenced by the decrease in the share of manufacturing in employment (32% to 21% from 1996 to 2017), there has been a decline in the industrial sector compared to the service one (Assaad et al., 2019).

Although the short-run effects of innovation seem to be negatively affecting the labour market, there are prospects of reverse effects in the long run (European Parliamentary Research Service, 2018). **The major determinant is how much investment is put into the human capital**. **Bridging the gap** between education and labour market demands **through investing in children from a young age** would prepare them to cope with the changes, innovate, and even lead change in the future (Emara, 2021).

There is a need for more educational reforms to keep up with the changing nature of work. This proposes that the **future will be dominated by knowledge workers**, those who think for a living, such as academics, programmers, innovators and so on. That's why **collaborative efforts between the government, the private sector, and the knowledge workers themselves should be developed.** However, it must be underscored that although the required steps are the same across the world, implementation should take into account cultural differences (El Badawy, 2012).

CHAPTER 3 Data and Methodology

A mixed methods approach is applied in this study to analyze shrinking and growing occupations and demand for skills in Egypt, using both qualitative and quantitative data sources.

We rely on nationally representative surveys on the Egyptian labour market covering the period between **2009 and 2019**. The main sources of data are: 1. **The Egypt Economic Census (EC)** for 2012/2013 and 2017/2018[2], 2. **The Egypt Labour Force Surveys** (LFS) for the years 2009 to 2019, 3. **Egypt Labour Market Panel Surveys (ELMPS)** of 2012 and 2018 and, 4. **In-depth Interviews (IDI)** and **Focus Group Discussions (FGDs).**

Qualitative Data

In order to have an in-depth insight of the main reasons for the growth and shrinking of some sectors in Egypt, a qualitative approach is applied in addition to the quantitative approach.

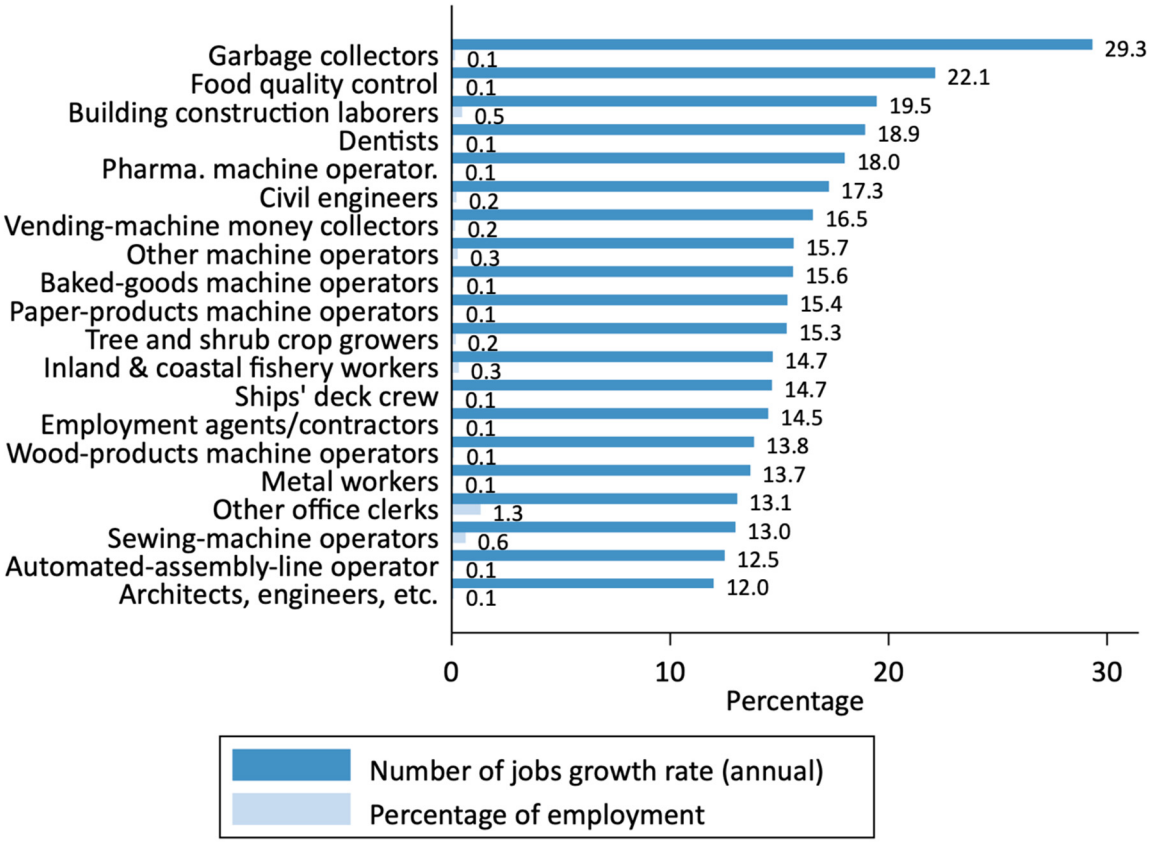
While the quantitative analysis in this report relies on the supply side of the labour market in Egypt, the qualitative analysis tries to fill in some of the gaps of the labour demand side. The main objective was to understand the reasons behind the growth and shrinking of some sectors. (See appendix for further details)

[2] Only 10% of census data was available for the analysis.

CHAPTER 4 Growing and Shrinking Occupations in the Egyptian Labour Market

In this chapter, we identify the occupations that are growing or shrinking in Egypt and the required education and skills for the labour market. The report also looks into those with technical secondary education and how they can fit into the future of work in Egypt. This analysis is based on both the quantitative and qualitative data presented in the previous chapter.

Figure 2: *Top 20 fastest growing occupations in terms of employment (number of jobs) growth rates (annual percentage)*



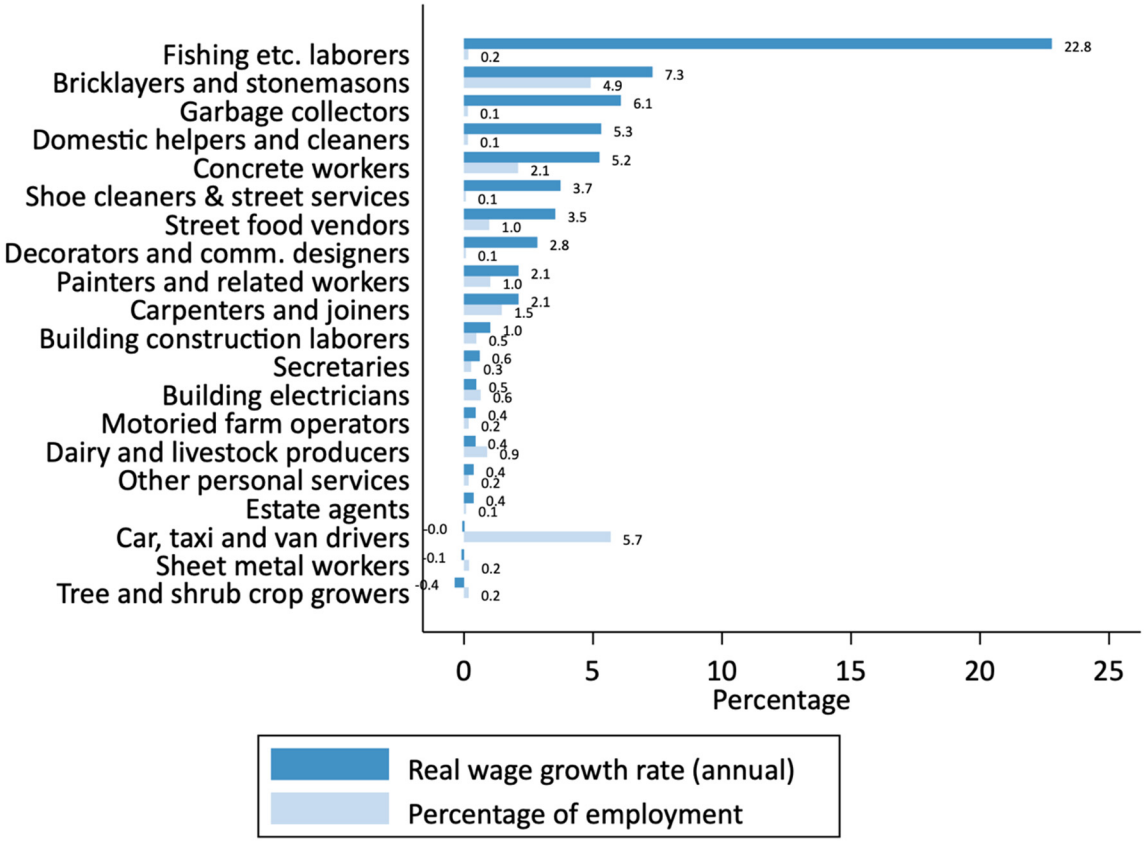
Source: Constructed by the authors using data from the Egypt labour force surveys of 2015 to 2019.

Figure 2 presents the top 20 growing occupations in Egypt in terms of employment growth in the number of jobs over the period between 2015 to 2019. A wide range of occupations are growing, primarily blue-collar jobs and informal occupations. **Among the fastest**

growing occupations are manual labour, where garbage collectors grew by 29.3 % and construction grew by 19.5 % annually between 2015 and 2019. Over the same period, specific **manufacturing operators such as food quality control grew** by 19.5 % annually, while professional dental occupations grew by 18.0 % and civil engineers grew by 17.3 %, respectively.

If we observe the top 20 growing occupations in Egypt in terms of real wage growth over the period between 2015 to 2019, We find that real wages were, overall, negatively affected by inflation over the period. However, **a number of blue-collar occupations witnessed strong real wage growth**, especially blue-collar jobs. **Fishing real wages grew by 22.8 % annually** over 2015-2019, followed by **bricklayers (7.3 % annually)** and **garbage collectors (6.1 % annually)**. (see **Figure 3**).

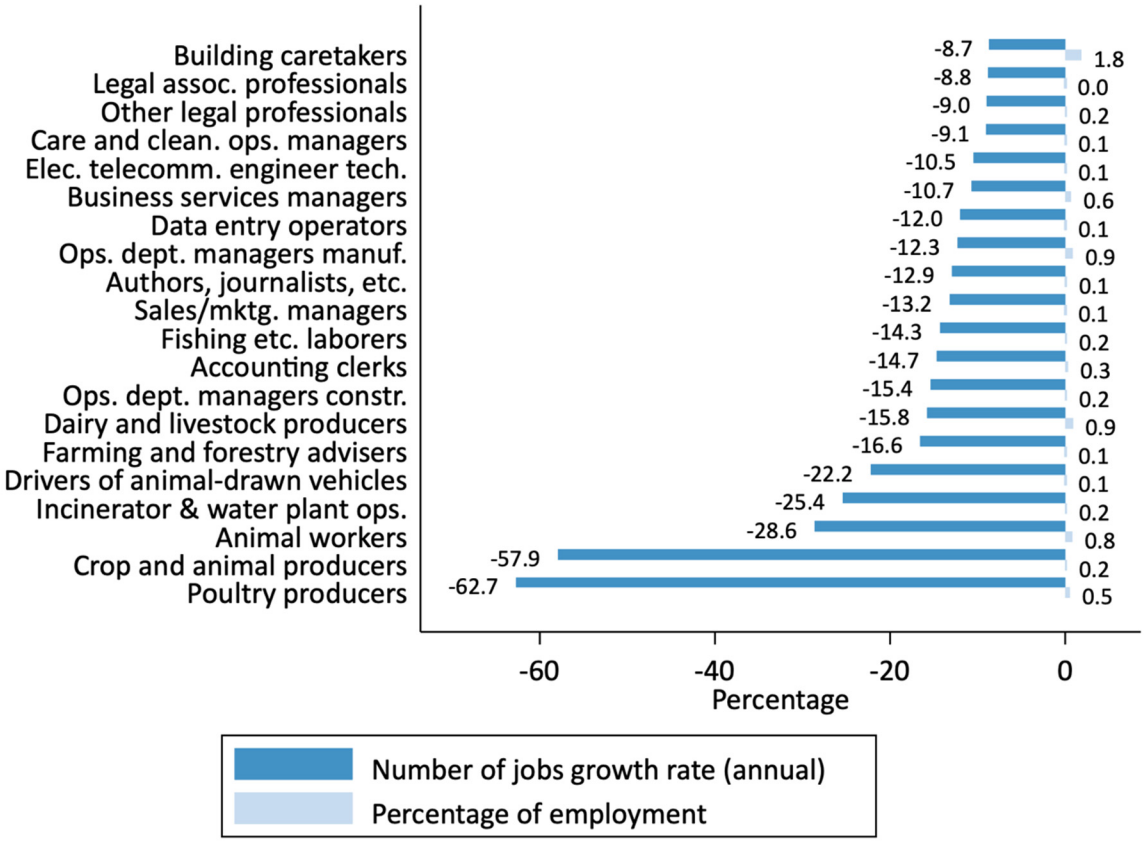
Figure 3 *Top 20 fastest growing occupations in terms of real wage growth (annual percentage*



Source: Constructed by the authors using data from the Egypt Labour Force Surveys of 2015-2019.

Moreover, we analyze the most shrinking occupations in terms of employment over the same period 2015-2019 (**Figure 4**) in order to have a full picture on how the Egyptian economy is evolving as well as the role of digitalization and automation in this phenomenon. We observe that occupations such as **drivers of animal-drawn vehicles has shrunk** in 2019 by 22.2 % per year compared to 2015, which is mainly due to automation since the drivers of animal-drawn vehicles have mostly been replaced by car drivers. **Livestock occupations has also diminished** over the same period following the shift from individual to industrial agriculture for livestock. With the digitalization of data entry, **accounting clerks' occupations are shrinking** as records are being digitalized.

Figure 4: *Most rapidly shrinking 20 occupations in terms of employment (number of jobs) growth rate (annual percentage)*



Source: Constructed by the authors using data from the Egypt labour force surveys of 2015-2019.

This findings on the effect of technology advancement and automation on growing or shrinking occupations were consistent with those of the qualitative study, in which

respondents from the field emphasized technological progress as a driver of growing occupations. The majority of both employers and workers reported an increase in the use of automation over the last few decades. According to a recent report on the future of jobs in the Middle East, Egypt is a leading Arab country in terms of the present work activities in the labour market that are automatable now based on currently shown technology (McKinsey, 2018).

> *Call centers and IT jobs are some of the main jobs dependent on using technology, while other jobs that do not require the usage of technology will disappear. Technological advancement is helping us get more job opportunities.*
>
> ***FGD with workers in call centers***

Similar views were stated by interviewed stakeholders, who believe that automation and technology are creating new jobs and supporting particular sectors and industries in growing.

While **technological progress** has led to growth in certain sectors and industries, it has also led to the decline of other sectors. Employers and stakeholders in the qualitative research stated that the evolution of technology created a skill gap between the supply and demand in the labour force participation. This gap has affected specific industries which could not acquire skilled workers who can use the needed technology. Moreover, machine prices have been one of the main reasons for the decline of some sectors.

> *One day, I had a mission in a village in Mansoura, the capital of the Dakahlia governorate, called "Salamoun". When I visited this village, I noticed that everyone had their own factories in their homes, and machines were everywhere. I couldn't believe that people had sewing machines in their homes that cost more than one million EGP, and people used technology quite easily, even if they couldn't read or write.*
>
> *IDI with policy maker from the Egyptian Federation of Investors Association)*

Another reason for the growth of some sectors and the shrinking of others was **global competitiveness**. According to qualitative research, Egypt is capable of competing in the global market, notably in the food and textile industries. Participants indicated that Egypt has a number of factors that can support the growth of industries, such as cheap labour, political stability, and developing technological infrastructure. However, despite these characteristics, **product pricing was the key difficulty** encountered by other sectors such as furniture and leather. Many employers in the qualitative research indicated that product prices in other countries such as China were lower than those in Egypt, which impacted their industries.

> *"The Egyptian textile industry will be one of the most important textile industries in the world. Now that the Chinese investors are having difficulties, all of the textile factories and investments in China are relocating from East Asian countries to countries close to Europe and America, because the products are manufactured there at a low cost, there is also cheap labour, besides other incentives. But I had to take a very long trade route to go to Europe and America, now I have an area in the Middle East, notably in Egypt, where logistics, ports, and infrastructure are being developed at a rapid pace."*
>
> ***(IDI with employer, Minia)***

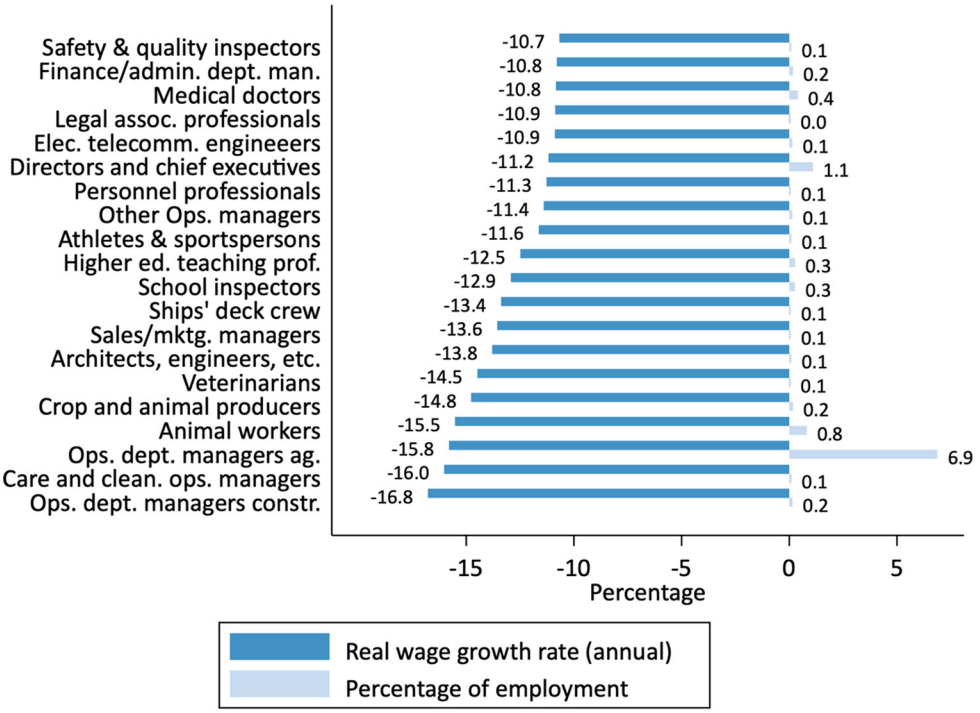
Other reasons for growing or shrinking sectors were **state policies**. Recent government strategies, according to our analysis, have concentrated on developing specific sectors, particularly service industries, such as construction and information technology. These policies created new jobs and greatly helped the industries. However, they also resulted in the decline of the performance of a number of productive sectors.

> *"The most rapidly growing sectors today are the construction and energy sectors. These are the fastest growing sectors because of state policies that encourage employers to invest in these sectors. The state has begun to develop the construction sector as one of the primary service sectors."*
>
> ***(IDI. Employer. Cairo***

> *"Leather manufacturing now exists in the cities, and the state is pushing us to move to the new industrial cities, which will add more transportation costs to our budget. In addition, we should also pay the bills for electricity, water, workers' insurance, and taxes which will raise the product of the cost."*
>
> ***(IDI. Employers. Cairo***

Figure 5 presents the most rapidly shrinking occupations in Egypt in terms of decreases in the real wages over the period 2015-2019. It's clear from the graph that the majority of the shrinking occupations, in terms of wages, belong to white-collar jobs, which are characterized by relatively fixed nominal wages that are unable to keep up with inflation and therefore, real wages decline. For instance, we find that **operation managers** across different specialties have seen the most decline in real wages, down 16-17 % per annum for 2019 compared to 2015. We also note that some groups of **agriculture workers have witnessed both shrinking occupations and falling real wages**.

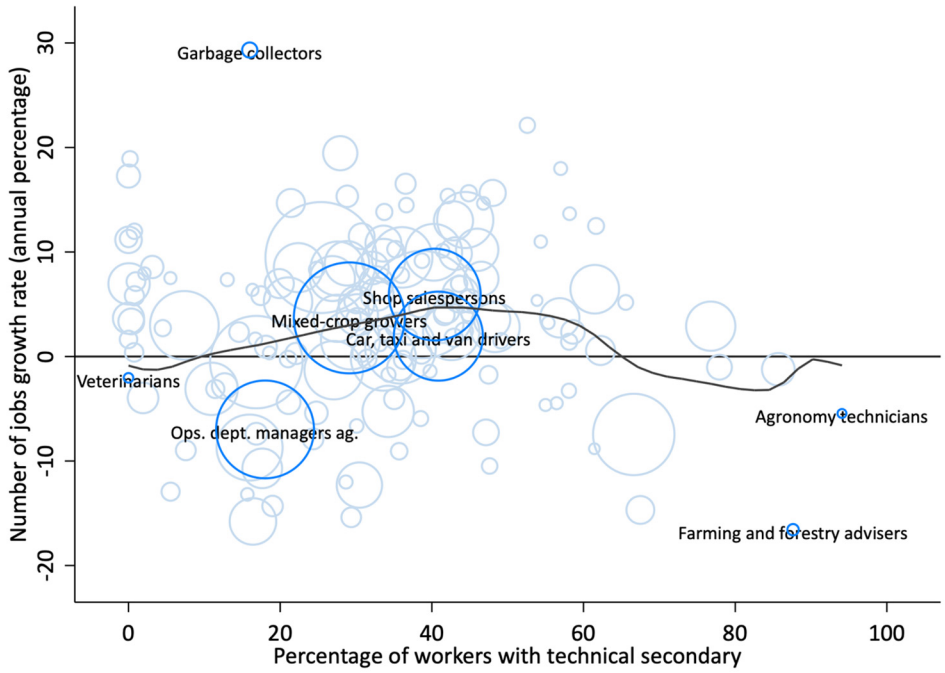
Figure 5: *Most rapidly shrinking 20 occupations in terms of real wage growth (annual percentage*



Source: Constructed by the authors using data from the Egypt labour force surveys of 2015-2019.

It is worth noting that around **40% of the population have a secondary technical degree** and that most of the occupations have 40% of their workers with a secondary technical degree. **Figure 6** sheds light on the extent to which different occupations require a technical secondary degree while presenting how those jobs grew in terms of number of jobs growth annually between 2015 and 2019. We first note that a limited number of occupations effectively require a technical secondary degree, as only farming and forestry advisers as well as agronomy technicians have more than 80% of their workers with a technical secondary degree. The figure also clearly shows that employment is growing more for occupations that are lying in the middle of the X-axis where technical secondary degrees are not required but are common. But for the occupations that have a low or high share of technical secondary graduations, we observe that employment is shrinking.

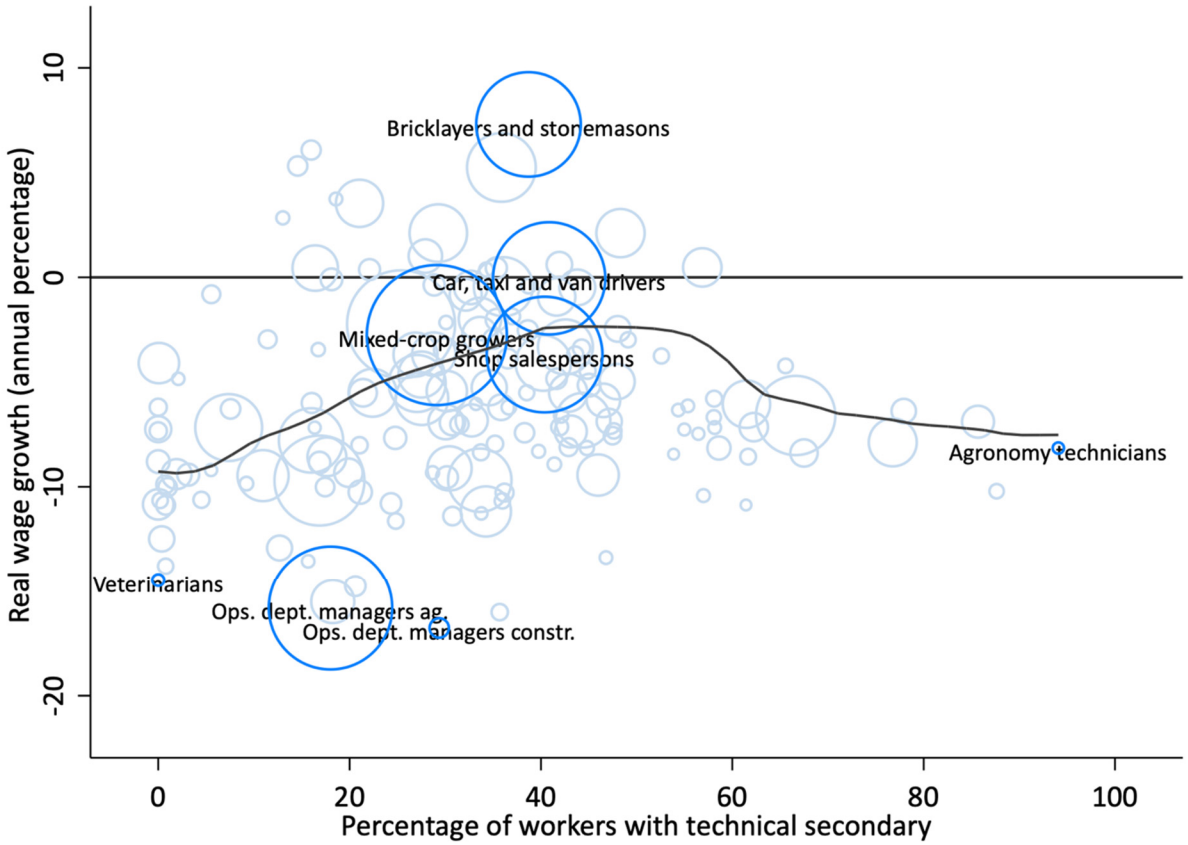
Figure 6*: Employment growth (annual percentage) and percentage of workers with a technical secondary education*



Source: Constructed by the authors using data from the Egypt labour force surveys of 2015-2019.

Occupations with a medium share of technical secondary graduates (40%) also have higher annual real wage growth, whereas occupations with both low and high shares of secondary technical education experienced slower wage growth (**Figure 7**).

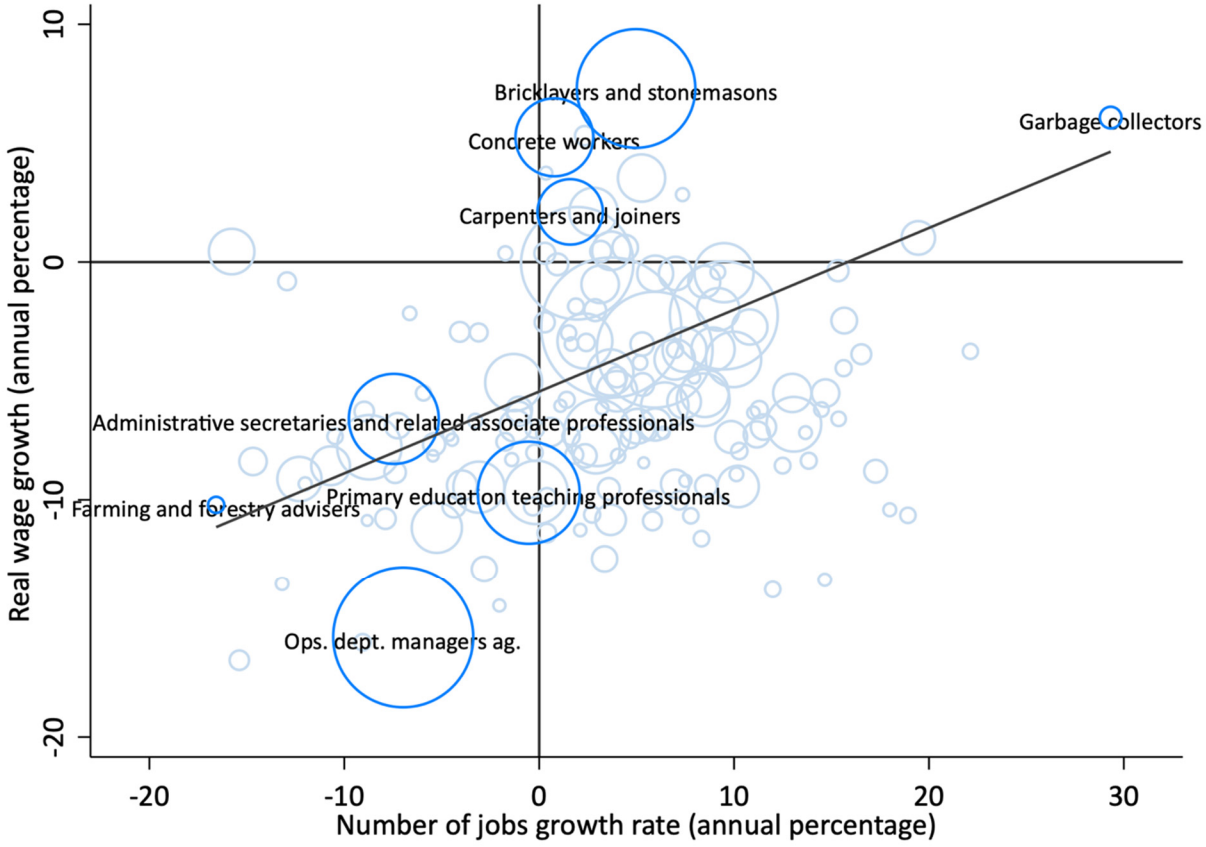
Figure 7: *Wage growth and percentage of workers with a technical secondary education*



Source: Constructed by the authors using data from the Egypt Labour Force Surveys of 2015-2019.

Analyzing the evolution of employment growth and real wage growth suggests a possible correlation between the two indicators (**Figure 8**). Indeed, we can observe a positive linear relationship between employment growth and wage growth. In other words, **occupations with growing employment tend to have growing real wages.** For instance, while operation managers in agriculture are witnessing negative employment and wage growth, garbage collectors possess both growing employment and growing real wage rates.

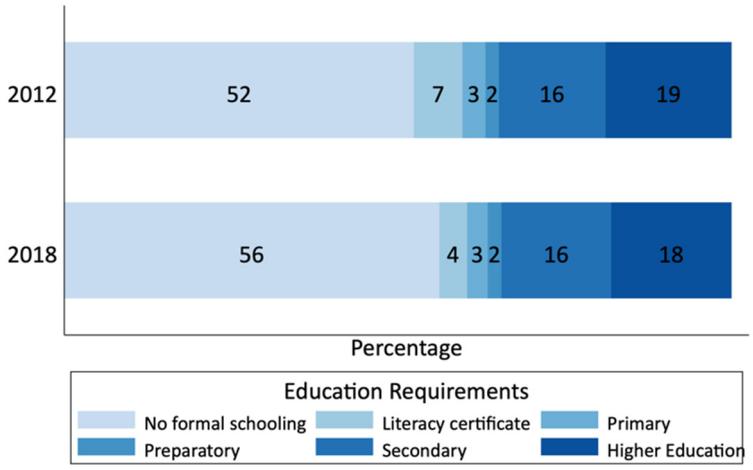
Figure 8: *Wage growth and employment growth (annual growth rate, percentage)*



Source: Constructed by the authors using data from the Egypt Labour Force Surveys of 2015-2019.

Figure 9 presents the education requirements of jobs in the Egyptian labour market for the two years 2012 and 2018. We can note that more than half of jobs (52 % in 2012 and 56 % in 2018) do not require any education, whereas less than one-fifth (18-19 %) required higher education and 16 % of jobs required secondary education.

Figure 9: *Educational job requirements (percentage), employed individuals, 2012 and 2018.*



Source: Constructed by the authors using data from the Egypt Labour Market Panel Surveys of 2012 and 2018.

Employers- during the interviews- confirmed these findings in regard to educational requirements. The majority of employers indicated that education was not the primary requirement for employing job seekers, as a considerable number of their employees did not attain a formal education. Instead, employers only require workers that are trained and knowledgeable or have the ability and motivation to work.

> *"I don't care about the education level, the majority of the workers at my firm are not formally educated. They can only read and write."*
>
> ***(IDI with an employer, at Cairo)***

This further highlights an employer's prioritization of an employee's specific qualifications in relationship to the job versus the employee's educational background. This is supported by the responses of some of the participants from industries such as readymade garments and leather manufacturing where they argued that education is not a major determinant of employability, indicating a disparity between what graduates learnt at their schools or colleges and the actual job needs.

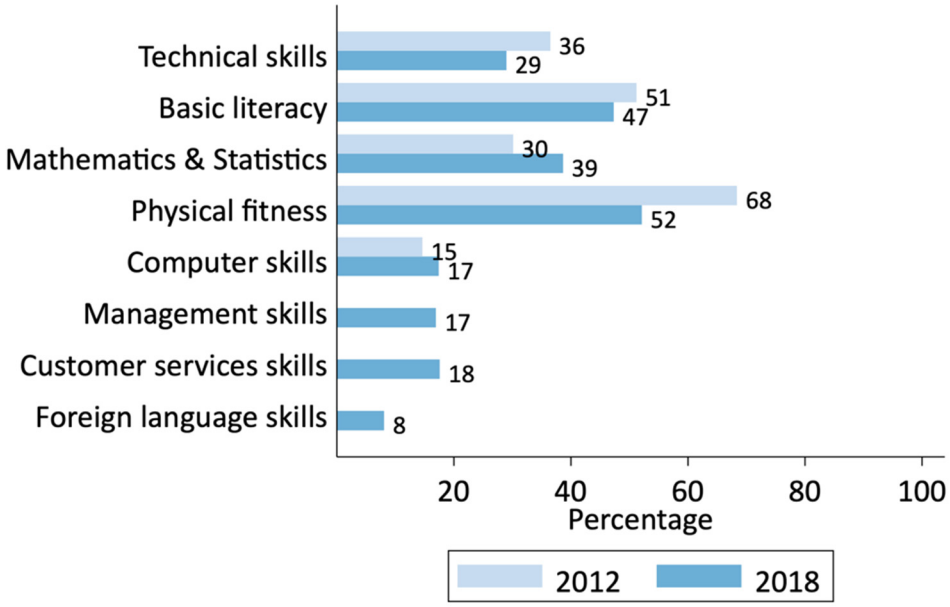
> *"I have learnt to be patient since I don't always find specialists; I look for the best I can find because I don't have the option nor hope to choose from among the graduates, whether they have a technical secondary education or a university degree. Both have learned the wrong things for our occupational requirements. I'm just searching for a self-learner because it'll show that he's interested in our profession and wants to learn more."*
>
> ***(FGD with employers, at Alex)***

Moreover, more than half of jobs (52 %) require physical fitness in 2018, declining from 68 % in 2012 (see Figure 10).

Employers in the qualitative fieldwork also stated that the majority of technical work requirements are related to physical fitness, particularly in the labour-intensive jobs, which need a healthy and strong physique.

Other skills required included basic literacy, which slightly decreased from 51 % in 2012 to 47 % in 2018. We can observe that while physical fitness skill is decreasing over the period, numeracy and mathematical skills being required are increasing from 30 % in 2012 to 39 % in 2018. Furthermore, only 29 % of jobs required technical skills in 2018, compared to 36 % in 2012. As for computer skills, small changes are apparent, reaching 17 % of jobs requiring such skills in 2018 compared to 15 % in 2012. Similar percentages are observed in 2018 for requiring management and customer services skills (17 % and 18 % respectively), while only 8 % of the workers reported that their jobs require foreign language skills.

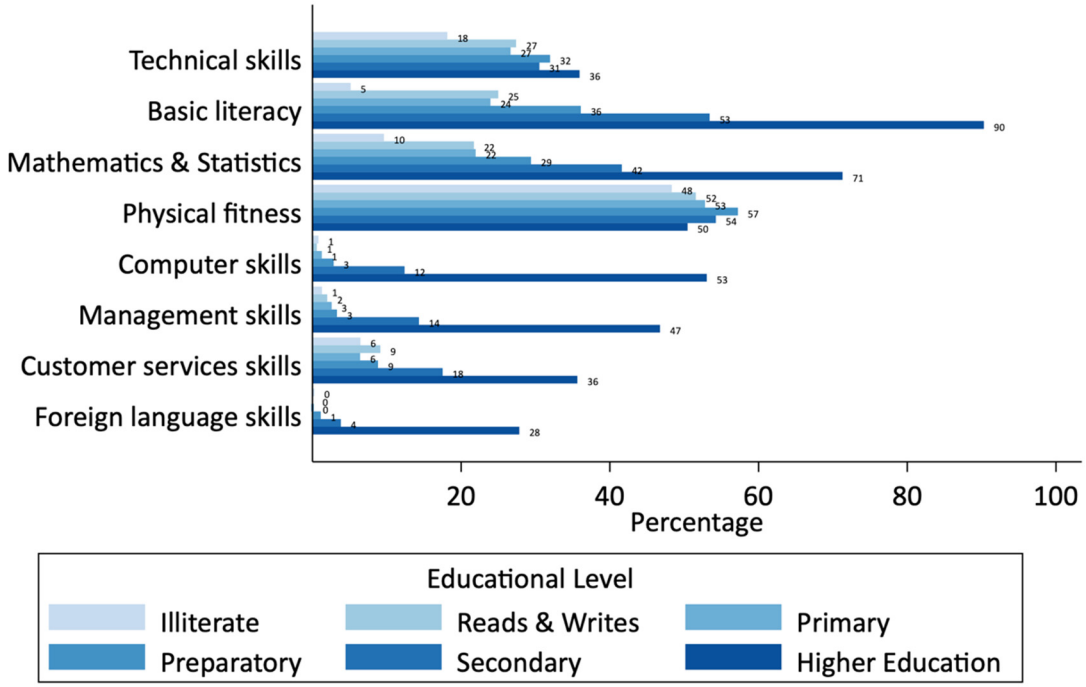
Figure 10: *Percentage of workers whose jobs require skills, employed individuals, 2012 and 2018.*



Source: Constructed by the authors using data from the Egypt Labour Market Panel Surveys of 2012 and 2018.

When looking at the jobs' skill requirements through an educational attainment lens, we observe that **educational attainment is positively correlated with the share of jobs requiring literacy and numeracy**, which increase with education, in other words jobs requiring high reading and numbers skills require more education. **Figure 11** also shows that a similar share requires technical and physical skills across education levels. **Computer, management, customer service, and language skills** are more common for secondary and higher education graduates.

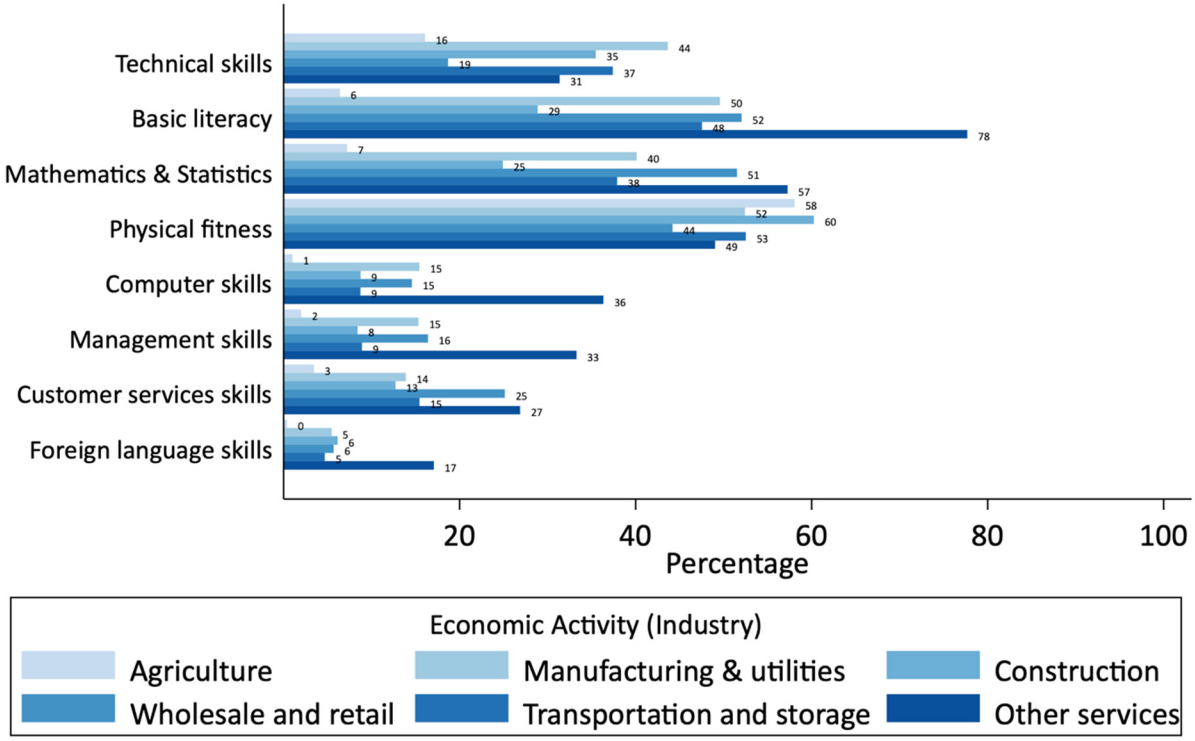
Figure 11: *Percentage of workers whose jobs require skills, by education, employed individuals, 2018.*



Source: Constructed by the authors using data from the Egypt Labour Market Panel Surveys of 2012 and 2018.

Another way to understand the demand side of the market is to look at the required skills across the main industries in Egypt. These sectors are agriculture, construction, trade and retail, transport and storage, and other services, as shown in **Figure 12**. Agriculture primarily requires physical skills, as reported by more than half (58 %) of workers in that sector, whereas basic skills (50 %) and technical skills (44 %) are more required in manufacturing. Lastly, the requirements of management, computer, customer services and language skills are more necessary for the services sector.

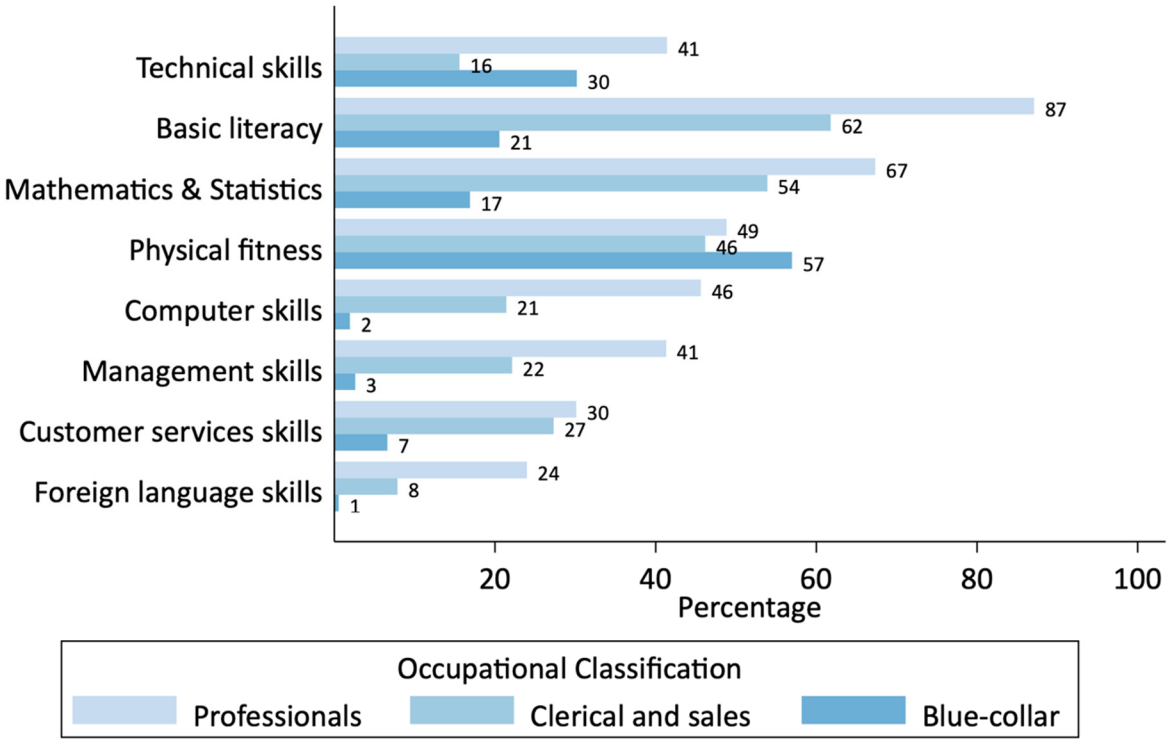
Figure 12: *Percentage of workers whose jobs require skills, by major industry, employed individuals, 2018.*



Source: Constructed by the authors using data from the Egypt Labour Market Panel Surveys of 2012 and 2018.

A closer look into the skills required for some particular occupations yields the conclusion that the correlation or connection between skills and occupation are stronger than those that relate skills and the type of industry. For example, those who work in the service and sales jobs need most of the skills mentioned, especially basic literacy (62 %), numeracy skills (54 %), physical fitness (46 %) and customer services (27 %). Professionals also reported that their jobs required different skills, among which were basic literacy (87 %), mathematics (67 %) and management skills (41 %). **blue collar workers rarely need any other skills other than physical fitness** (57 %), **technical skills** (30 %) and **basic literacy** (21 %) (**see Figure 13**).

Figure 13: *Percentage of workers whose jobs require skills, by one-digit occupation, employed individuals, 2018.*



Source: Constructed by the authors using data from the Egypt Labour Market Panel Surveys of 2012 and 2018.

The qualitative data also show that the required skills differ depending on job type. Participants from both employers and workers reported that the required skills differ depend on the job nature (blue versus white collars). For example, while languages represent a major requirement for white-collar jobs, technical skills are needed for blue-collar jobs. Interestingly, both white and blue-collar occupations require technological and life skills such as communicating and negotiating. As previously stated, one of the key reasons for growing sectors that hire workers from all occupational categories is 'the usage of technology'.

> *"In terms of customer service, I require someone who has good communication skills with people from different cultures, as well as the ability to simplify information. When it comes to technicians, all I require is that they have professional technical skills, as well as communication skills that allows them to communicate effectively with customers."*
>
> ***(IDI with an employer).***

New skills can be acquired through formal education or on the job (through employers' investments in their employees). New skills can also be acquired through investment in self-learning which aims to improve the person's leverage in the labour market and increase the probability of getting hired or getting a promotion. **Figure 14** shows that school and technical education were sources for skill acquisition for a third of workers (32 %) in 2012 and 2018, among workers whose jobs required technical skills. Moreover, around a quarter of workers whose jobs required technical skills acquired their skills thanks to on-the-job learning (27 %) and/or apprenticeships (26 %) in 2018. In fact, vocational training is still not considered as a main source of skill learning, but it grew from only 4 % in 2012 to 11 % in 2018.

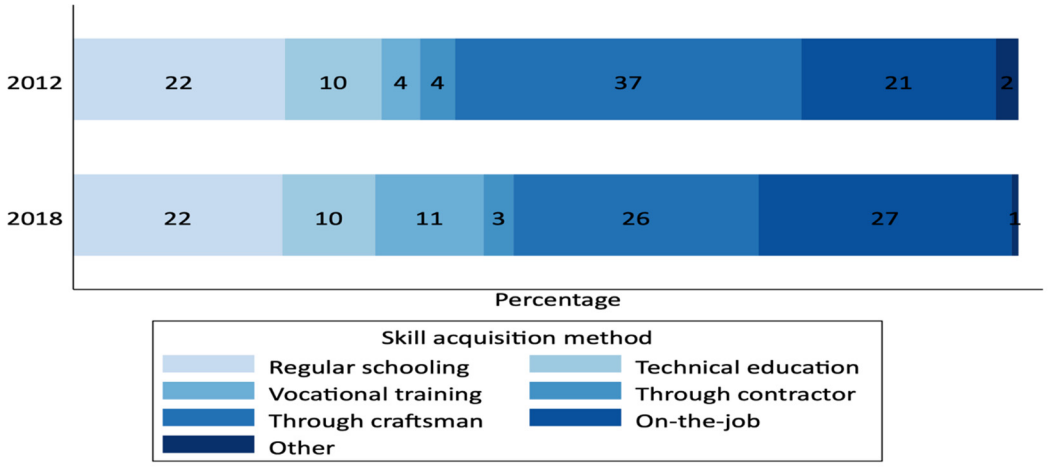
These results are also confirmed by the qualitative data. The majority of workers in growing sectors are concerned with developing their skills on a regular basis through self-learning or through free courses provided by governmental institutions or by their employers.

> *"I've spent my entire life developing my skills in preparation for any future employment requirements, and I believe that finding skilled workers is the biggest challenge in the labour market."*
>
> ***(FGD with workers in IT sector)***

Employers in the qualitative data recognized the importance of employee skill development. The majority of them indicated that they provide free job-related training to their staff.

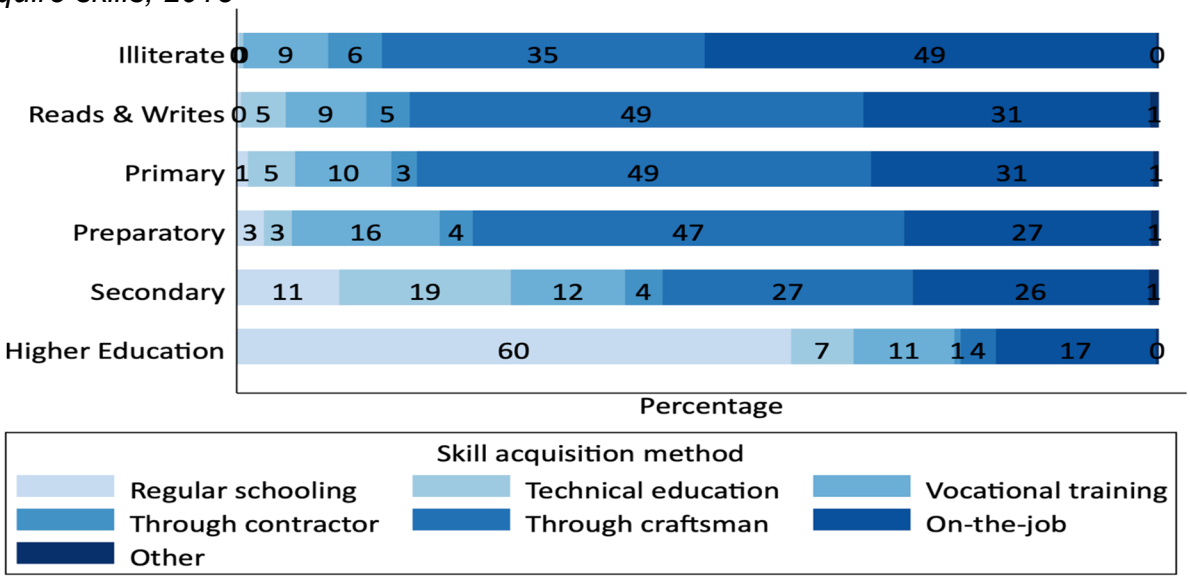
> *"It depends on the employee's skills; for fresh graduates, I have previously given them appropriate training, and some of them have been promoted to higher positions."*
>
> ***(IDI with an employer)***

Figure 14: *Skill acquisition method (percentage), workers whose jobs require technical skills, 2012 and 2018.*



Source: Constructed by the authors using data from the Egypt Labour Market Panel Surveys of 2012 and 2018.

Figure 15: *Skill acquisition method (percentage), by education, workers whose jobs require skills, 2018*



Source: Constructed by the authors using data from the Egypt Labour Market Panel Surveys of 2012 and 2018.

Figure 15 examines skill acquisition methods by education, for workers whose jobs required technical skills. Less educated workers were more likely to learn on the job than the higher educated ones. For instance, 49 % of workers who can read and write learned their skills on the job compared to only 17 % among workers with higher education levels. On the other hand, education and external training were important for more educated workers, where around 78 % of those in jobs requiring technical skills reported they acquired skills through one of the regular/ formal education channels.

CHAPTER 5 Conclusions and Policy Recommendations

In light of global trends, namely digitalization; demographic changes; climate change and the green economy; and globalization of the financial markets**, the Egyptian labour market has been experiencing several changes**. The positive impact of digitalization on the Egyptian labour market, for instance, has triggered Egypt to undergo further changes when it came to automation, new skills and competencies. For the demographic changes, the result of the increased child population shaped an opportunity for the Egyptian labour market since it will lead to significant increase in labour. Also, climate change and the green economy is considered an opportunity for Egypt by taking advantage of the renewable energy sector and shift to green jobs. When it comes to Globalization in the financial markets, it is estimated to encounter an increase in the Egyptian GDP and total employment by 1% as a result of the liberalization of the African Continental Free Trade Agreement (ACFTA).

As such, it is important for policymakers, employers, employees, and researchers to have a thorough understanding of the Egyptian labour market, its future and, more specifically, the growing and shrinking occupations within the labour market. Accordingly, this analysis aims to provide policymakers with the necessary information that could assist them in the formulation of evidence based polices regarding the future of work in Egypt. While the primary focus of this report is growing and shrinking occupations in Egypt, and the requisite education and skills, it also considers individuals that possess technical secondary education and their role in the future of work in Egypt.

Growing occupations in Egypt are typically informal or irregular forms of work, with garbage collectors and food quality control being the two fastest growing occupations in terms of employment. Conclusions can be drawn for real wage growth, as fishery, hunting and trapping labour and garbage collectors are the occupations with the highest real wage growth. Furthermore, growing and shrinking occupations were affected by technological trends, specifically technological advancement. Additionally, the analysis undertaken in this report shows that formal education has been a considerable source of acquiring skills for a large percentage of workers- namely the highly educated ones, but new forms of learning are apparent. Workers with no to low level of education rather mostly learn skills on the job. Moreover, during the interviews with employers, it was indicated that the **most demanded skills are the basic ones such as physical fitness, literacy and punctuality**. The qualitative findings also show that the **IT sector has the highest demand-driven course.**

Shrinking occupations were also affected by technological trends as employers and

stakeholders in the qualitative research that was conducted have highlighted the existence of a gap between supply and demand in the labour force participation. Additionally, by analyzing the most rapidly shrinking occupations in terms of real wage growth, it became evident that there is no strong relationship between wage or employment growth and technical secondary education. It has also become apparent that the majority of occupations do not require high skills. So, new entrants mostly rely on skills they learnt at school or on the job. It is worth noting that there is a need for **more in-depth analysis of the required skills** for each occupation based on surveys or in-depth interviews with the employers from the different sectors.

Ultimately, based on the findings of the report and the analysis of the skills requirements which highlighted the **most demanded skills for the Egyptian Labour Market,** the report has outlined a number of policy recommendations. Firstly, there is **a need to equip students with basic skills** (reading and writing, math), and soft skills (such as teamwork, customer service, and communication); this focus applies not only to primary education but also to preparatory and secondary education. Secondly, the is a necessity for the adoption of reskilling programs in order to equip displaced low-medium skilled workers (as a result of the rise in automation, and/or climate change) with the relevant skill sets that meets the future demands of the labour market.

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ANNEX 2 Data Sources & Methodology

Quantitative Data

To identify the growing and shrinking sectors the Egyptian Economic Census (EC) data was used. Both EC 2012/13 and 2017/18 were used to measure the share of each two-digits industries of total employment, in addition to the employment growth rate (in terms of number of jobs created), and the share of these sectors in the overall employment growth. Based on initial analysis of these censuses, the growing and shrinking sectors were selected according to the following criteria:

- Sector size including the number of employees.
- The sectors which experience a higher-than-average growth rate as compared to other sectors during 2012-2018.
- The share of the sector in job creation growth rate.

These findings go in line with (Assaad, Krafft, Rahman, & and Selwaness, 2019) that used the Egypt Establishments censuses of 1996 and 2017. In addition, the LFS data was used to observe the trend of the selected sectors' employment shares during 2009-2019. Accordingly, the selected growing sectors are manufacturing and tailoring of ready-made garments, Information services, real estate activities on a fee or contract basis, Specialized construction activities, food processing and financial intermediation other than insurance. On the other hand, the selected **shrinking sectors were manufacturing of footwear, non-metallic minerals industry (Such as ceramics and sand) and furniture industry.**

Quantitative Data Sources

The Egypt Labour Force Surveys (ELFS) [3] are nationally representative surveys. that consist of a total number of approximately 90,000 households annually.
These households are distributed on the governorate level (urban/rural), according to the estimated number of households in each governorate in accordance with the percentage of urban and rural population in each governorate. The questionnaire design follows the latest International Labour Organization (ILO) concepts and definitions of labour force, employment, and unemployment. The ELFS includes information about 1. Demographic and employment characteristics and basic data for all household individuals, 2. Employment characteristics and, 3. Unemployment characteristics. This data allows us to analyze occupations at the four-digits level following the 2005 Egyptian Occupation Classification which is, in turn, based on the ISCO coding of 1988.

The Egypt Labour Market Panel Surveys of the years 2012 and 2018[4] are nationally representative surveys that were carried out by the Economic Research Forum (ERF) in cooperation with Egypt's Central Agency for Public Mobilization and Statistics (CAPMAS). The final sample of the 2018 ELMPS included 15,746 households and 61,231 individuals. Of these households, 13,793 households included members from 2012 (10,042 panel and 3,751 split households) and 1,953 were refresher households. Among individuals, 53,040 were in households that included at least one individual interviewed in 2012 (i.e., either panel or split households), while 8,191 were in refresher households. Of the 49,186 individuals included in the 2012 sample, 39,153 (79.6%) were successfully re-interviewed in 2018. To measure the skills and education requirements of jobs, the ELMPS data was used.

The Egyptian Economic Censuses 2012/2013 and 2017/2018 provide a huge amount of data which sheds light on the components and elements of economic activity by providing a complete, comprehensive, and detailed image of economic establishments in various sectors according to the most recent international standards and concepts.
The Egyptian Economic Census has two parts of data: the regular statistics, which includes all establishments, in both Public and Public Business Sectors, and some private sector establishments, which are regularly conducted annually. The second part includes private sector establishments covered in the EC using sampling methods, for those which aren't covered by regular statistics. The data included in this analysis is 50% of the original data, representing around 62,200 and 170,300 establishments in 2012/2013, and 2017/2018, respectively.

Qualitative Sample and Data Collection Instruments

Based on (Assaad, Krafft, Rahman, & Selwaness, 2019) and the EC data analysis, the qualitative study team purposely selected five governorates within Egypt. These governorates are Cairo, Alexandria, Sharqiya, Damietta and Minya. Each governorate was represented by the following regions:

I. **Greater Cairo:** Including 3 main sub-regions (Cairo, Giza and Qalyubia) which have the largest number of employees of all targeted sectors.
II. ***Alexandria region***: targeting Alex governorate which comes in the second rank of employees in many sectors such as manufacturing and tailoring of ready-made garments.
III. **Suez Canal:** Targeting Sharqiya governorate, which include one of the biggest industry areas in Egypt (10th of Ramadan).
IV. **Lower Egypt**: Targeting Damietta governorate, which has the largest number of employees in the furniture industry.
V. **Upper Egypt**: Targeting Minya governorate which has the biggest factories in ready-made garments in Egypt.

(For more details, see Table 1 to Table 4)

Data collection took place with four different populations within the five study sites that targeted growing and shrinking sectors.

A total of **41 in-depth interviews** (IDIs) and 7 **focus group discussions** (FGDs) were conducted with governmental policy makers, employers, workers and development and training organizations (table 2). **Purposive sampling** was used to reach to the targeted participants (see attached detailed participants demographic info) as the following:

I. **Governmental policy makers**: 5 IDIs were conducted with Ministries, government entities, semi-governmental institutions including Ministry of Trade and Industry, Ministry of Communication, and Information Technology MCIT, Ministry of Education and Technical Education (MOETE), Egyptian Trade Union Federation (ETUF), Federation of Egyptian Industries (FEI).
II. **Employers**: 25 IDIs and 2 FGDs were conducted with employers in both shrinking and growing sectors in the five targeted governorates.
III. **Workers***: 5 FGDs and 1 IDI were conducted with workers in both shrinking and growing sectors in four of targeted governorates.* [3]
IV. **Development and training organizations**: 10 IDIs were conducted with international organizations, vocational training centers and research centers such as (USAID, Unwoman, ILO, Sawiris foundation, Egyptian Federation of Investors Association (EFIA), ABA, governmental policy makers, Alternative Policy solutions)

Participants	*No IDIs*	*No FGDs*
Governmental policy makers	5	-
Employers	25	2
Workers	1	5
Development and training organizations	10	-
Total	**41**	**7**

Different versions of the IDI guide and FGD were developed for each type of the targeted participants:

- **In governmental policy makers' guide**, participants were asked about the current policies regarding the technological revolution and the current growing and shrinking sectors and occupations, as well as the current governmental programs towards the enhancement of the young people skills for covering the gap between demand and supply in the skills. In addition, they were asked on their perspectives towards the reasons and challenges of growing and shrinking sectors particularly the informal and gig sectors. Finally, the guide was focused on their perceptions on the future of work in Egypt during the next five years.

- **Development and training organizations guide**; Participants were asked about the current programs, initiatives and recent studies that were conducted to enhance young people skills and understand the current situation of the future of work, in addition to their perceptions on the reasons of growing and shrinking sectors and occupations and finally their perspectives towards the future of work during the coming five years.

- **Employer's guide** included information on their firms with a focus on the gig employers' firms or projects, then they asked about the required skills and the challenges which they face regarding the skills demand. And finally, they were asked about their perceptions regarding the future of the labour market in Egypt.

- **Worker's guide** focused on their current skills and the tools used to develop their skills for the future of work, particularly focusing on the gig workers and how they joined the gig sectors. Then, workers were asked about the advantages and challenges which they are facing during their current work, and finally, they were asked about their perspectives toward the future of work in Egypt.

Qualitative fieldwork and analysis

A training for the interviewers was conducted by the national consultants in November of 2021. The training covered an overview about the Employment Promotion Project (EPP3). It also included a detailed discussion of the different interview guides, role-

playing, interview techniques and methods of communication with respondents. The interviews were conducted by the national consultant and four additional interviewers. Data collection was conducted from December 2021- February 2022 under the supervision of the national consultants. Participants of the IDIs and FGDs were mostly selected using snow-balling techniques whereas some of them were selected through collaboration with Alexandria business Association (ABA). Interviews and FGDs were held either via online meeting programs (Zoom and Microsoft teams) or through interviewing the participants in their firms and institutions.

All interviews were recorded, after which they were transcribed in the original Egyptian Colloquial Arabic, with quality review of transcription conducted by the national consultants. The **codebook** was developed based on the above research objectives. The codes were grouped into families that covered the main themes of the data. The codes were revised and merged as needed during the initial stages of the coding process. This resulted in a list of 21 code families with over 180 sub-codes. All the data was uploaded on ***Dedoose***[4] qualitative program for analysis.

Table 1: Distribution of IDIs and FGDs by target respondents

Participants	FGD	IDI
Governmental policy makers	-	5
Employers	2	25
Workers	5	1
Development and training organizations	-	10
Total	**7**	**41**

Table 2: Distribution of IDIs and FGDs by governorate

Governorate	FDG	IDI
Greater Cairo	3	33
Alexandria	2	5
Damietta	1	1
Menya	1	1
Sharqya		1
Total	**7**	**41**

[4] (www.dedoose.com).

Table 3: Distribution of IDIs and FGDs by industry

Sector	Sector Type (Shrinking/ Growing)			
	Growing		Shrinking	
	FGD	IDI	FGD	IDI
Furniture industry	0	0	1	3
Gig Economy	1	6	0	0
Manufacture and tailoring of ready-made garments	2	5	0	0
Manufacture of footwear	0	0	0	6
Non-metallic minerals industry	0	0	0	2
Other activities of other information services/GIG	1	2	0	0
Specialized construction activities	0	1	0	0

Table 4: Distribution of FGDs by location, industry, and gender

FGD	Location	Industry	Respondents	Gender
FGD1	Menya	Ready- made Garments	Formal workers	Females
FGD2	Online	Information Technology	Workers	Males
FGD3	Greater Cairo	Ready- made Garments	Informal workers	Females
FGD4	Greater Cairo	Digital Economy	Workers	Males
FGD5	Damietta	Furniture	Workers	Males
FGD6	Online	Traditional industries	Employers	Males
FGD7	Online	Hi-tech and knowledge-based industries	Employers	Males

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Im Auftrag des

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wirtschaftliche Zusammenarbeit
und Entwicklung