

ETF experience with Online Job Vacancy Analysis

Focus on Green and Digital Skills

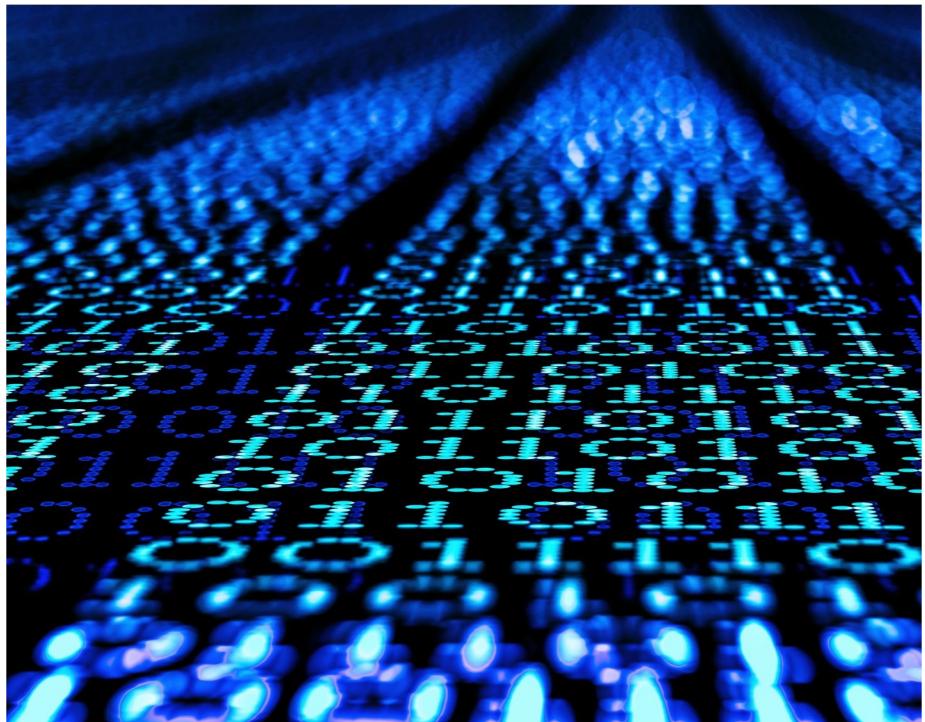
Skills Lab Network of Experts

5 April 2023

Eduarda Castel-Branco



European Training Foundation

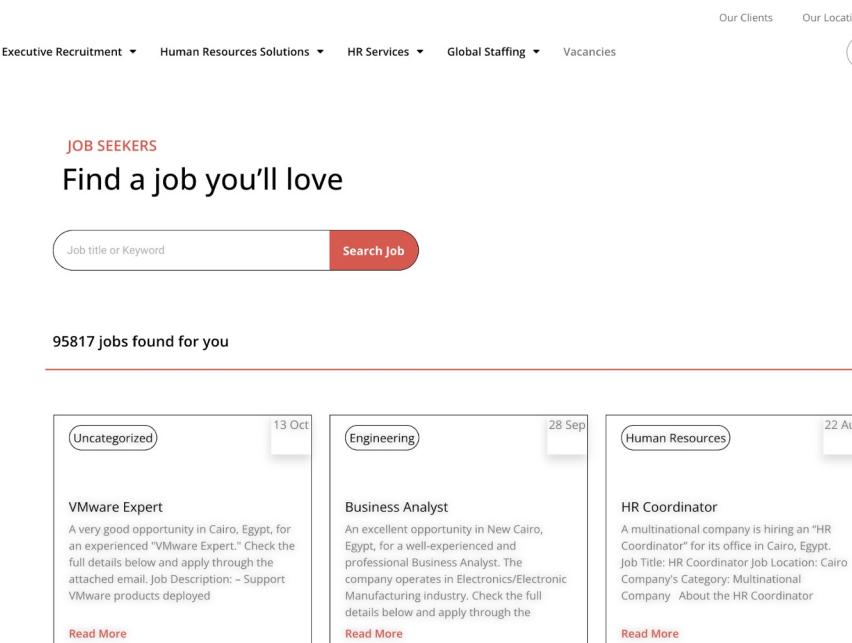


**Online Job
advertisements /
vacancies**

(OJV)



ONLINE JOB ADVERTISEMENTS

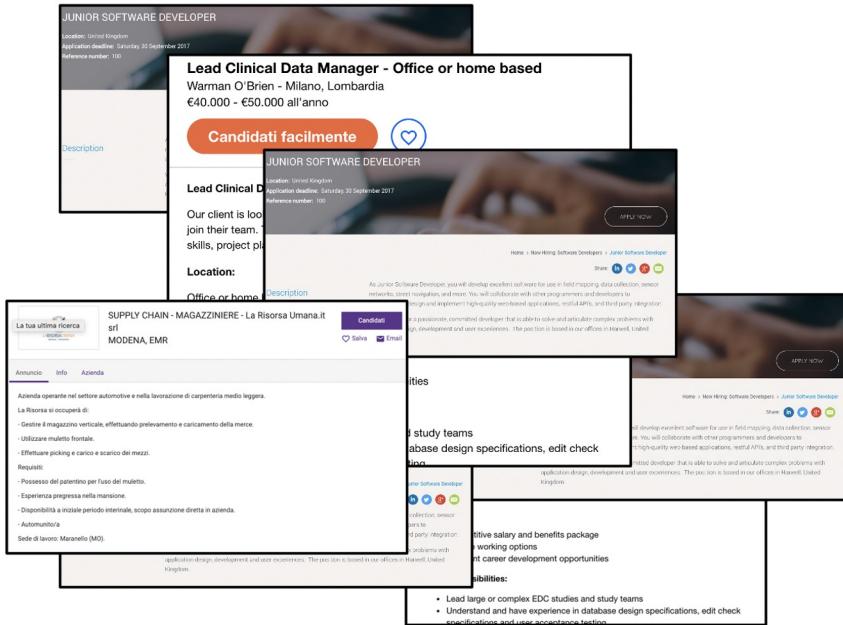


The screenshot shows the homepage of the TARGET Recruitment & HR Solutions website. The top navigation bar includes links for Executive Recruitment, Human Resources Solutions, HR Services, Global Staffing, and Vacancies. Below the navigation is a search bar with the placeholder 'Job title or Keyword' and a red 'Search Job' button. The main content area is titled 'JOB SEEKERS' and features the sub-headline 'Find a job you'll love'. It displays a count of '95817 jobs found for you'. Three job listings are shown in a grid: 1. 'Uncategorized' job for a 'VMware Expert' posted on 13 Oct, with a description about a VMware opportunity in Cairo, Egypt, and a 'Read More' link. 2. 'Engineering' job for a 'Business Analyst' posted on 28 Sep, with a description about a business analyst role in New Cairo, Egypt, and a 'Read More' link. 3. 'Human Resources' job for an 'HR Coordinator' posted on 22 Aug, with a description about a multinational company hiring an HR coordinator in Cairo, Egypt, and a 'Read More' link.

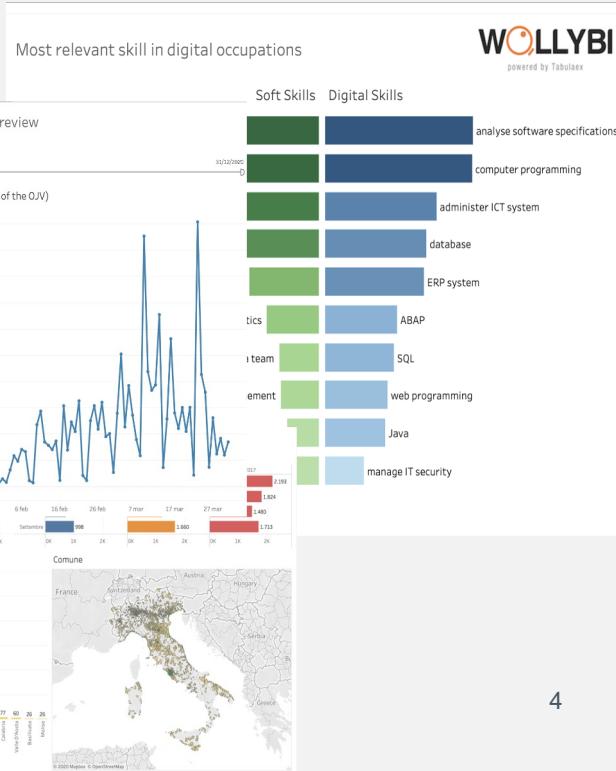
- Online job advertisements (OJAs) refer to advertisements published on the internet.
- Volume of OJAs is growing
- OJAs usually include data on the characteristics of the job (e.g. occupation and location), characteristics of the employer (e.g. economic activity) and requirements (e.g. education/skills).
- Part of this information is available only as natural language textual data.
- This type of big data requires specific methodologies for processing and analysis but also provides much more detailed information (compared to alternative data sources) and avoids pre-conceived classifications (important to identify emerging skills).

THE GOAL OF OJV ANALYSIS IS...

To transform this...



...into value

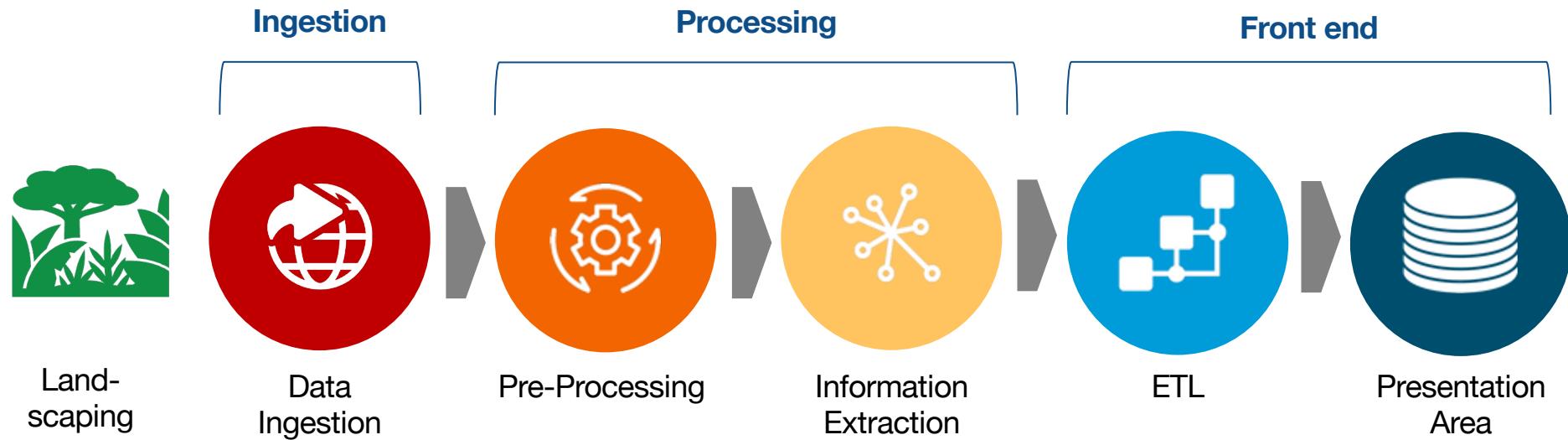
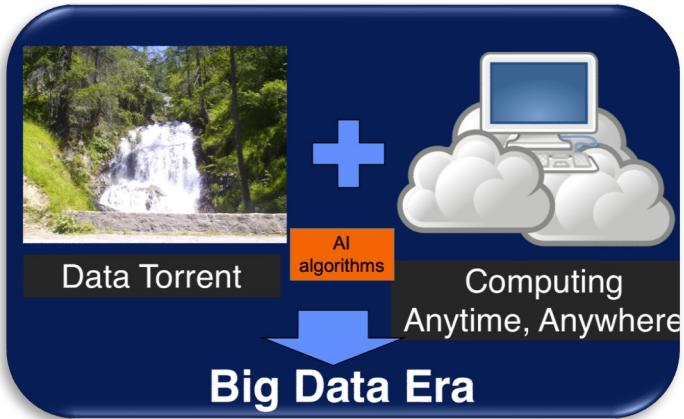


BIG DATA LMI: FOCUS ON OJV KEY FEATURES

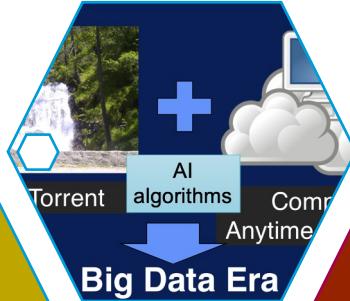
- Data collected from the web, based on feasibility analysis (landscaping)
- 5 Vs of Big Data
- Data management flow: landscaping, ingestion, processing, extraction, ETL, presentation
- Several data quality steps and tools
- Data classification: a) AI-aided – with human in the loop; b) International classifications & taxonomies
- ISCED, ISCO, ESCO, NACE; CEN-CENELEC, Stackoverflow, GitHub; ETF green skills
- Big Data: complements conventional statistics (“*Trusted Smart Statistics*”) – points topics and issues for further / wider analysis



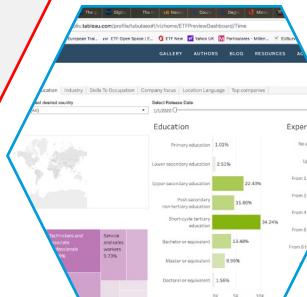
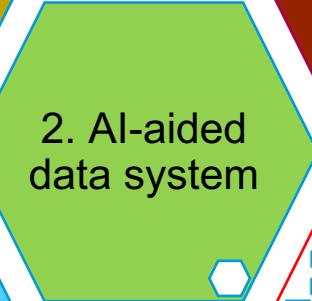
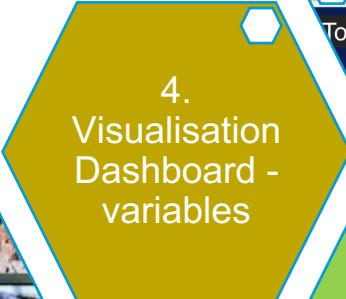
DATA FLOW



OJV analysis system



1. Data from OJV
Complements statistics



6. Volume, Velocity, Variety, Veracity, Value

Papers and reflections

- The added transformative value of combining different data sources
- Supply side analysis using Big Data
- On integration of OJV data – with Occupational Outlook Egypt
- Concept note on ETF Green Skills
- Concept note on Digital skills analysis



ETF PROJECT – Big Data for LMI OJV DATA

- Experimental project – data production system based on internet data
- Data science expertise Lightcast.
- Started: 2019
- Based on conceptual-technical approach OJV analysis project of EU-27

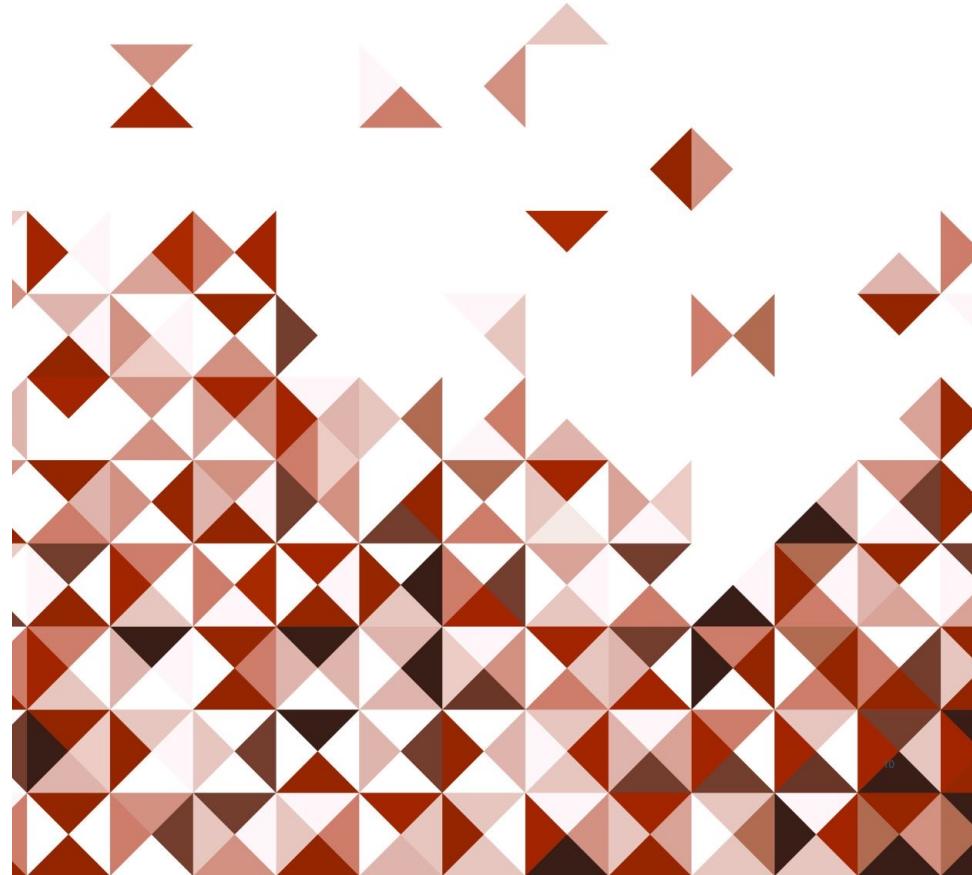
Standard variables on ETF dashboards - Analysis by:

- Occupation
- Occupation– education
- Occupation – industry
- Industry
- Occupation to skill (ESCO)
- Occupation to skill (O*Net)
- Location – language
- Professional dashboard (summary all variables)



Egypt

Data production system



Data – Egypt

- Collected: from Jan 2021 to Dec 2022
- By 30/12/2022:
 - 1,5 million total collected OJV;
 - 490 thousand deduplicated.
 - English and Arabic language sources
- OJV Web Portals: EG Wuzzuf, Bayt, OLX, Jobzella, Tanqeeb, AllJobs, CareerJet, Indeed, Amcham, CareerjetAfrica, Wzayef
- ETF OJV Database
- Dashboard

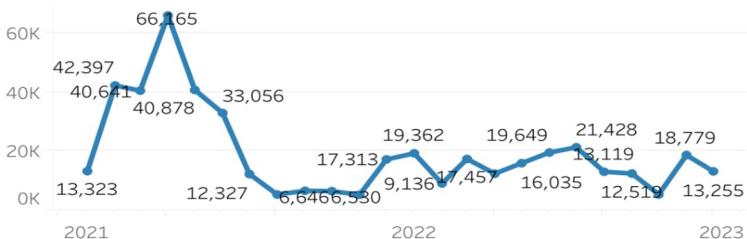
All variables
in 1 view



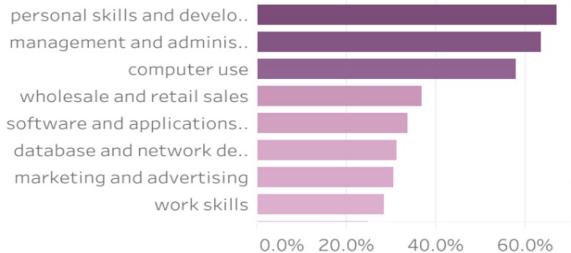
Select the Occupation that you want to Analyze
(then select it again to reset your choice)



Distribution by Release Date (date of publication of the OJV)



Knowledge



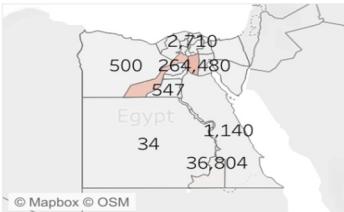
If you want, you can filter by occupation famil..

ESCO (Level 1)
Tutti

ESCO (Level 2)
Tutti

ESCO (Level 3)
Tutti

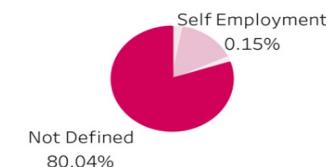
Location



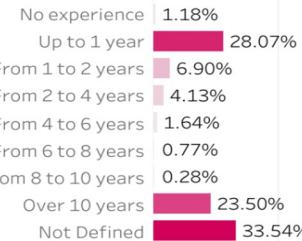
Industry (level 1 NACE)



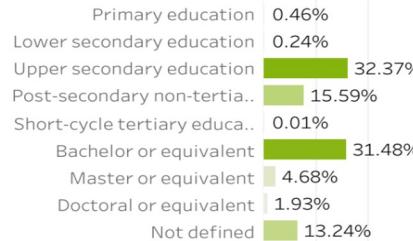
Contract



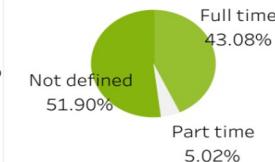
Experience



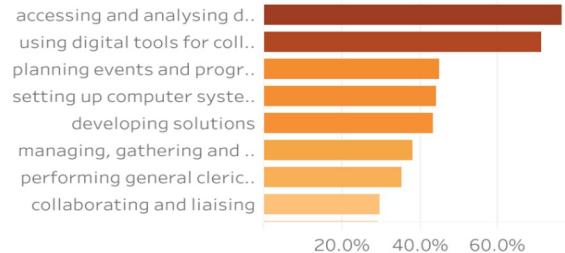
Education



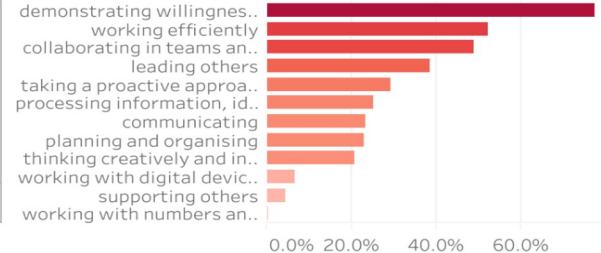
Working hours



Skills



Transversal Skills and Competences





GREEN SKILLS

IN ETF OJV DATA - EGYPT

Definitions

Green skills – an important area of policy debate and action and becoming a priority in LM research (quantitative and qualitative). A range of international organisations are working on analysis and on taxonomies related to green skills.

Cedefop defines green skills as “**Knowledge, abilities, values and attitudes needed to live, work and act in economies and societies seeking to reduce the impact of human activity on the environment.**”

Skills for the green economy consist of:

- **transversal skills**, linked to sustainable thinking and acting, relevant to all economic sectors and occupations;
- **specific skills**, required to adapt or implement standards, processes and services to protect ecosystems and biodiversity, and to reduce energy, materials and water consumption;
- **highly specialised skills**, required to develop and implement green technologies such as renewable energies, sewage treatment or recycling;

➤ Skills for the green economy are also referred to as skills for green jobs, skills for the green transition or green skills.

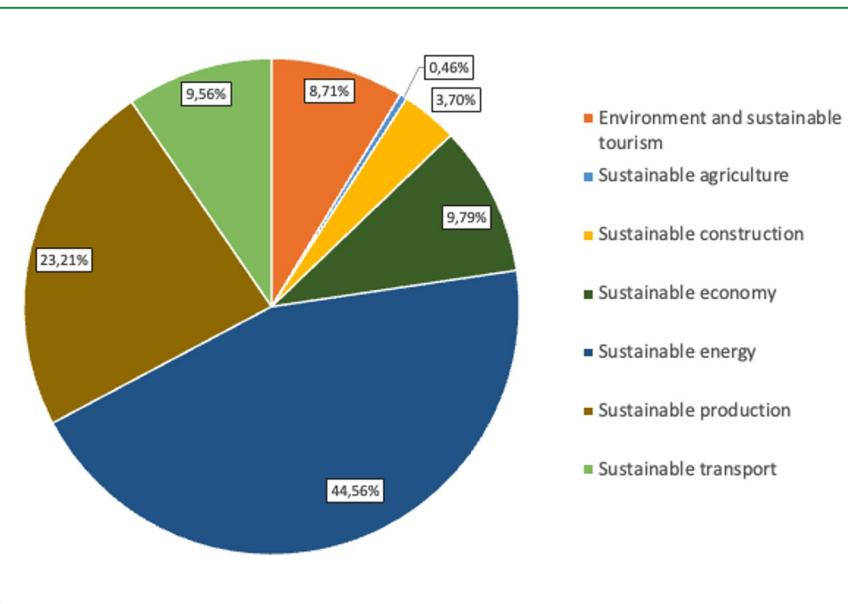
Taxonomy

- ETF green skills list
- 225 terms (data-driven identification)
- 7 clusters of sustainable activity (inspired by the European Green Deal)

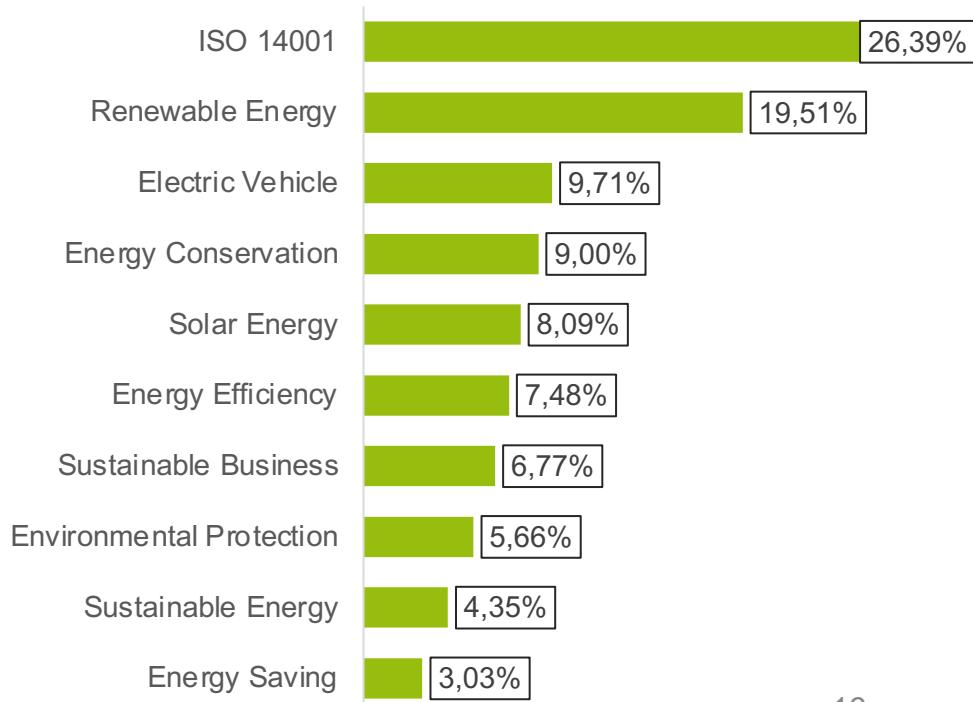
- ❖ Development of the ETF list: ongoing exchanges with ESCO concerning convergence ETF list and ESCO's green skills

GREEN SKILLS: TOP 10

By clusters

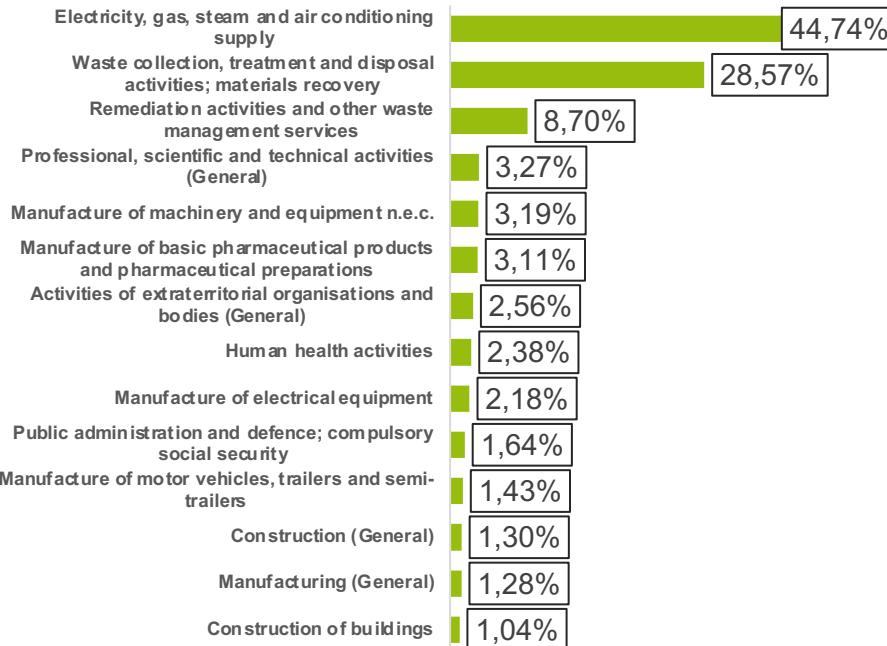


Top Green Skills

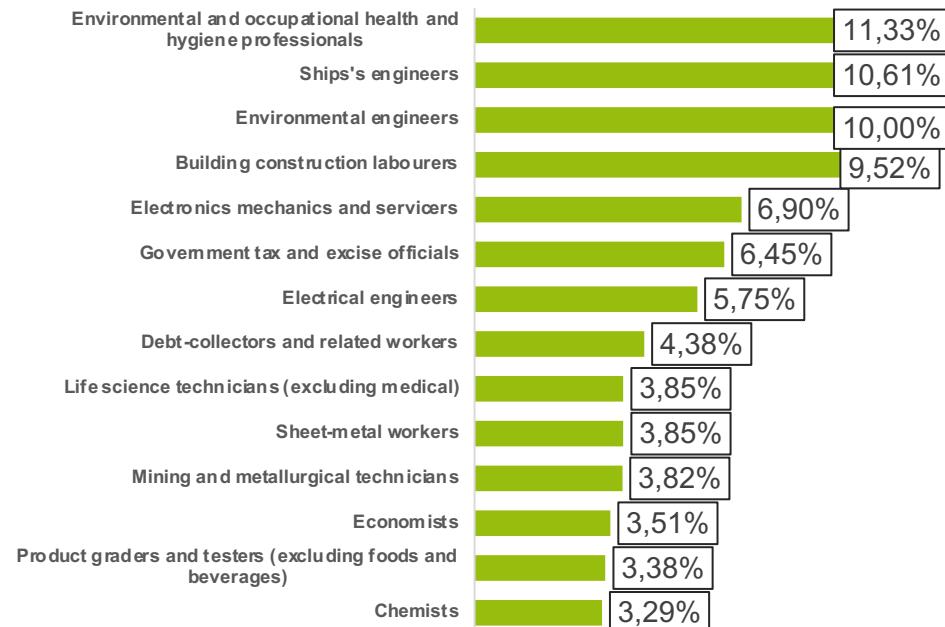


GREEN SKILLS: SHARES BY SECTORS AND OCCUPATIONS

Sectors



Occupations

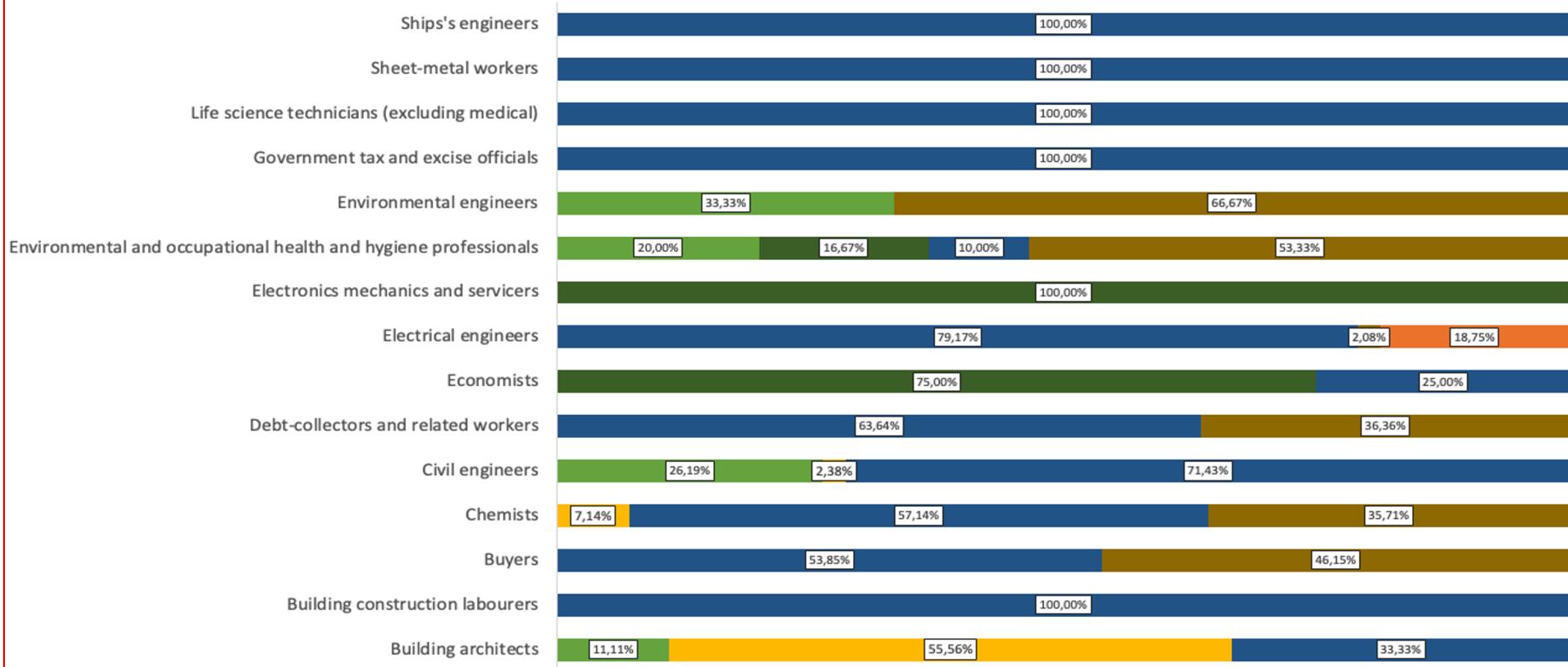


GREEN SKILLS PROFILES OF TOP GREEN OCCUPATIONS

- Environment and sustainable tourism
- Sustainable economy
- Sustainable transport

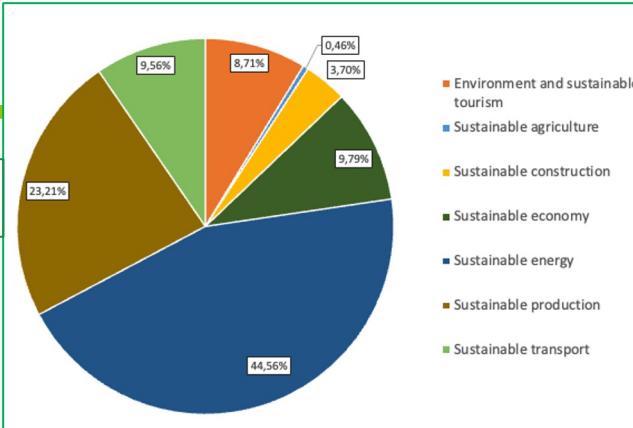
- Sustainable agriculture
- Sustainable energy

- Sustainable construction
- Sustainable production



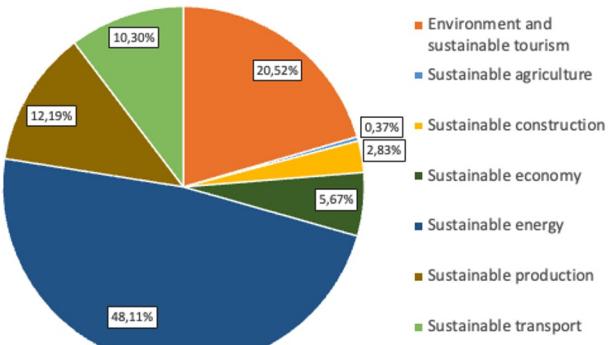
COMPARISONS: % GREEN SKILLS BY CLUSTERS

Egypt



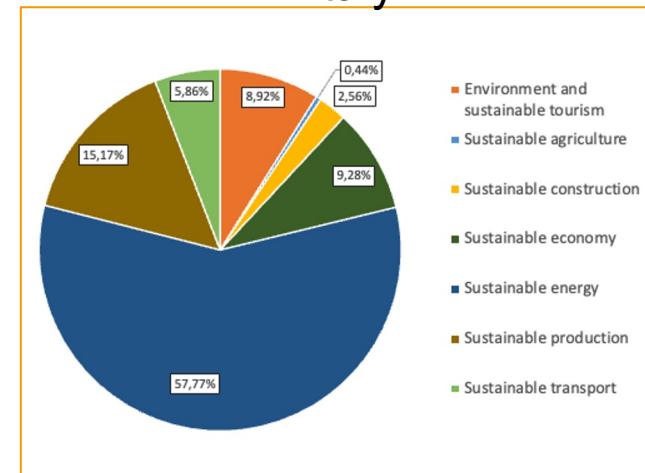
Germany

- Environment and sustainable tourism
- Sustainable agriculture
- Sustainable construction
- Sustainable economy
- Sustainable energy
- Sustainable production
- Sustainable transport



Italy

- Environment and sustainable tourism
- Sustainable agriculture
- Sustainable construction
- Sustainable economy
- Sustainable energy
- Sustainable production
- Sustainable transport

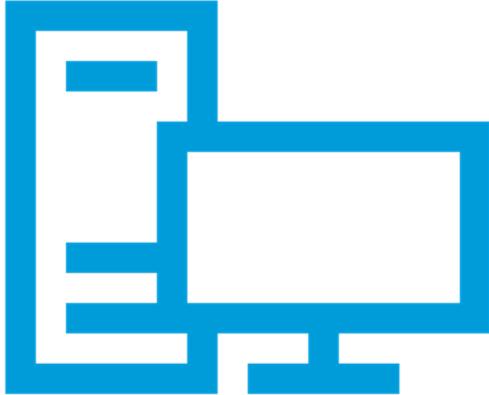


Digital skills – an overview of some features

Analysis based on ETF OJV data - Egypt



Digital skills



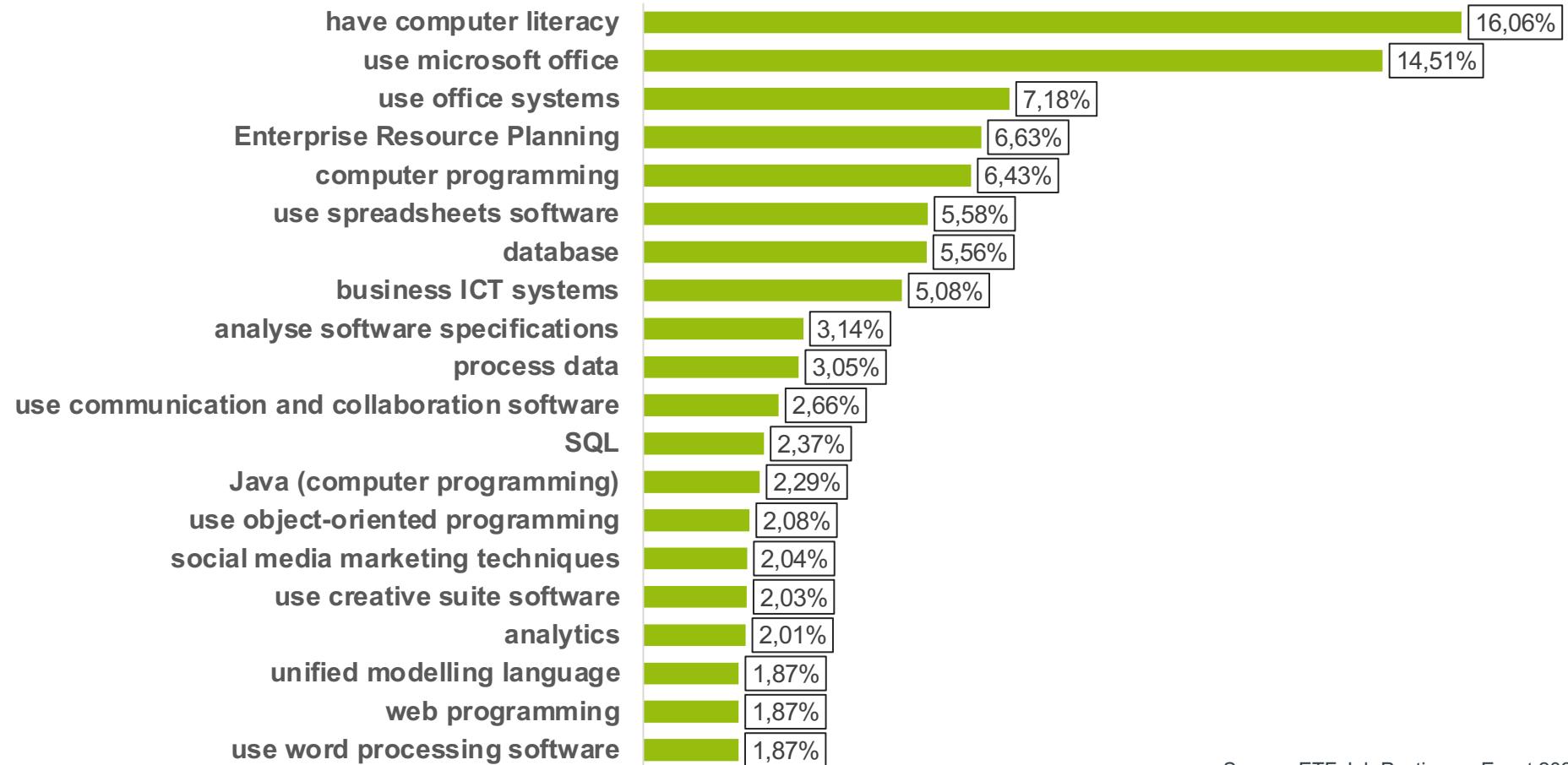
Ability to make confident, critical and responsible use of, and engage with, digital technologies for learning, at work, and for participation in society.

It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking.

Taxonomy

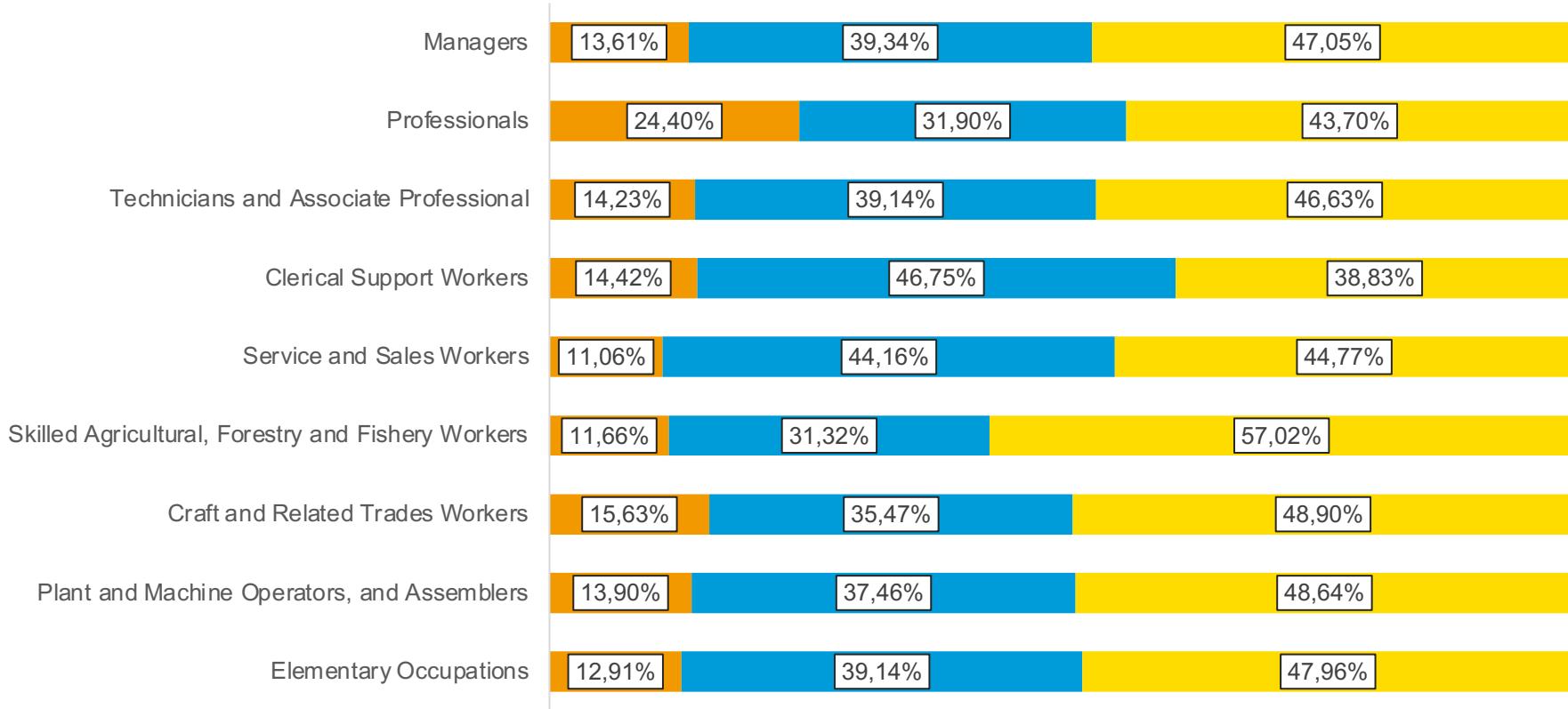
- **ESCO: 1,100 digital skills terms**
- Other sources of digital skills terms: Stackoverflow and Git-Hub – ease classification

DIGITAL SKILLS: TOP 20



DIGITAL SKILLS: BY ISCO GROUPS

■ Digital skills rate ■ Soft skills rate ■ Occup-specific skills rate



DIGITAL SKILLS: IN DIGITAL AND NON-DIGITAL OCCUPATIONS

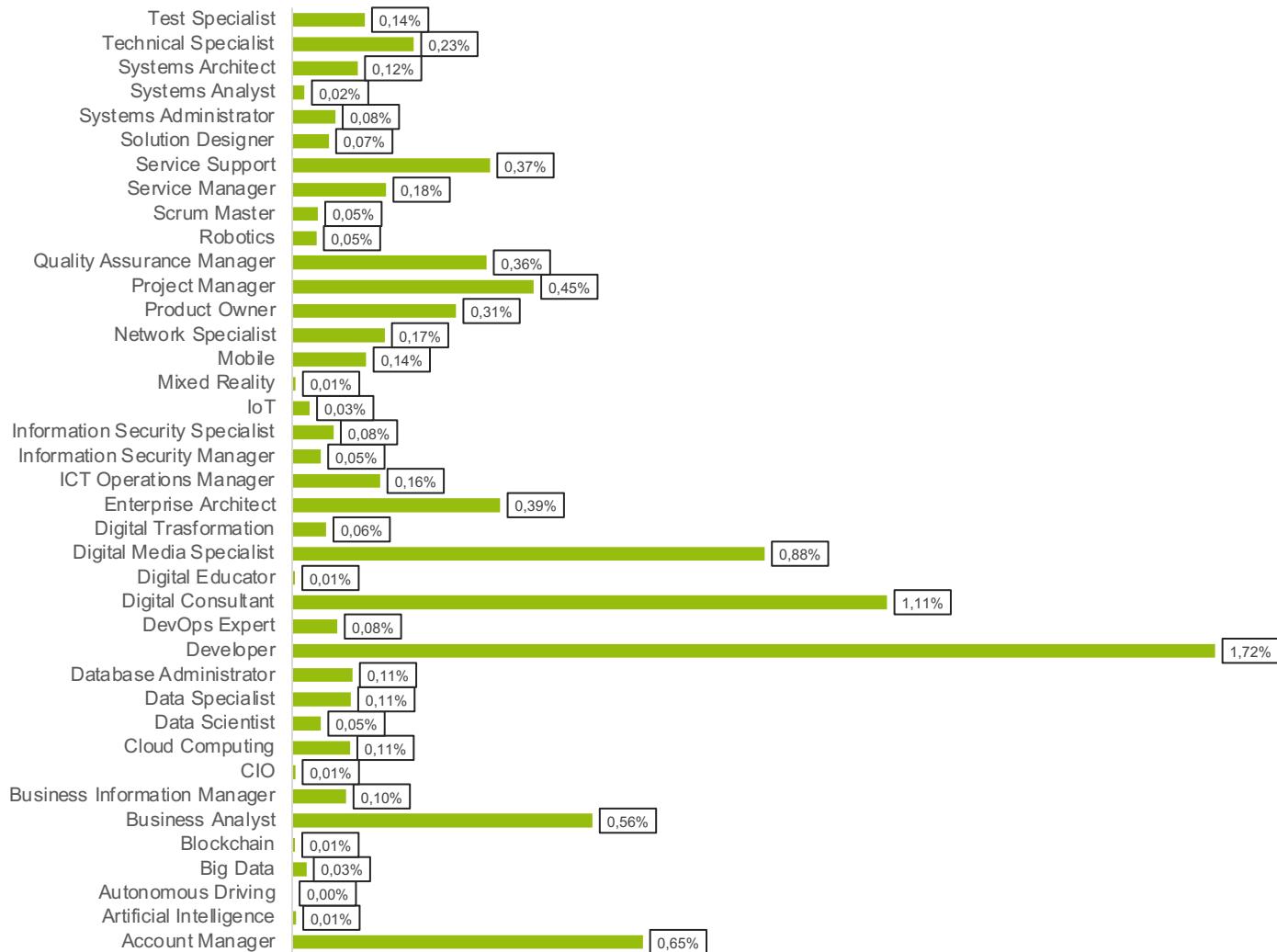
Occupation (ISCO 08)	Unique OJV 2022	Digital skills rate	Soft skills rate	Occupational-specific non digital skills rate
Database designers and administrators	158	54,00%	20,00%	26,00%
Web and multimedia developers	5418	48,00%	23,00%	29,00%
Systems administrators	1366	47,00%	25,00%	28,00%
Applications programmers	1343	44,00%	24,00%	32,00%
Software developers	14752	40,95%	26,32%	32,73%
Data entry clerks	351	40,13%	30,64%	29,23%
Mathematicians, actuaries and statisticians	174	39,08%	28,53%	32,38%
Database and network professionals	1780	38,77%	26,57%	34,66%
Computer network professionals	397	38,29%	29,08%	32,63%
Systems analysts	6593	28,64%	33,62%	37,74%
Graphic and multimedia designers	3686	25,39%	25,93%	48,69%
General office clerks	2022	21,92%	44,19%	33,89%
Environmental engineers	58	19,53%	36,15%	44,31%
Business services and administration managers	1785	15,78%	40,38%	43,84%
Personnel and careers professionals	4122	15,77%	39,97%	44,26%
Accounting and bookkeeping clerks	240	11,88%	33,99%	54,13%
Handicraft workers in textile, leather and related materials	2022	19,75%	31,85%	48,41%

ICT PROFILES

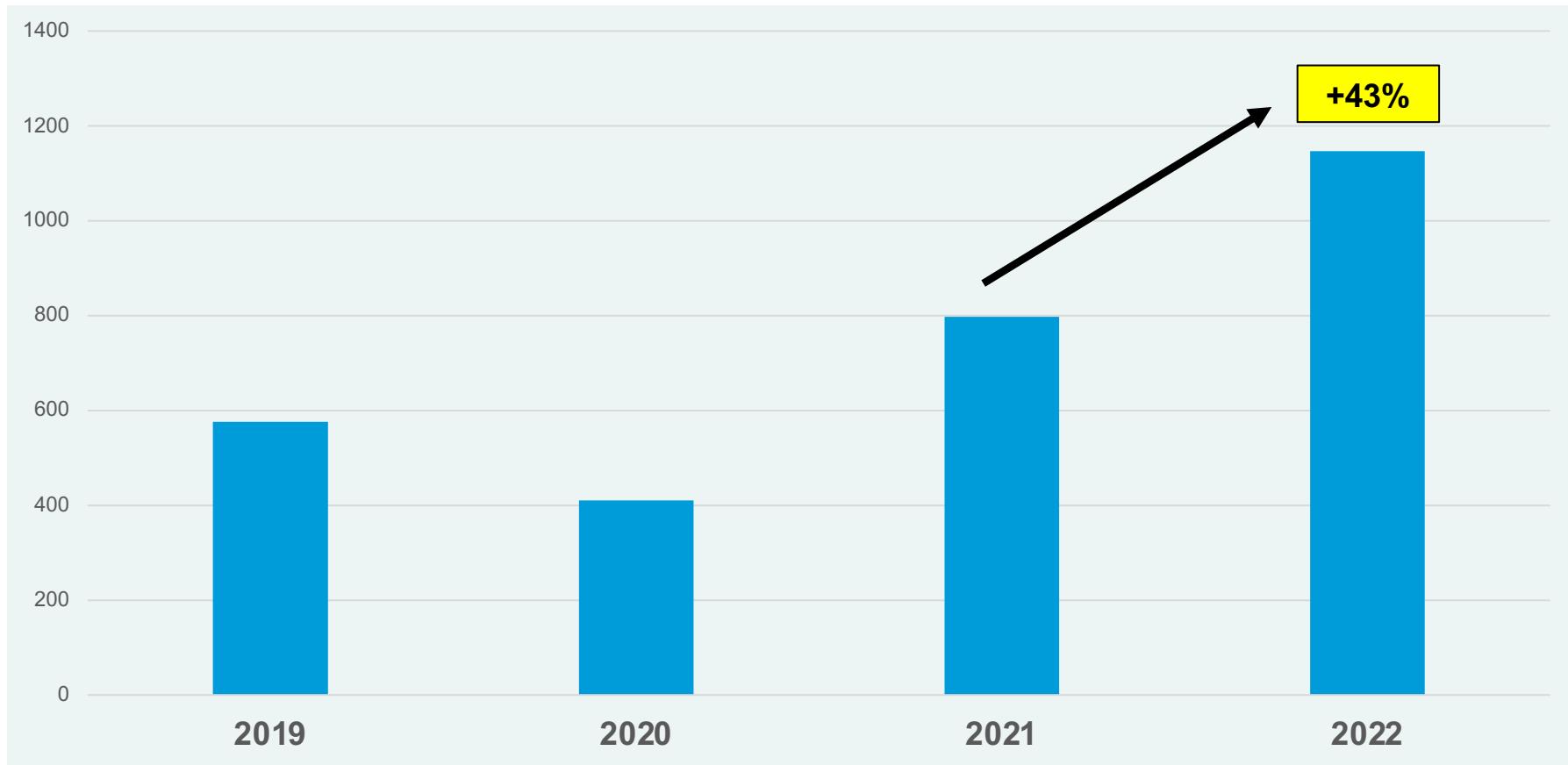
CEN-
SENELEC

(UNIQUE OJV)

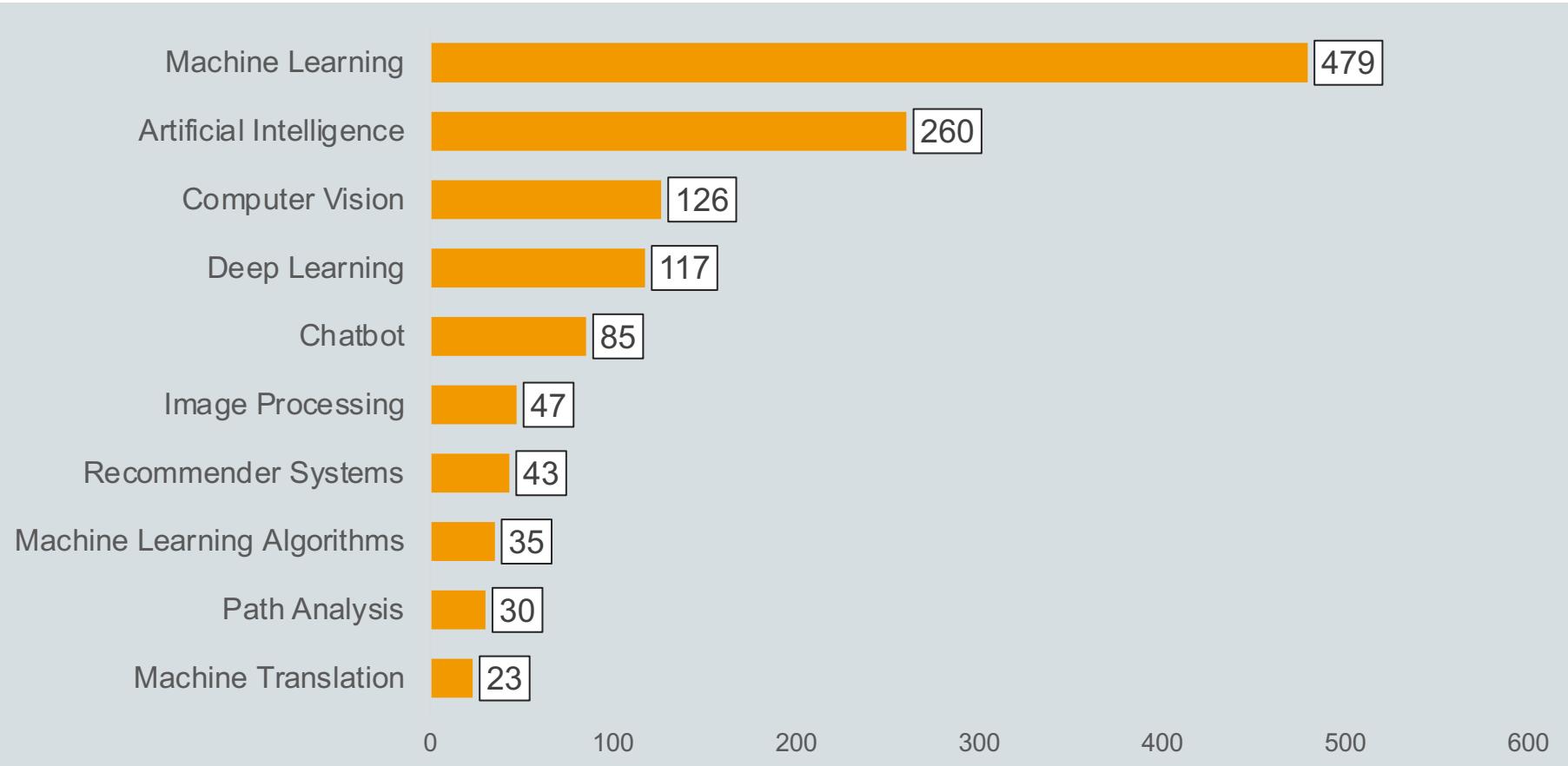
Source: ETF Job
Postings – Egypt
2022

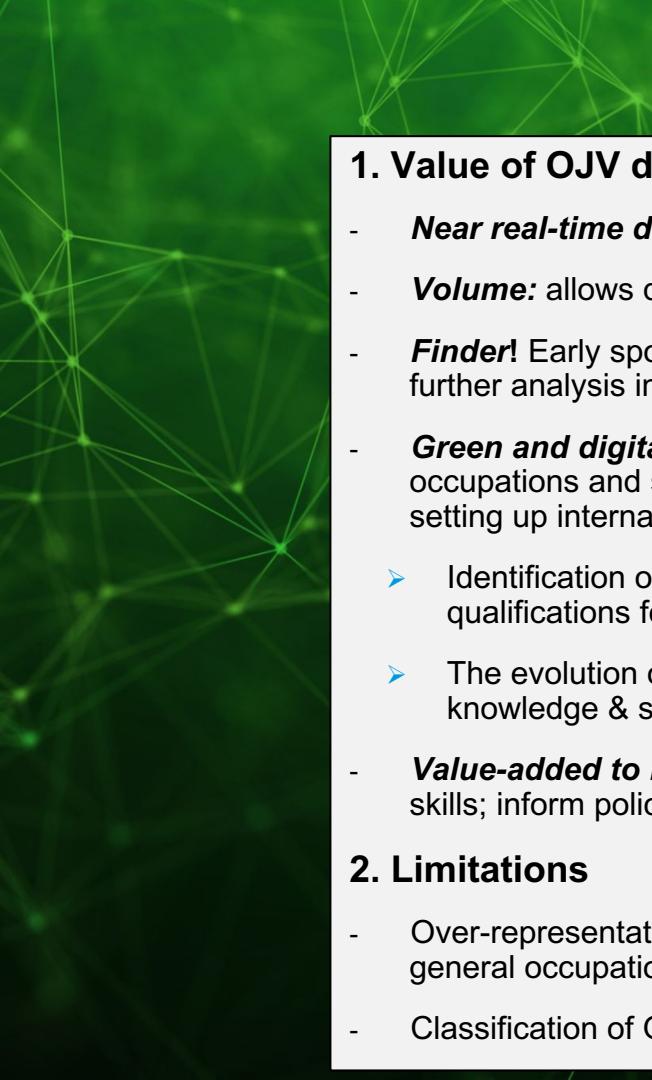


AI SKILLS: UNIQUE JOB POSTINGS



AI SKILLS: TOP SKILLS IN OJV





FINAL NOTES

1. Value of OJV data

- **Near real-time data**
- **Volume:** allows different angles of analysis on skills and occupations; granularity
- **Finder!** Early spotting of new skills / new patterns of skills mix (digital, soft, technical, green...). For further analysis in combination with conventional statistical and other data sources
- **Green and digital transition:** Identification of demanded skills; quantitative trends over time – by occupations and sectors; green and digital skills profiles of occupations; AI skills and occupations; and setting up international benchmarking / comparisons.
 - Identification of **green jobs** in high demand; lead industries and regions in green job creation; qualifications for green jobs
 - The evolution of the **digital skills** and new emerging occupations; growth in jobs requiring new knowledge & skills.
- **Value-added to LMI and skills development policies and practices:** emerging trends in LM and skills; inform policy responses;

2. Limitations

- Over-representation of certain occupational groups (professionals – 55%); underrepresentation (in general occupations requiring lower level of skills and qualifications).
- Classification of OJV data: robust techniques, constant evolution, taxonomies in transformation.



THANK YOU

- **European Training Foundation**

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- **Lightcast**

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