

Virtual Launching Ceremony

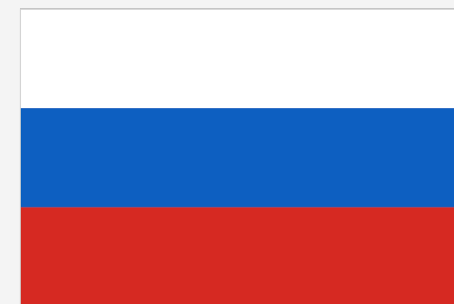
# Demand for and supply of digital skills in Cambodia

Tuesday 14th December 2021

Prepared By



Funded By



*With financial support from the Russian Federation*



Scan to access the slides.

# Objectives of the project

(2)  
Project  
overview

## DEMAND SIDE

1. Assess the job markets for digital skills (ICT included) and the use of digitization by firms.
2. Identify the challenges faced by firms in recruiting qualified digitally-skilled employees and those with basic digital literacy.
3. Understand how they address recruitment challenges and the skills mismatch.

## SUPPLY SIDE

1. Identify digital-related subjects and skills universities/TVET institutions offer to students.
2. Examine challenges and concerns students are facing and have in their career advancement.
3. Quantify labor market outcomes of students specializing in ICT major relative to those of non-ICT students.

(2)

Project  
overview

# A multi-stakeholder approach to the assessment

## Supply

*Educational institutions*



- Skills supplied
- Courses offered
- Curriculum design
- Linkages
- Internship and counseling

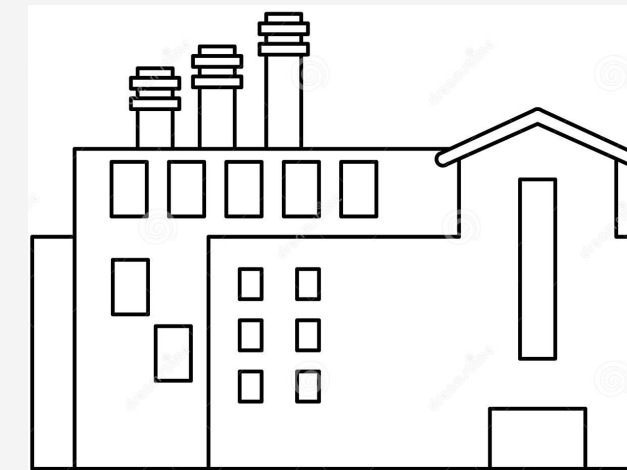
*Students/Graduates*



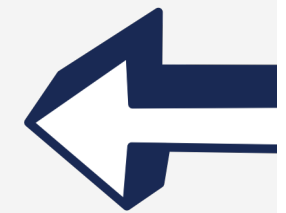
- Degree and skills choice
- Labour market performance
- Internship and apprenticeship

## Demand

*Employers*



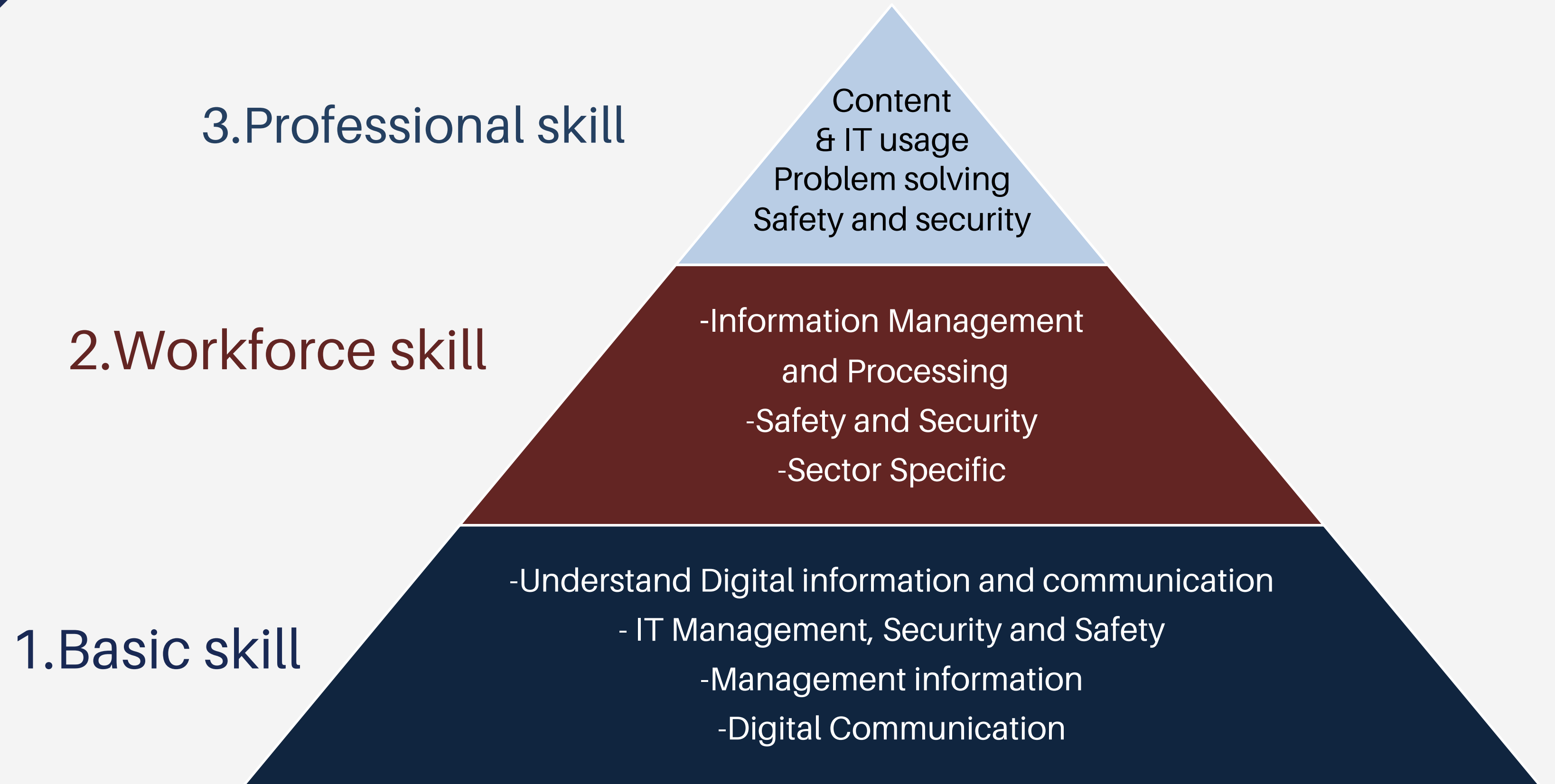
- Skills needs
- Investment in reskilling and upskilling
- Linkages
- Technology adoption



Government cross-cutting measures

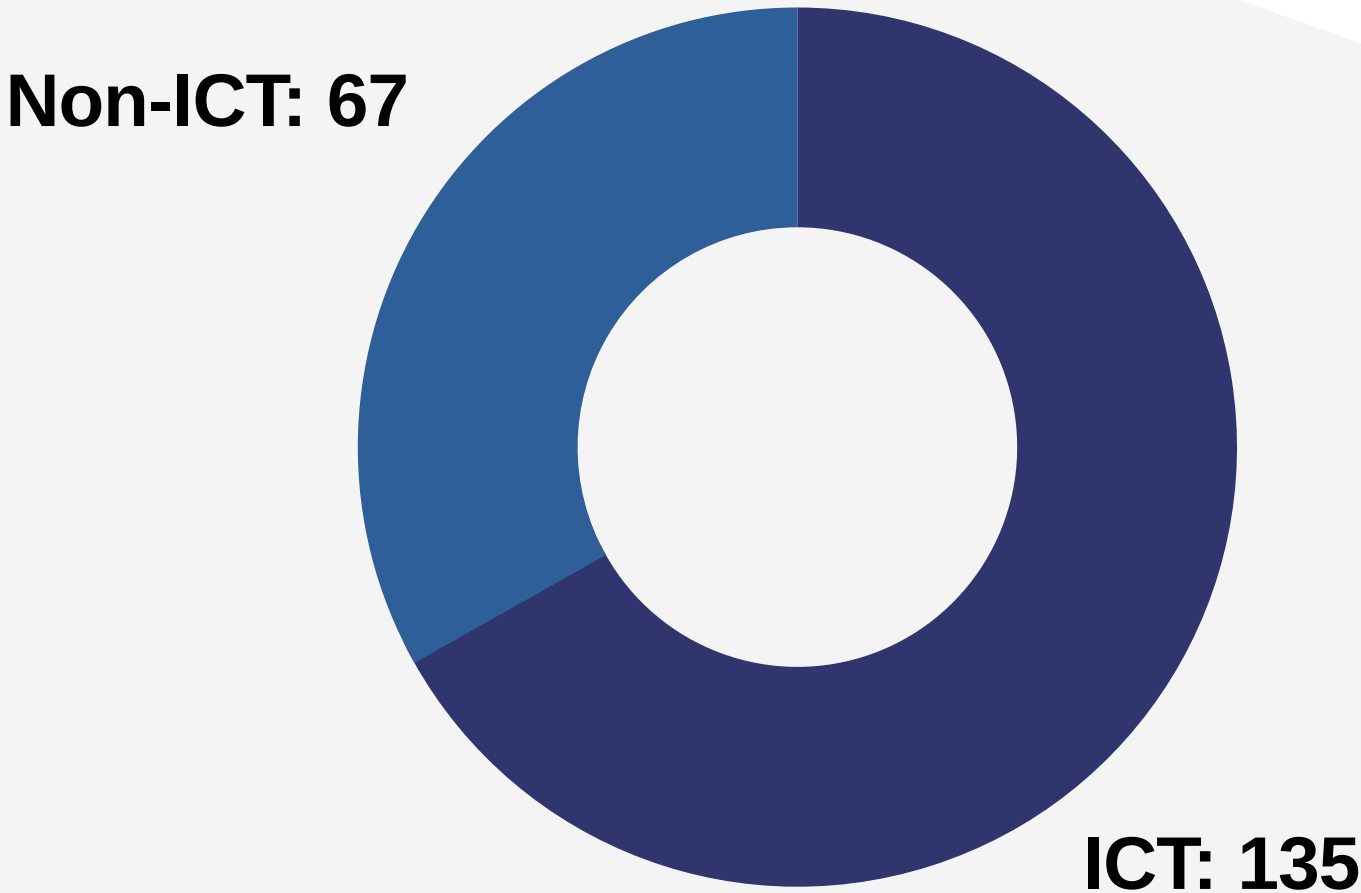


# Defining digital skills

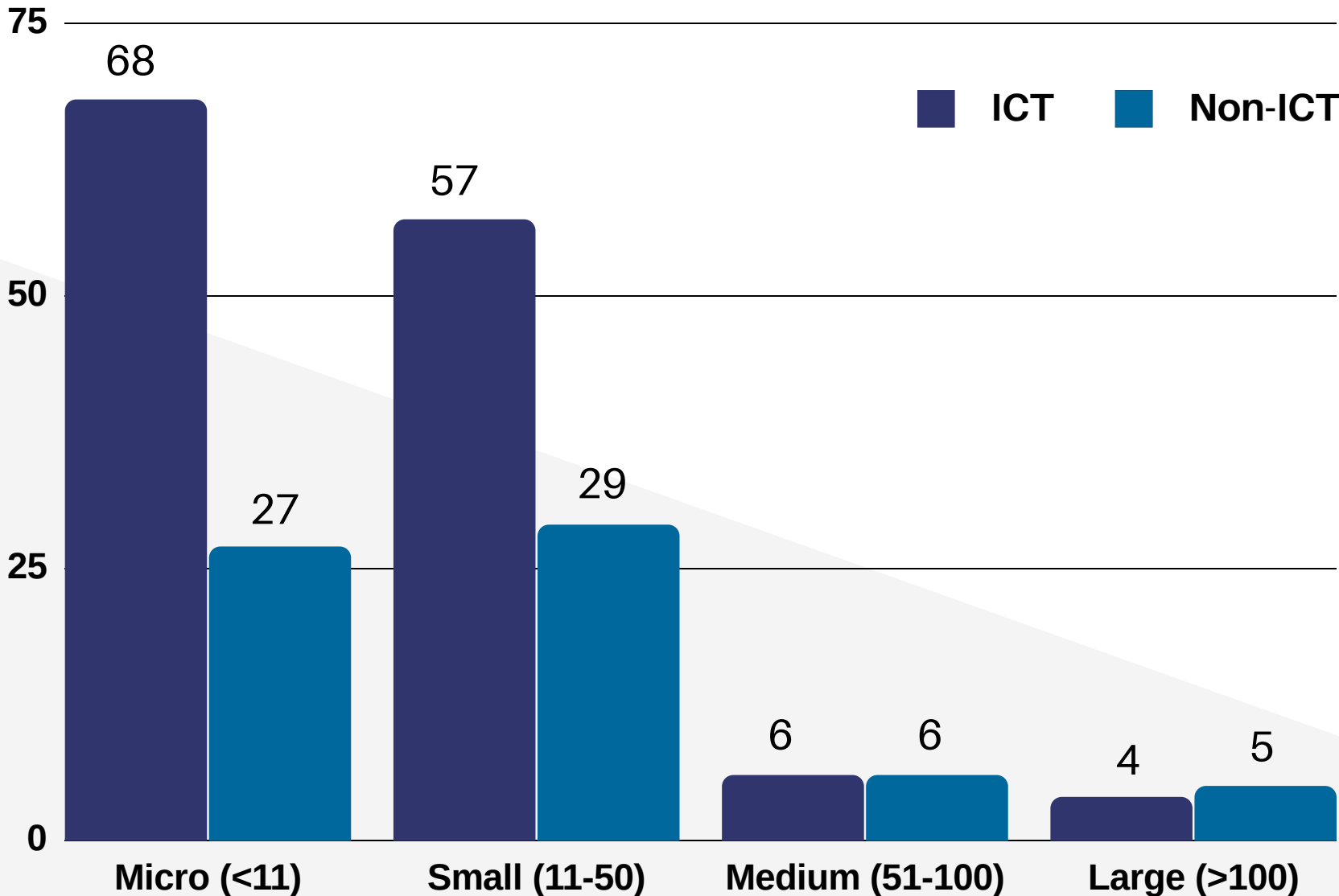


# Stratified random sampling and sample size: firm survey

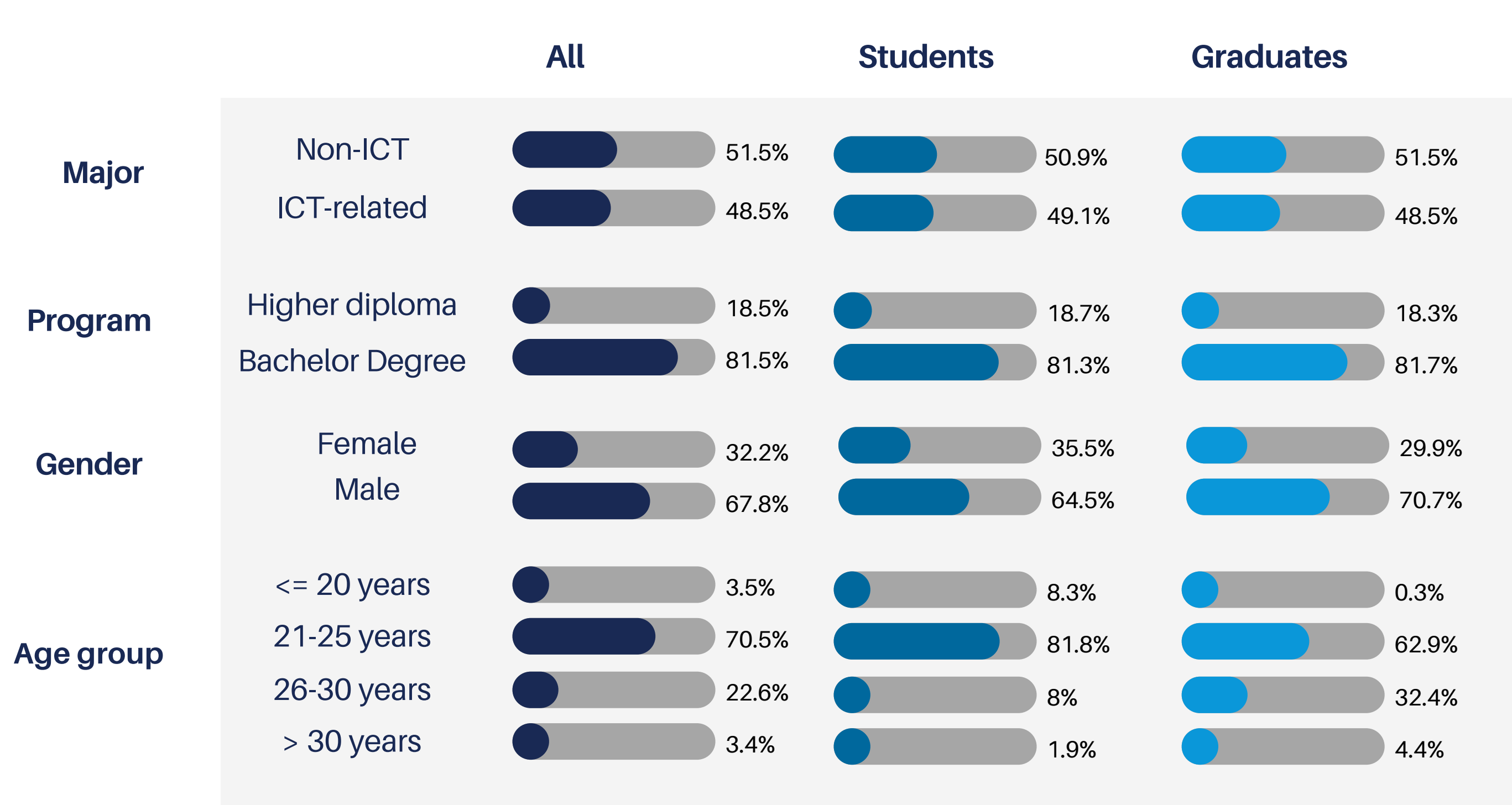
**By firm type**  
(n=202)



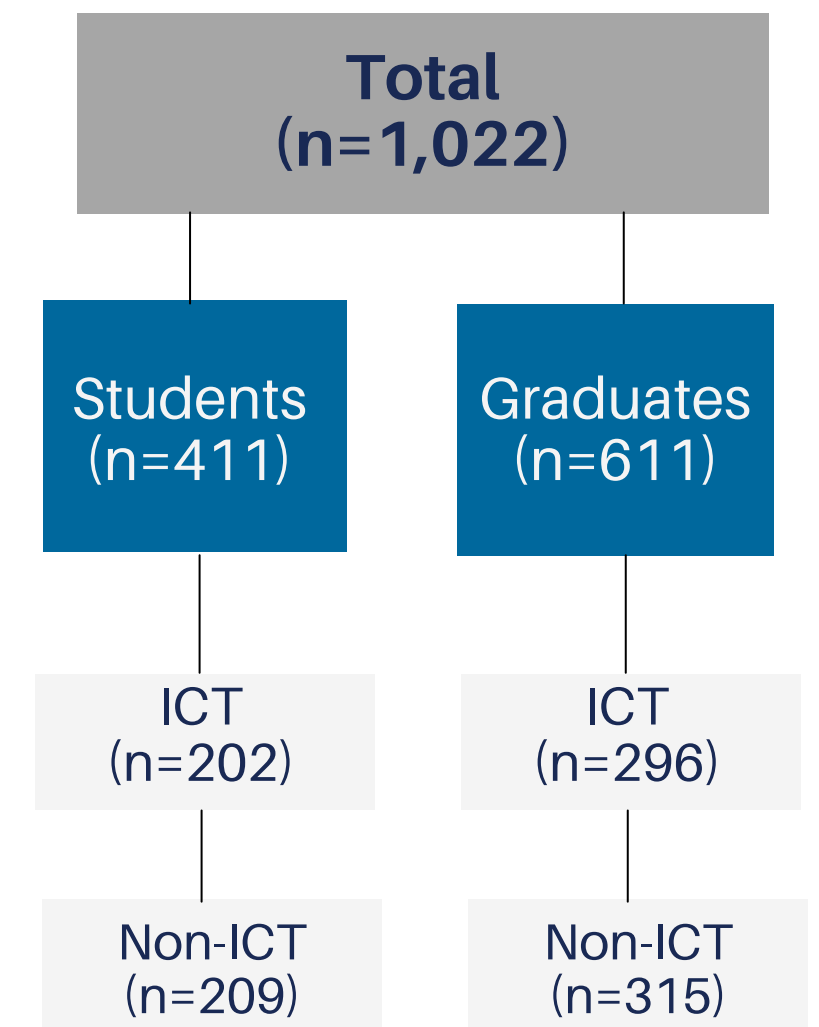
**By size of employee**  
(n=202)



# Stratified random sampling and sample size: student/graduate survey



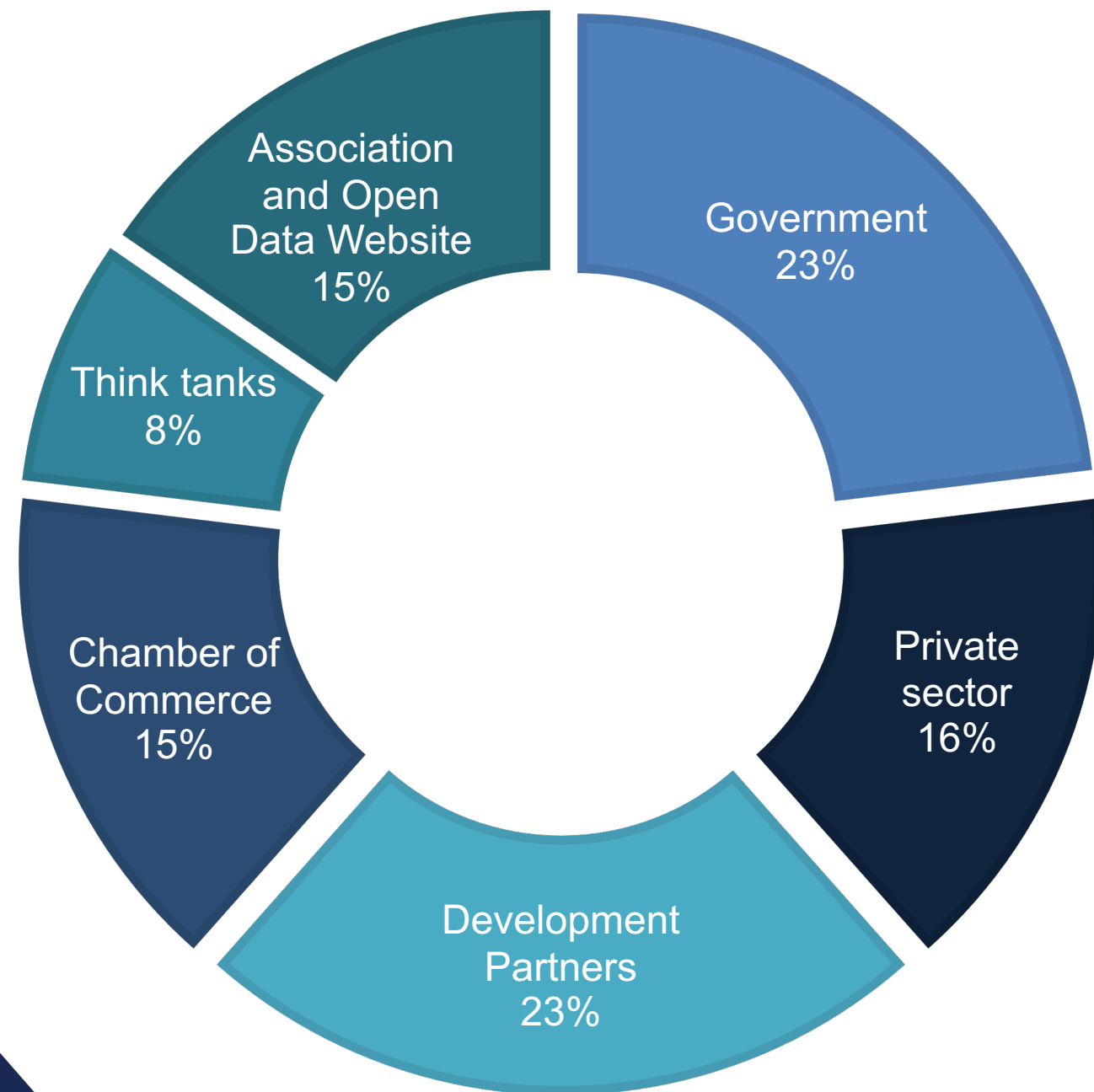
## Sample characteristics



# Sample size for qualitative component

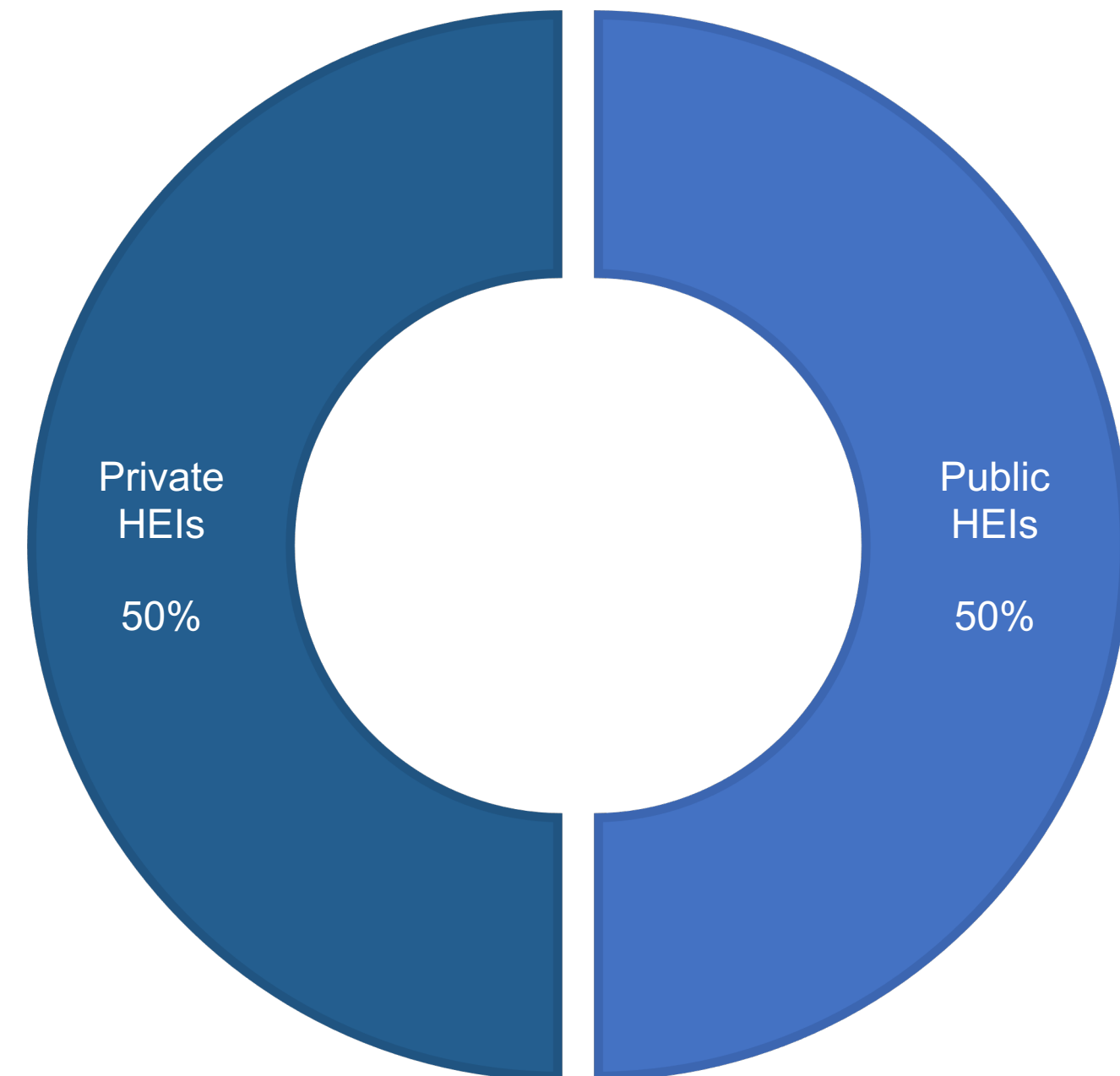
## Demand Side

Key Informant Interviews with stakeholders  
(n=13)



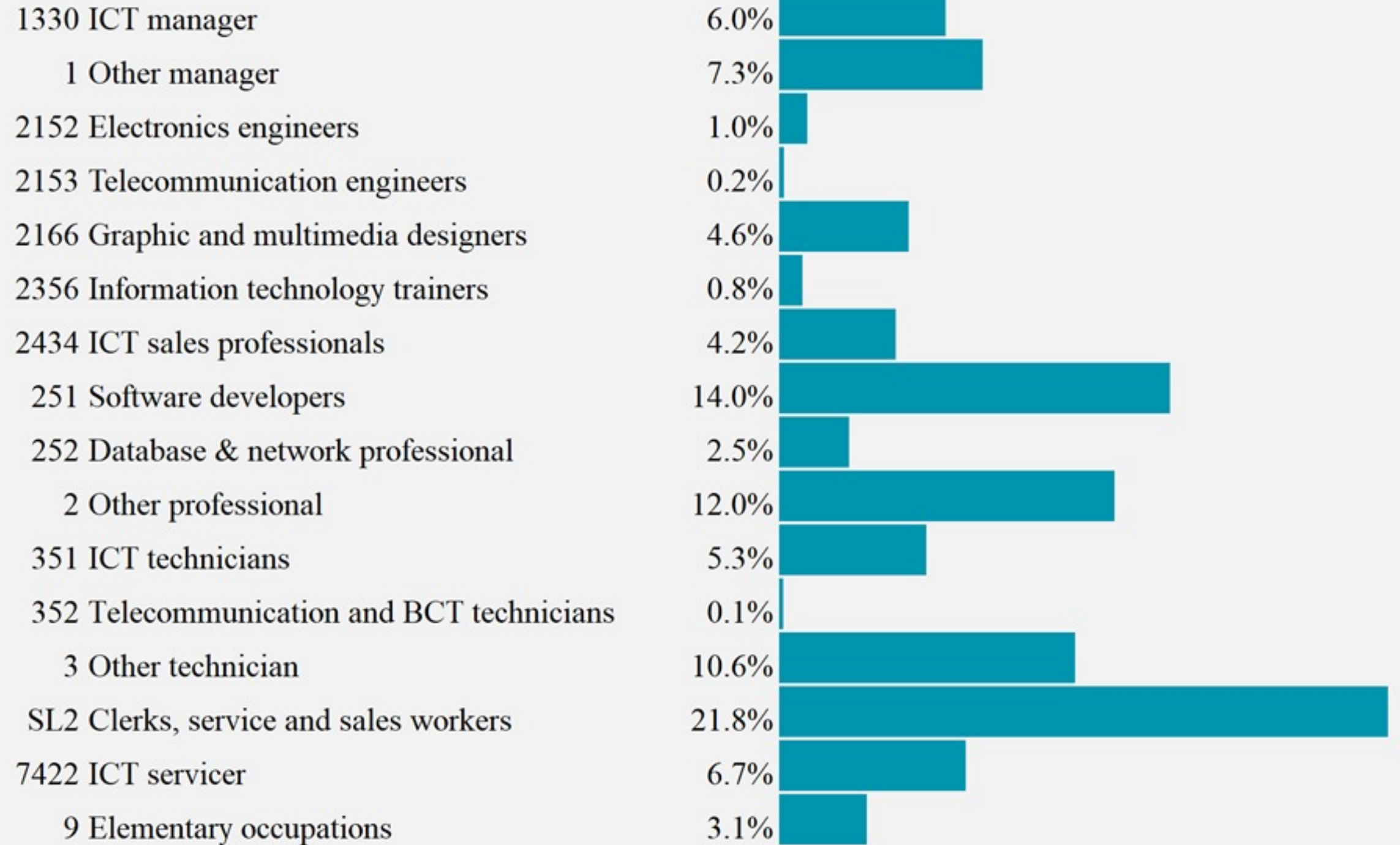
## Supply Side

Key Informant Interviews with HEIs  
(n=18)



## Theme 1: (a). Occupational types in ICT firms

**5 most prevalent ICT occupations in ICT firms: software and application developers and analysts, ICT servicers, ICT managers, ICT technicians and graphic and multimedia designers.**

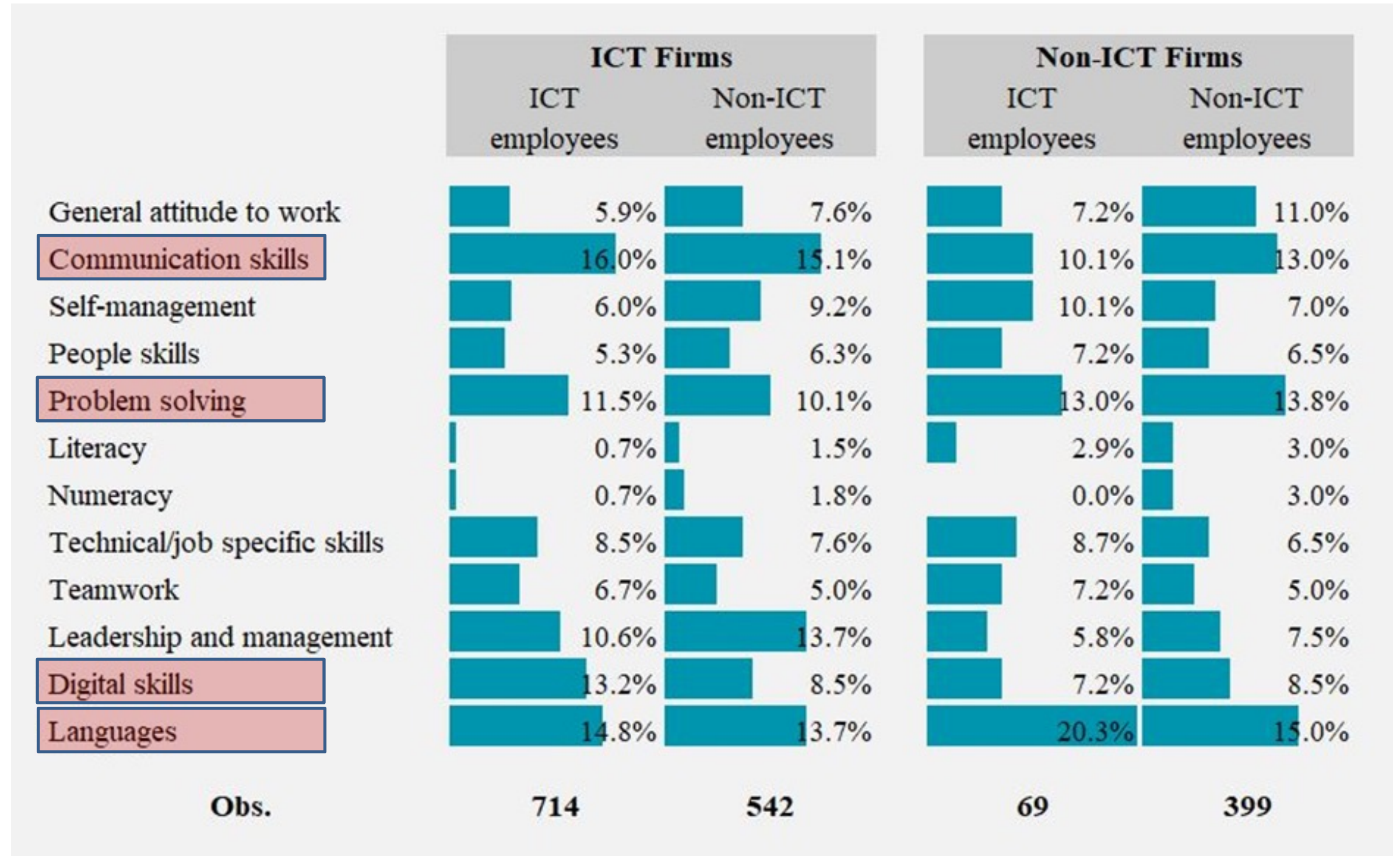




# Theme 1: (a). General skills gaps reported

Among ICT employees, communication, foreign languages, digital and problem-solving skills are reported skills gaps.

These skills are also common skills gaps reported among non-ICT employees.



# Theme 1: (a). Digital skills gaps

## Digital skills gaps reported by sample firms

Digital Skills	ICT Sector		Non-ICT Sector	
	ICT employees	Non-ICT employees	ICT employees	Non-ICT employees
<b>Basic Skills</b>				
Literacy	5	6	0	2
Numeracy	3	8	0	6
Writing	4	15	2	10
Communication skills	7	13	1	14
Understanding the basic laws and ethics applying to use ICTs	8	4	0	4
Hardware	12	4	0	1
<b>Software skills</b>				
Protecting personal data	9	9	0	3
Health (e.g. ergonomics of ICT usage)	9	6	0	1
Environment issues (e.g. relating to disposal of ICTs)	9	5	0	2
Identifying, evaluating and procuring relevant ICTs	6	5	0	1
Browsing, searching and filtering information	13	9	0	3
Evaluating information	14	6	0	2
Retrieving and storing information	14	9	0	5
Interacting and collaborating through ICTs	8	5	0	2
Sharing information and content	7	7	1	2
Engaging in online citizenship	5	6	1	2
Netiquette	10	8	1	1
Managing digital identity	16	10	1	2
<b>Workforce Skills</b>				
Using relevant apps to create documents	7	10	0	3
Using information of various digital formats effectively and efficiently	8	10	0	2
Legal, contractual and ethical conditions relating to the workplace	13	7	0	2
Digital skills specific to changing workplace environments	20	12	1	2
<b>Professional Skills</b>				
Developing and re-purposing content	27	13	0	1
Adopting appropriate good practice regarding copyright and licensing	12	7	0	1
<b>Applications/programming skills</b>				
Evaluating and using physical versus cloud-based ICT infrastructures	11	9	0	2
Solving information, software and technical (hardware) problems	14	13	0	2
<b>Creativity and innovation using technology</b>				
Reviewing and evaluating ICT developments	9	7	0	2
Protecting sensitive information	14	7	0	2
Cybersecurity - Securing IT infrastructures	8	8	0	2
Policies and practices for securing extended information infrastructures	9	7	0	2



## Theme 1: (b). Skills supplied

STEM enrollment in Cambodia remains low by regional standards.

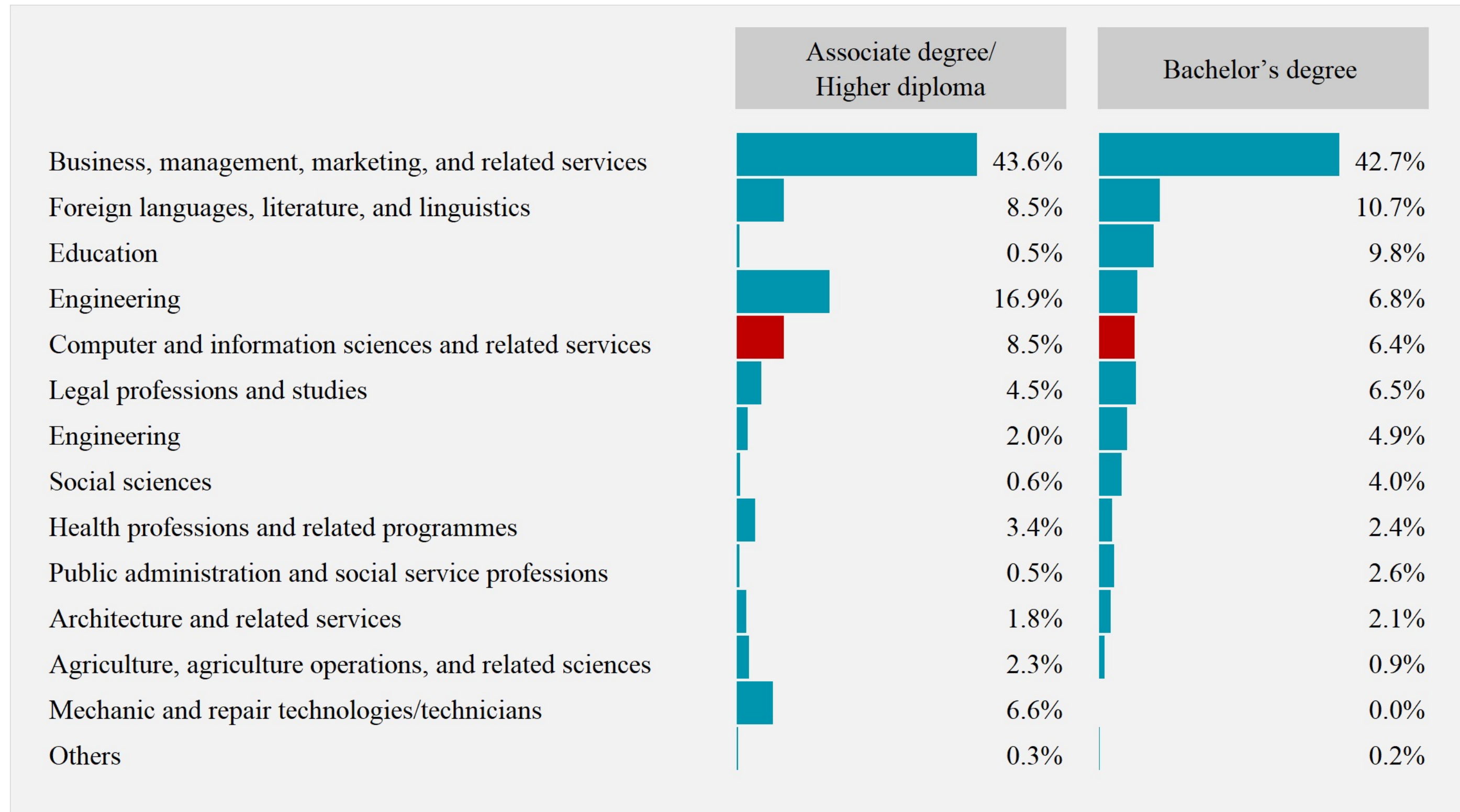
Country	Year	Science	Technology	Engineering	Mathematics	Total
Malaysia	2019	1.6%	6.9%	28.6%	3.7%	40.8%
Brunei	2019	N/A	13.6%	18.1%	8.4%	40.1%
Myanmar	2018	0.6%	2.2%	8.0%	23.6%	34.3%
Singapore	2018	0.2%	8.6%	19.6%	5.3%	33.7%
Philippine	2017	3.3%	12.0%	15.3%	1.5%	32.0%
Thailand	2016	3.0%	4.5%	19.0%	4.3%	30.9%
Lao	2019	7.5%	8.5%	12.7%	2.0%	30.7%
Vietnam	2016	4.5%	2.1%	19.9%	0.7%	27.2%
<b>Cambodia</b>	<b>2019</b>	<b>3.8%</b>	<b>9.7%</b>	<b>9.0%</b>	<b>4.5%</b>	<b>27.0%</b>
Indonesia	2018	4.1%	8.3%	7.9%	3.3%	23.5%

Source: UNESCO Institute of Statistics (accessed on June 05, 2021)

Note: i) Science majors: agriculture, forestry, fisheries, ii) Technology majors: information and communication technologies, iii). Engineering majors: engineering, manufacturing, and construction; and iv). Mathematics majors: mathematics, and statistics.

## Theme 1: (b). Skills supplied

### ICT enrolment remains low relative to other majors.

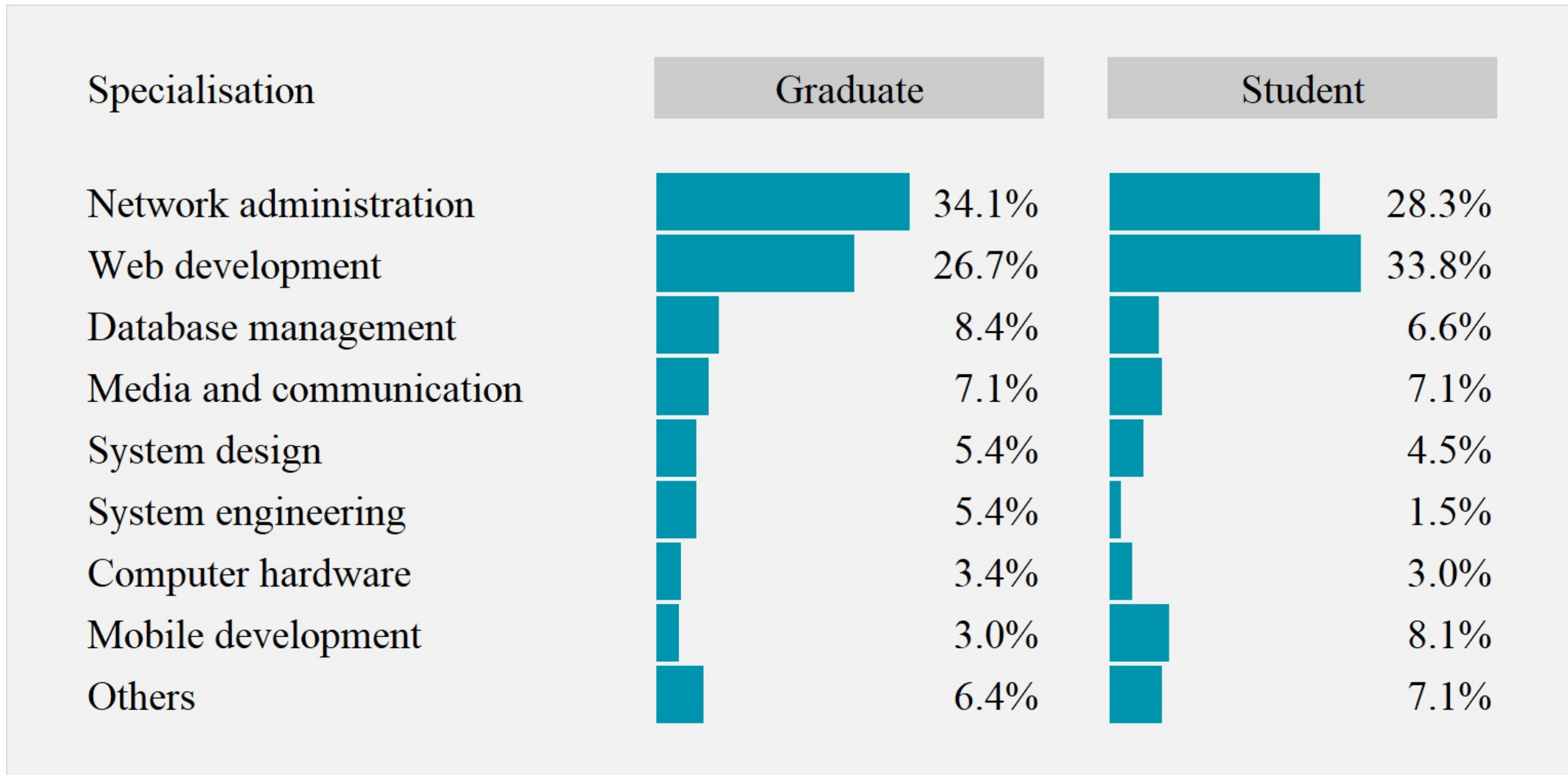


Source: Authors' calculation based on MoEYS and MLVT statistics for the 2018-2019 academic year



## Theme 1: (b). Skills supplied

Network administration and web development are most common ICT majors.

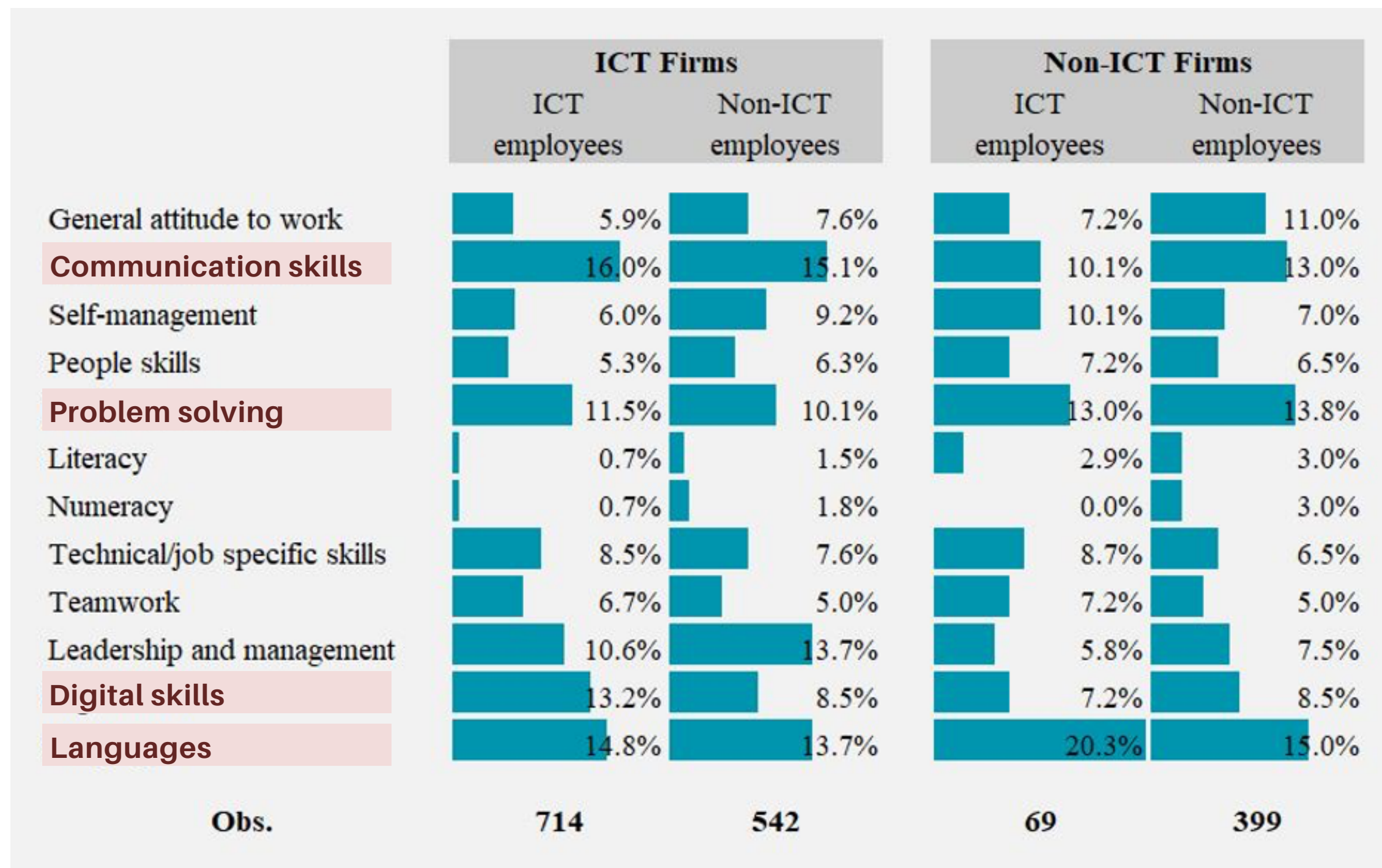


Source: Authors' calculation using data from the student/graduate survey

## Theme 2: Skills mismatch and firms' solution

**Skill mismatches and shortages remain for both ICT and non-ICT firms. General and digital**

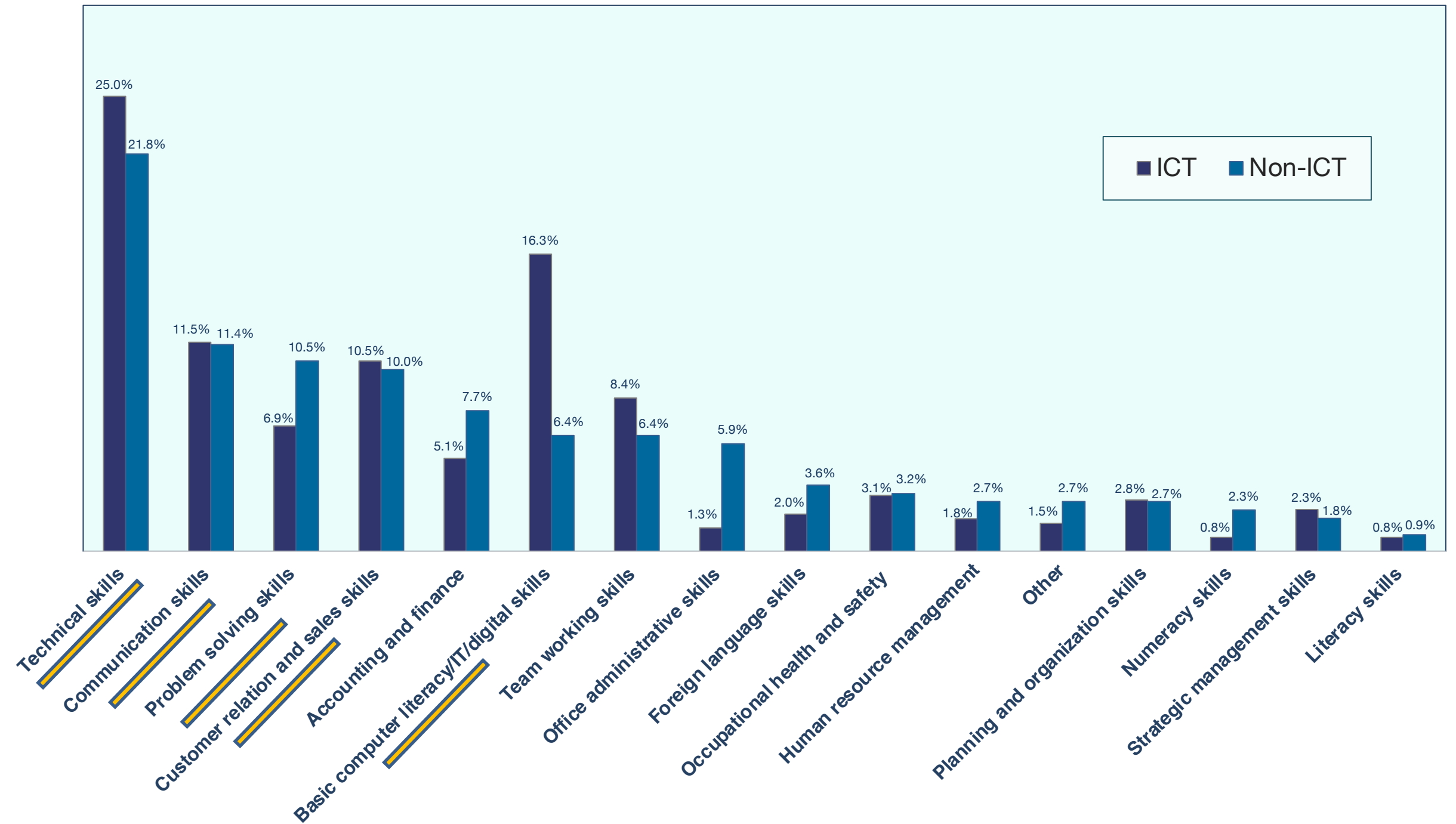
General skills gaps reported by the sample firms



## Theme 2: Skills mismatch and firms' solution

How did the sample firms deal with the skills gaps?

**On-the-job training.**





# Theme 3: (a). Labour market performance of ICT graduates

## Salary of Graduates

**Average monthly salary (ICT and non-ICT) is around USD450/month.**

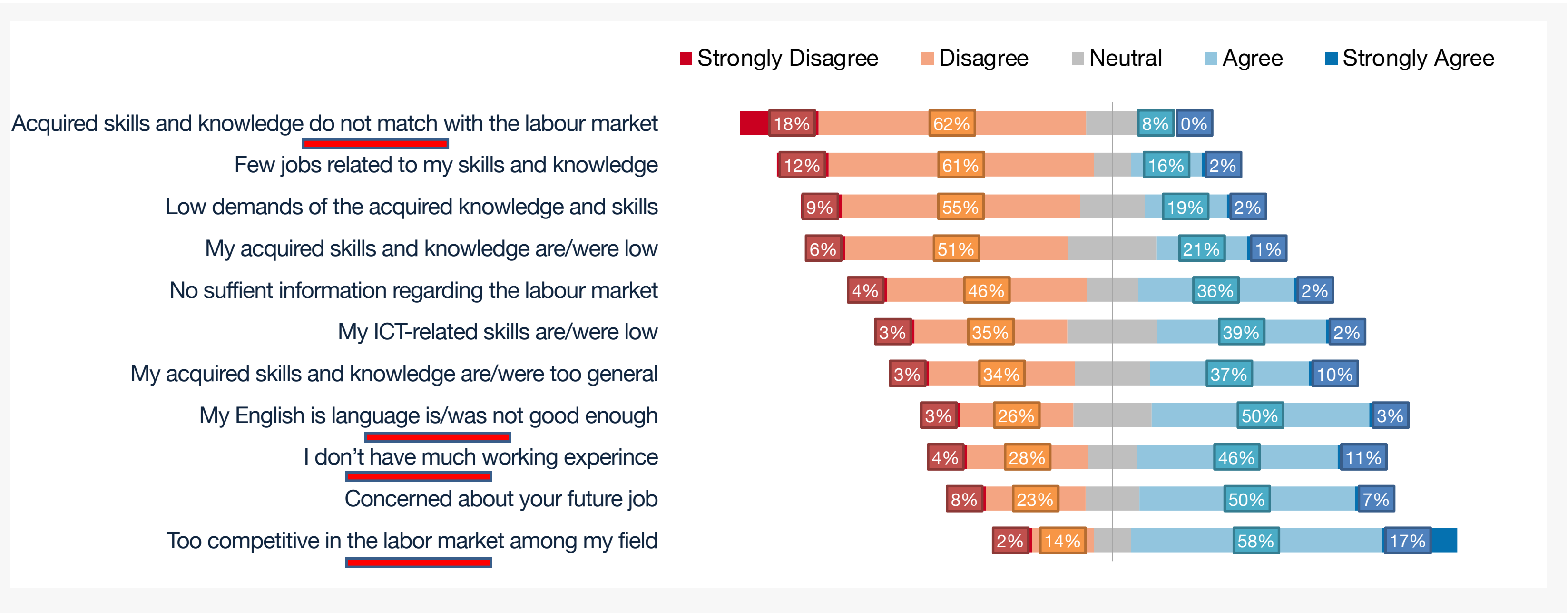
**Average salary in ICT sector is higher than that in non-ICT sector.**

Occupation	ICT	Non-ICT
1330 ICT manager	\$938	\$875
1 Other manager	\$1,222	\$1,117
2152 Electronics engineers	\$605	\$300
2153 Telecommunications engineers	\$600	\$0
2166 Graphic and multimedia designers	\$531	\$200
2356 ICT trainers	\$675	\$550
2434 ICT sales professionals	\$466	\$392
251 Software developers	\$695	\$350
252 Database & network professionals	\$558	\$433
2 Other professionals	\$501	\$640
351 ICT technicians	\$467	\$400
352 Telecommunications and BCT technicians	\$575	\$0
3 Other technicians	\$386	\$469
SL2 Clerks, service and sales workers	\$315	\$284
7422 ICT servicer	\$313	\$230
9 Clerks, service and sales workers	\$82	\$80



## Theme 3: (a). Labour market performance of ICT graduates

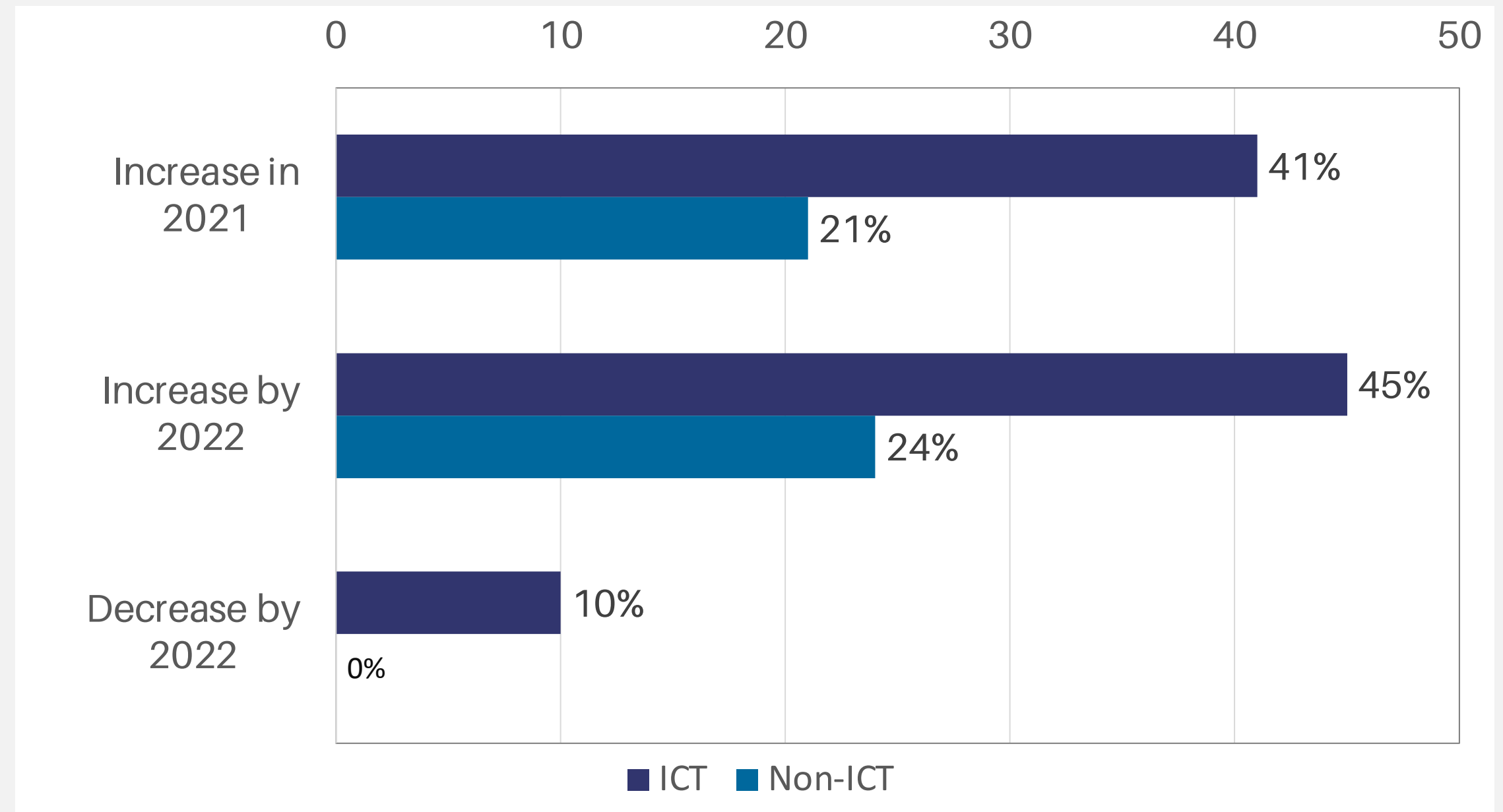
Competitiveness in the labour market, lack of working experience and English proficiency seem to be the forefront concerns of students. They are less concerned about the skill mismatches.



## Theme 3: (b). Possible future demand for digital skills

Demand for ICT and digital skills is expected to increase in the next two years, averaging **40%** for ICT firms and **20%** for non-ICT ones.

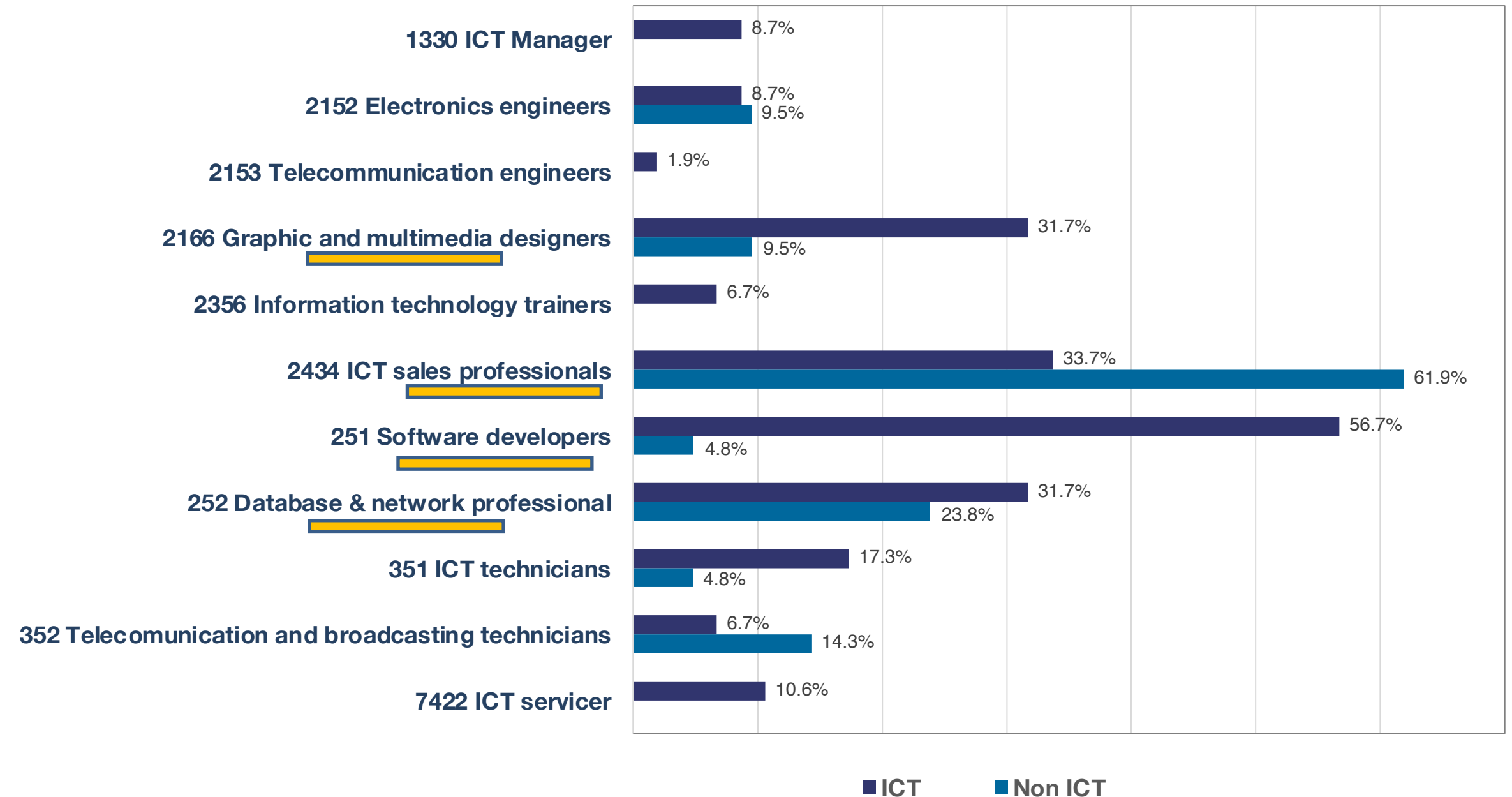
### A. Average percentage change in ICT employees



# Theme 3: (b). Possible future demand for digital skills

Some of the ICT occupations demanded: software developers, ICT sales professional, graphic and multimedia designers and database and network professional.

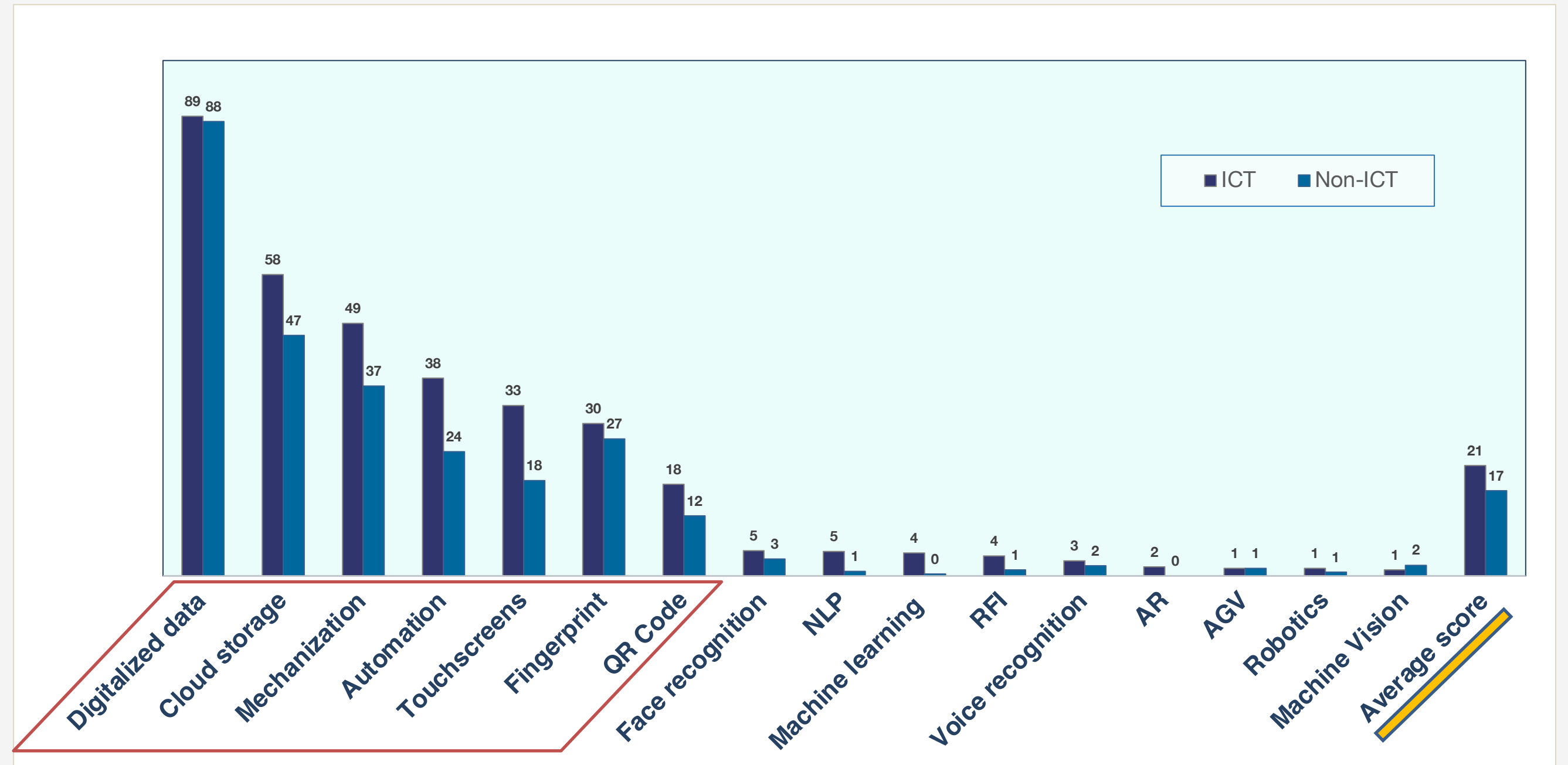
## B. Future demand for ICT occupations



## Theme 4: (a). Covid-19 and tech adoption

### Firms' use of new technology

The use of new technology remains low and is mostly basic.





**Theme 4: (b). EdTech adoption during Covid-19**  
**(3) Main findings**



**SWITCH TO DIGITAL**

After school shutdown in March 2020, all sampled HEIs have switch to online or remote teaching and learning by August 2020.



**SLOW ADOPTATION**

However, while some schools could establish their Learning Management System (LSM), some provincial schools merely used messaging platforms (i.e., telegram or messenger) to keep.



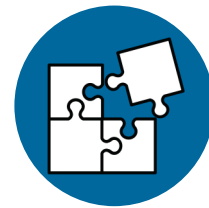
**COMMON PLATFORMS**

Microsoft Teams or Google G Suit for Education are the most common platforms used by HEIs, although a few schools used open-source Moodle as their LSMs.



**CONTINUED ONLINE OFFER**

Nevertheless, nearly all interviewed HEIs intend to continue to offer online course (either in blended format or separated courses) even after the covid-19.



**CHALLENGES**

Challenges include poor internet connection (especially in rural areas), student assessment, technological readiness of students and teachers.



**TRADITIONAL CLASSROOM PREFERENCE**

Nearly half of the survey students are unsatisfied with the online learning offered by their schools, and most of students prefer traditional classroom.



## (4) Main messages

### DEMAND SIDE

- ❖ The demand for ICT and digital skills is expected to **GROW**. There have, however, been mismatches and shortages of qualified digitally-skilled workforce (ICT included).
- ❖ **Occupational demand for digital skills:** 1 ICT sales professional; 2 software, application and web developer; 3 multimedia and graphic designers (including e-marketing professionals); and 4 programmers.
- ❖ **Soft skills:** inter-personal and communication with colleagues and manager, problem-solving and critical thinking and creative solutions, and English proficiency.
- ❖ Firms deal with the ICT and digital skills mismatches and shortages by providing **on-the-job training**.

### SUPPLY SIDE

- ❖ Tertiary enrolment in STEM majors including ICT remains low, male dominated, and geographically concentrated (Capital).
- ❖ Curricular is mainly devoted to general subjects and lacks subjects on new technologies (i.e., machine learning, artificial intelligence, fintech, and data science).
- ❖ Lack of subjects devoted to soft skills: critical thinking and problem solving.
- ❖ Several challenges HEIs and TVET institutions are facing 1 **limited support from the government**, 2 **limited financial and human resources**, and 3 **uneven ability and preparedness of students who enroll in the STEM programs in mathematics and digital literacy**.

## (4) Some recommendations

### Government

Strengthen industry-university and university-university linkages (sector skills council for ICT).

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Capitalize and equip universities/TVET institutions, particularly ones the provinces

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Ensure gender and geographically inclusive STEM education

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Better equip students at upper secondary schools with basic digital skills and math competency

### Educational institutions (HEIs and TVET)

Consult constantly with employers about their skills needs.

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Modernise curricular to include subjects in new technologies (i.e., data science, fintech, artificial intelligence, and cyber security).

---

Collaborate with employers to provide internship or apprenticeship opportunities to students.

---

Combine hard and soft skills.

### Private Sector

Participate in the sector skills council for ICT.

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Work with educational institutions to offer internship and apprenticeship

---

Continue to provide on-the-job training



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**Many thanks for your attention.**

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**We are happy to answer questions.**