



Information and Communications Technologies (ICT)

2018 Market Data
April 2019

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Exports, employment, types and value of incentives utilized, factors driving growth, major issues faced in the sector, investment and impact areas, etc.

Project stakeholders

Project Consultant

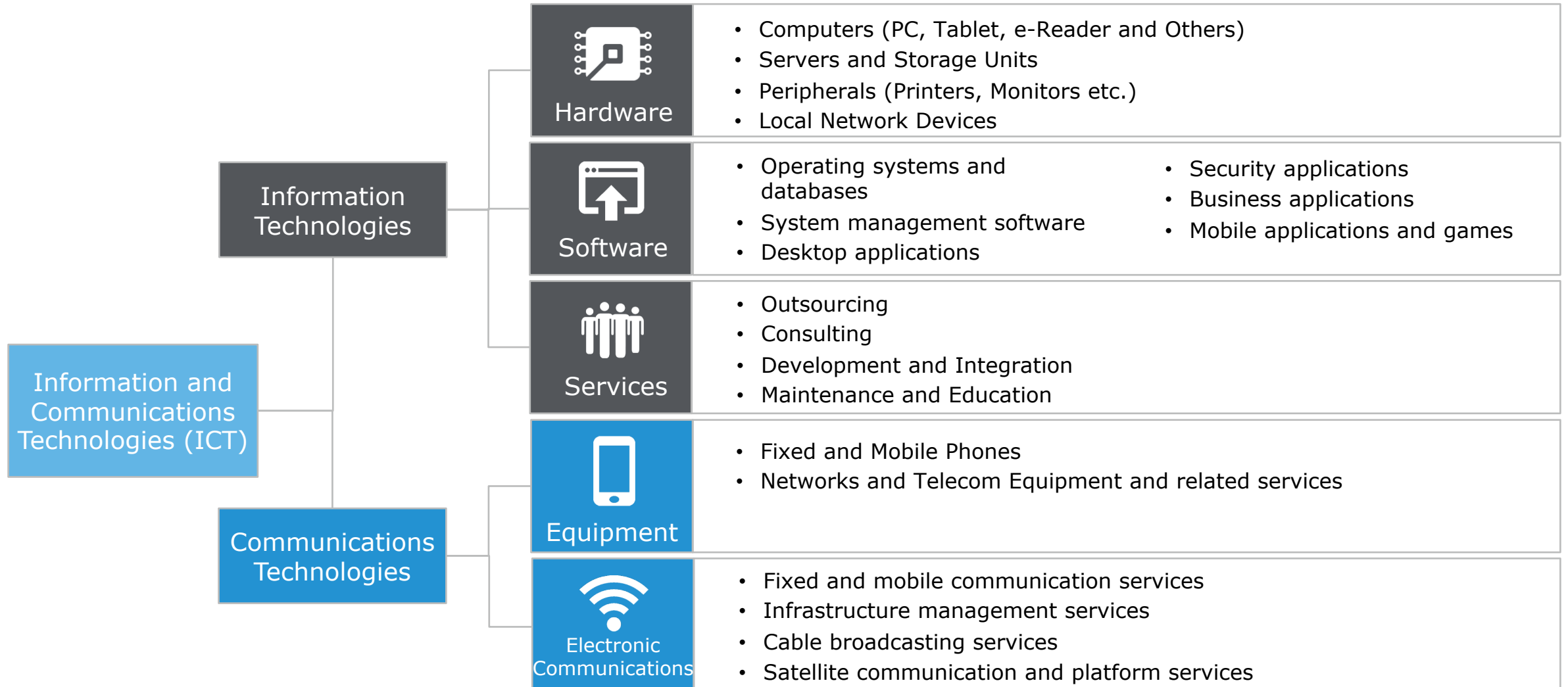
Deloitte.

Project Data Providers

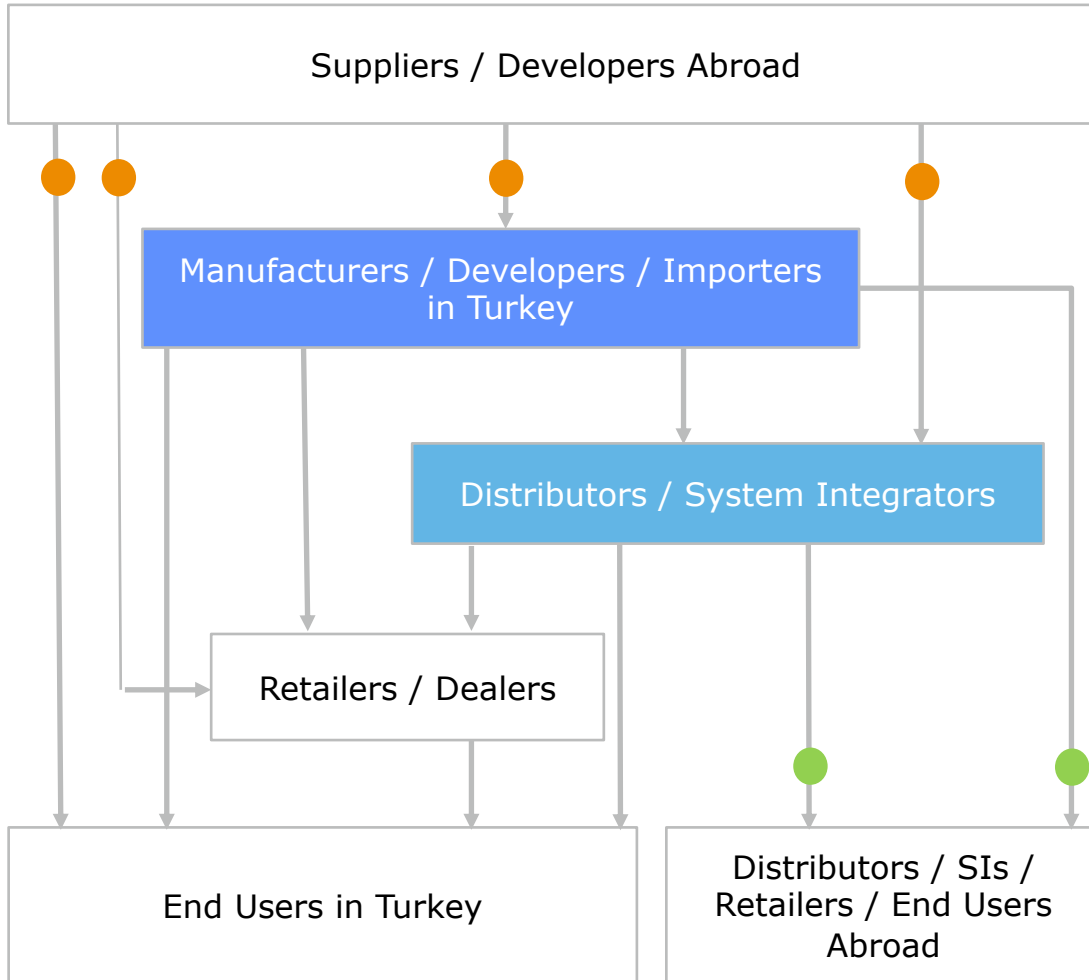


Project scope

TUBISAD's Market Data study, which has been conducted since 2012, has been performed with Deloitte with a standardized scope and methodology for the last 6 years



Measurement methodology



Sector size is calculated and verified through a bottom-up approach.

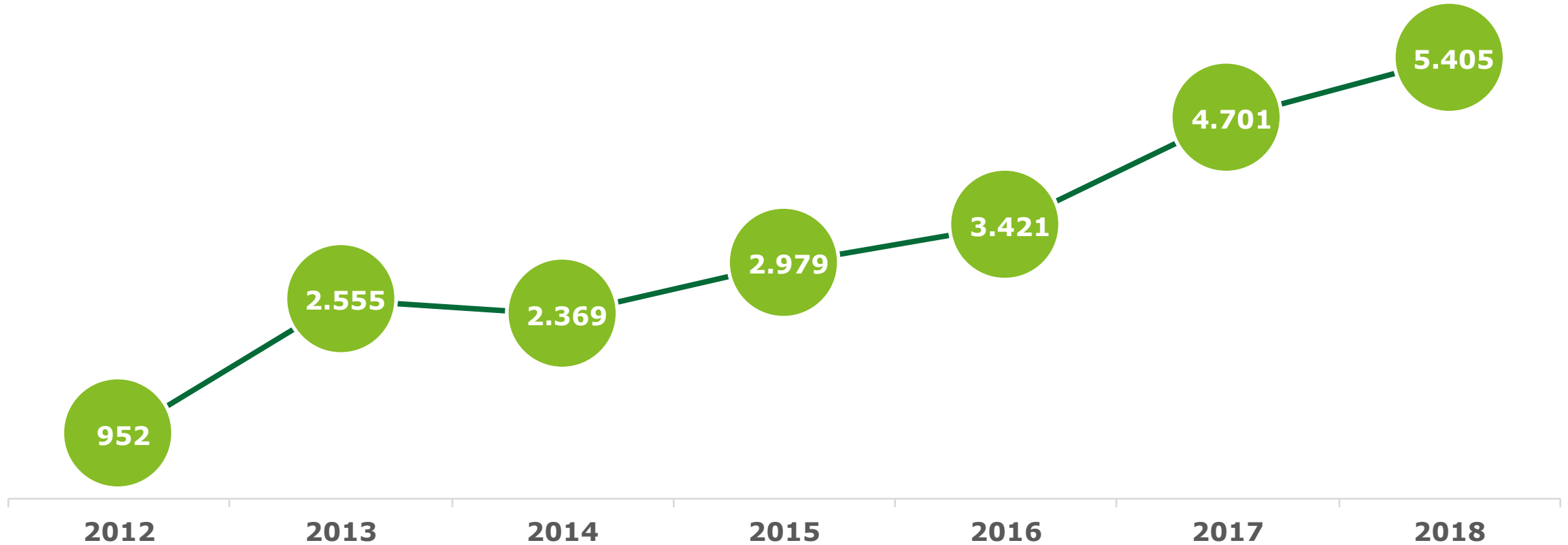
In addition to the data provided by our sector companies through a comprehensive survey, data from institutions such as BTK, Context, SASAD and the Ministry of Industry and Technology are also utilized.

- Company and sector data are measured properly to avoid any overlaps or duplicate calculations
- Company data are gathered together with different breakdowns:
 - Sales direct to End-users vs through distributors
 - Import vs export
 - Origin of products and services
 - R&D center share

● = Import
● = Export

Sector players in the scope of the study

Market data is provided by sector companies. The number of companies whose data is being measured within the scope of our work has increased 5 times over the last six years and reached 5,405 in 2018

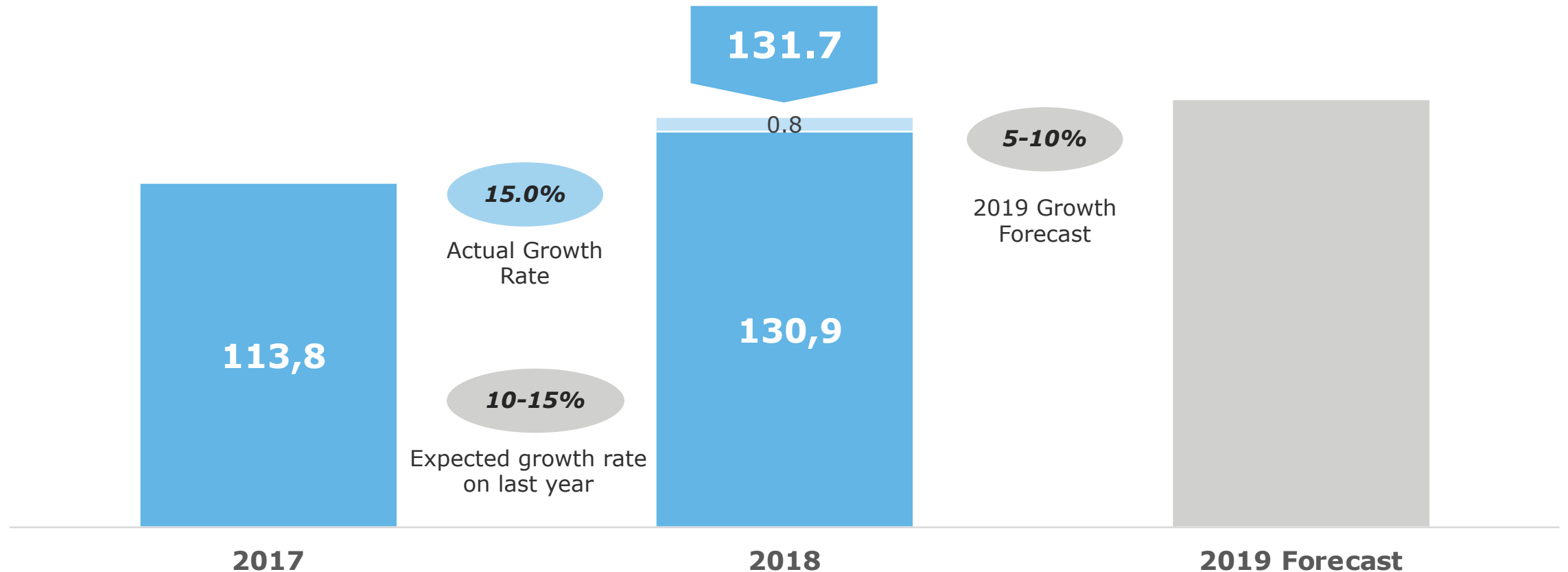


Total sector size (bn TRY)

ICT market size in Turkey reached 131.7 billion TRY in 2018 by showing 15% growth rate

ICT market size in Turkey

(billion TRY)



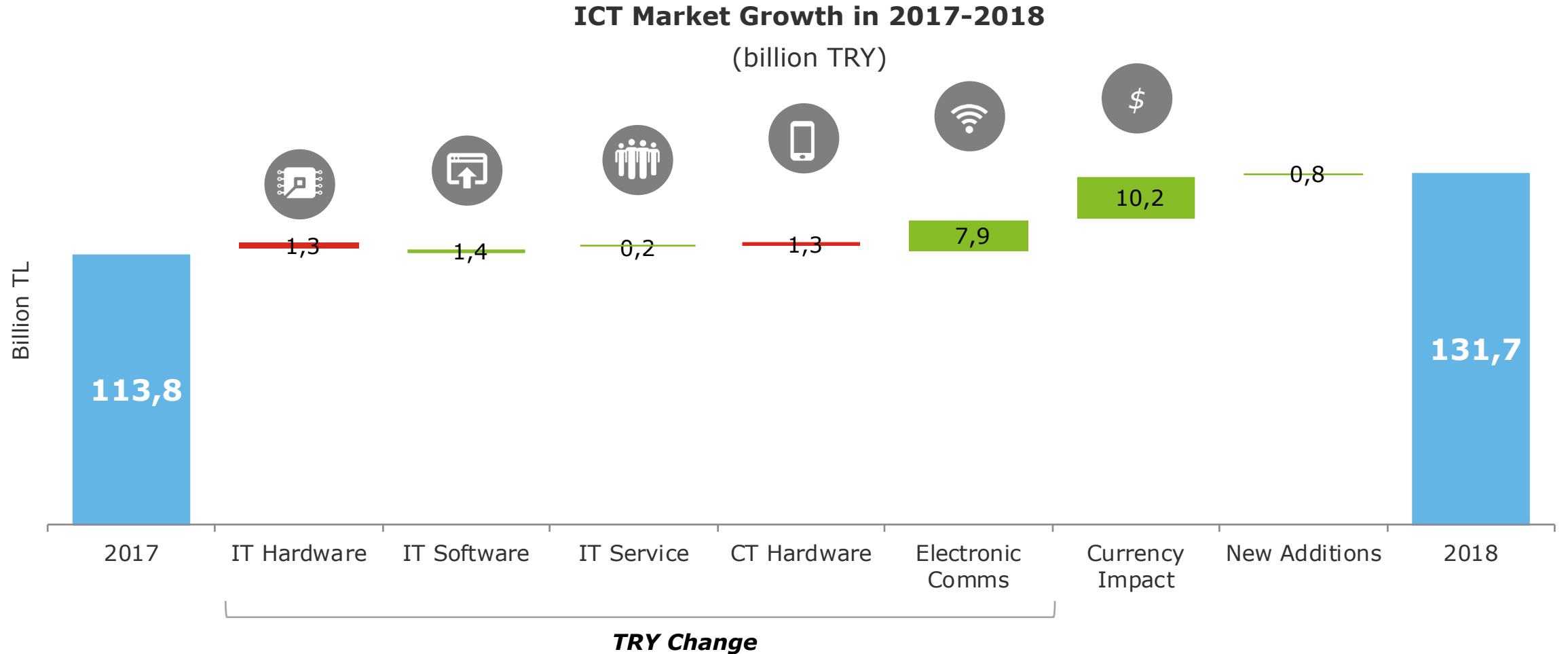
Annual changes refer to comparable growth rates

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Size of newly added companies this year

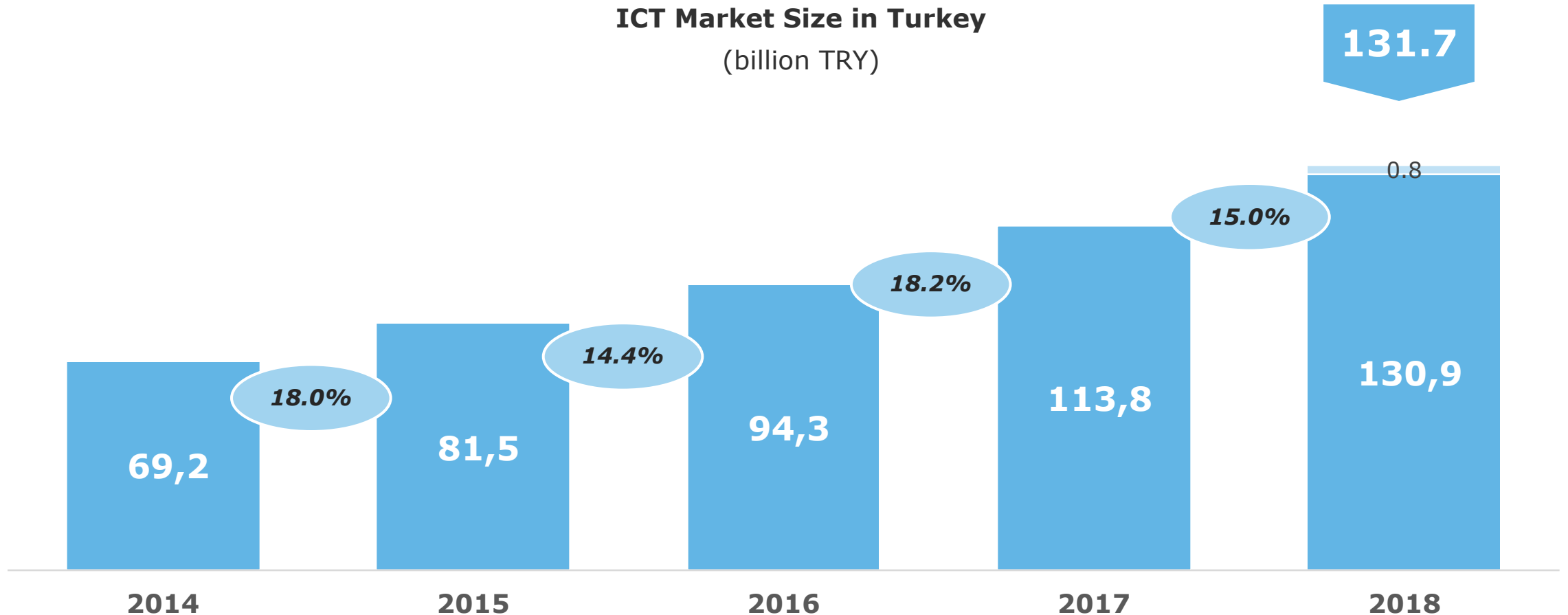
Sector growth components

Changes in foreign exchange rates and electronic communications sector contributed growth in the sector with 10.2 bn and 7.9 bn TRY, respectively



2014-2018 sector development (billion TL)

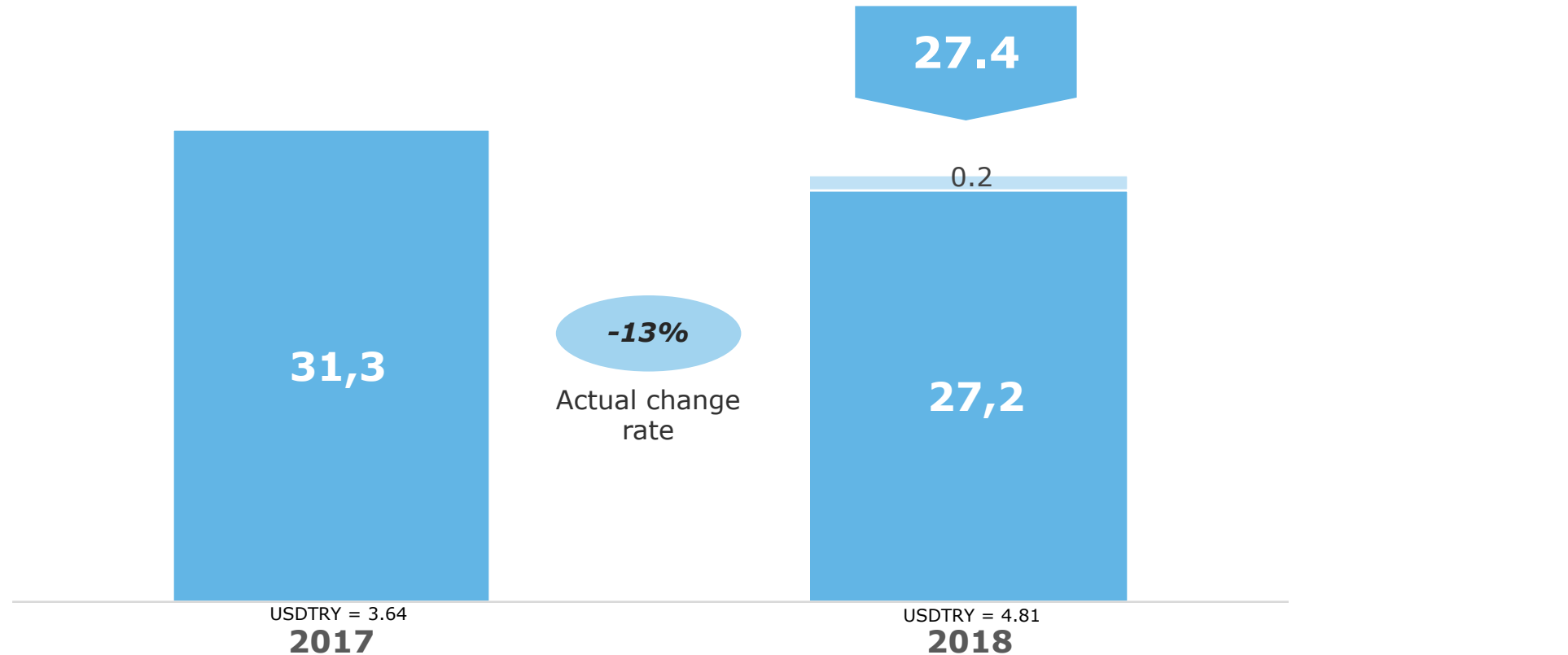
Size of the Turkish ICT sector has almost doubled by growing at annual average rate of 17% last five years



Annual changes refer to comparable growth rates

Total sector size (USD bn)

ICT Market Size in Turkey (USD bn)



Annual changes refer to comparable growth rates

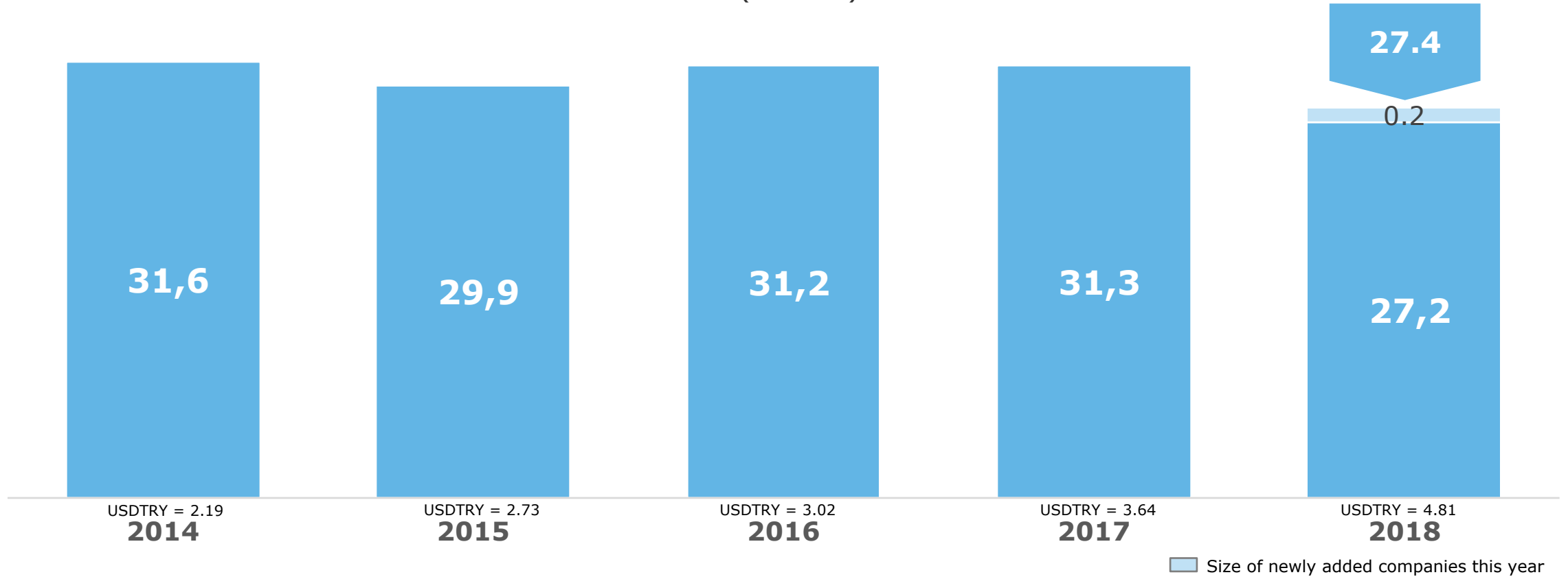
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Size of newly added companies this year

2014-2018 sector development (USD bn)

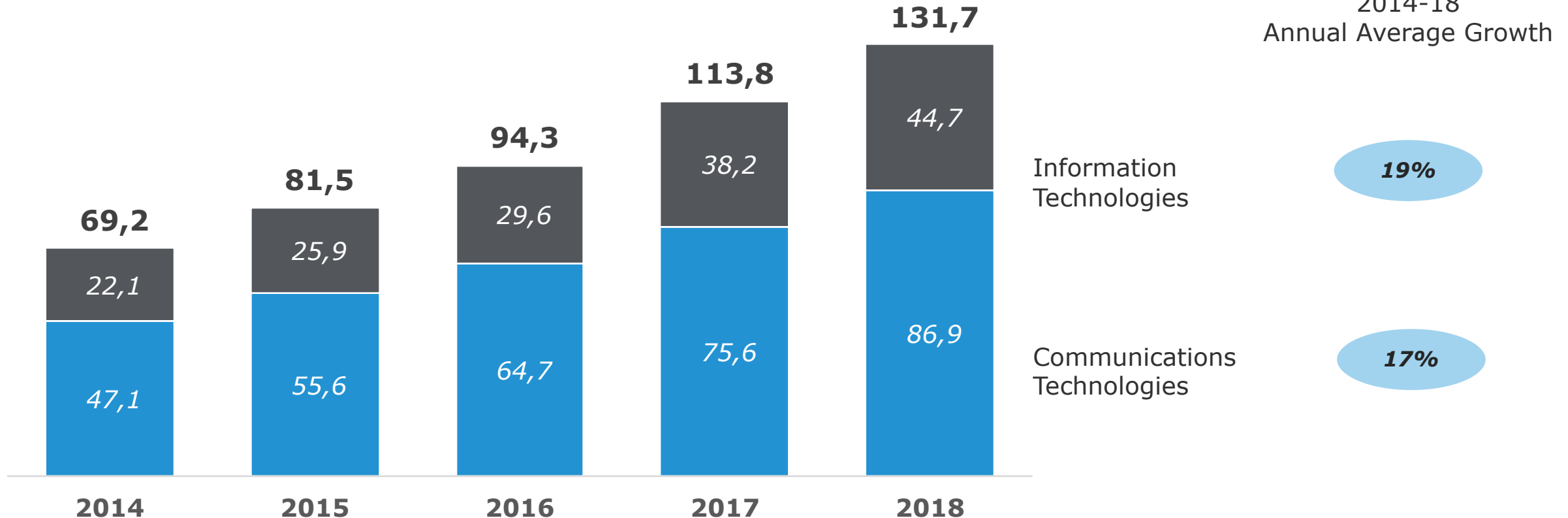
The Turkish ICT market, which has been trending in the USD 30-33bn range, decreased to USD 27-30bn range due to foreign exchange effect in 2018

ICT Market Size in Turkey
(USD bn)



Information and Communications Technologies market breakdown (billion TL)

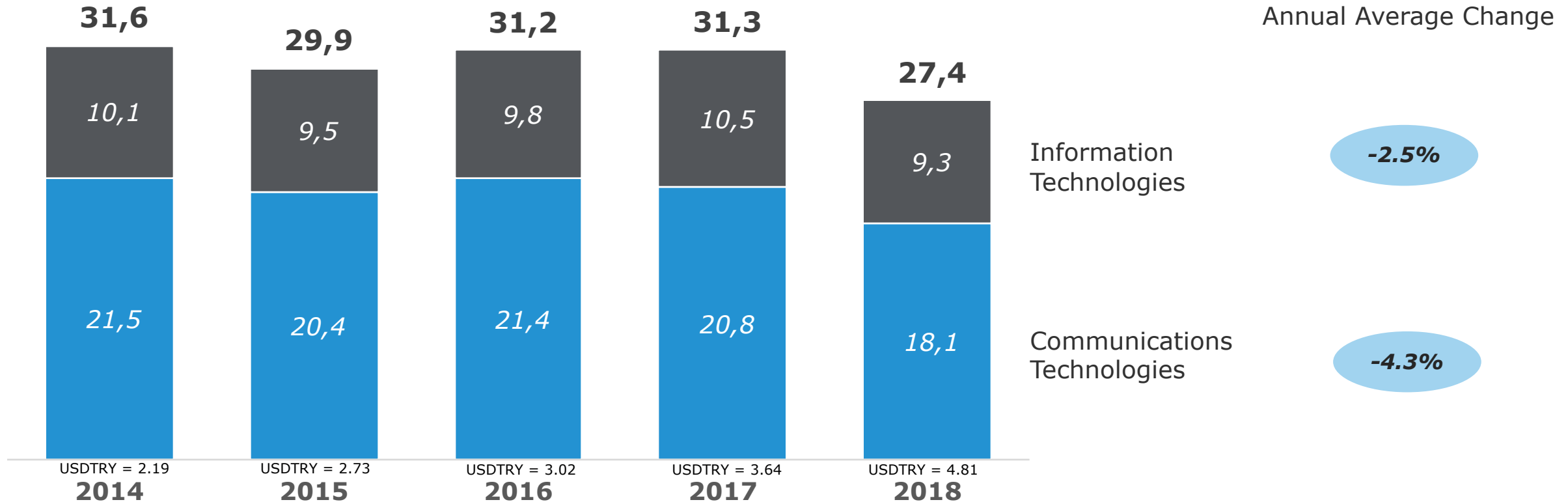
ICT Market Size in Turkey
(billion TRY)



Note: Sums may differ due to rounding. Annual changes refer to comparable growth rates

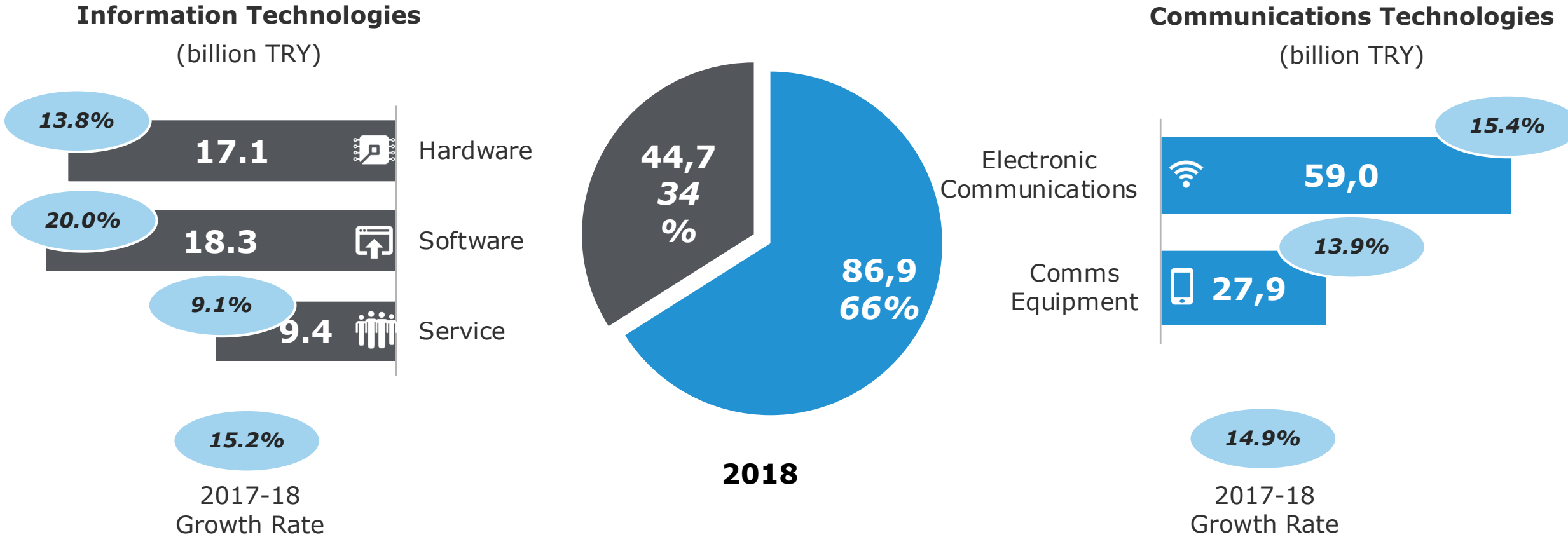
Information and Communications Technologies market breakdown (USD bn)

ICT Market Size in Turkey
(USD bn)



Note: Sums may differ due to rounding. Annual changes refer to comparable growth rates

Information and Communications Technology sector subcategories

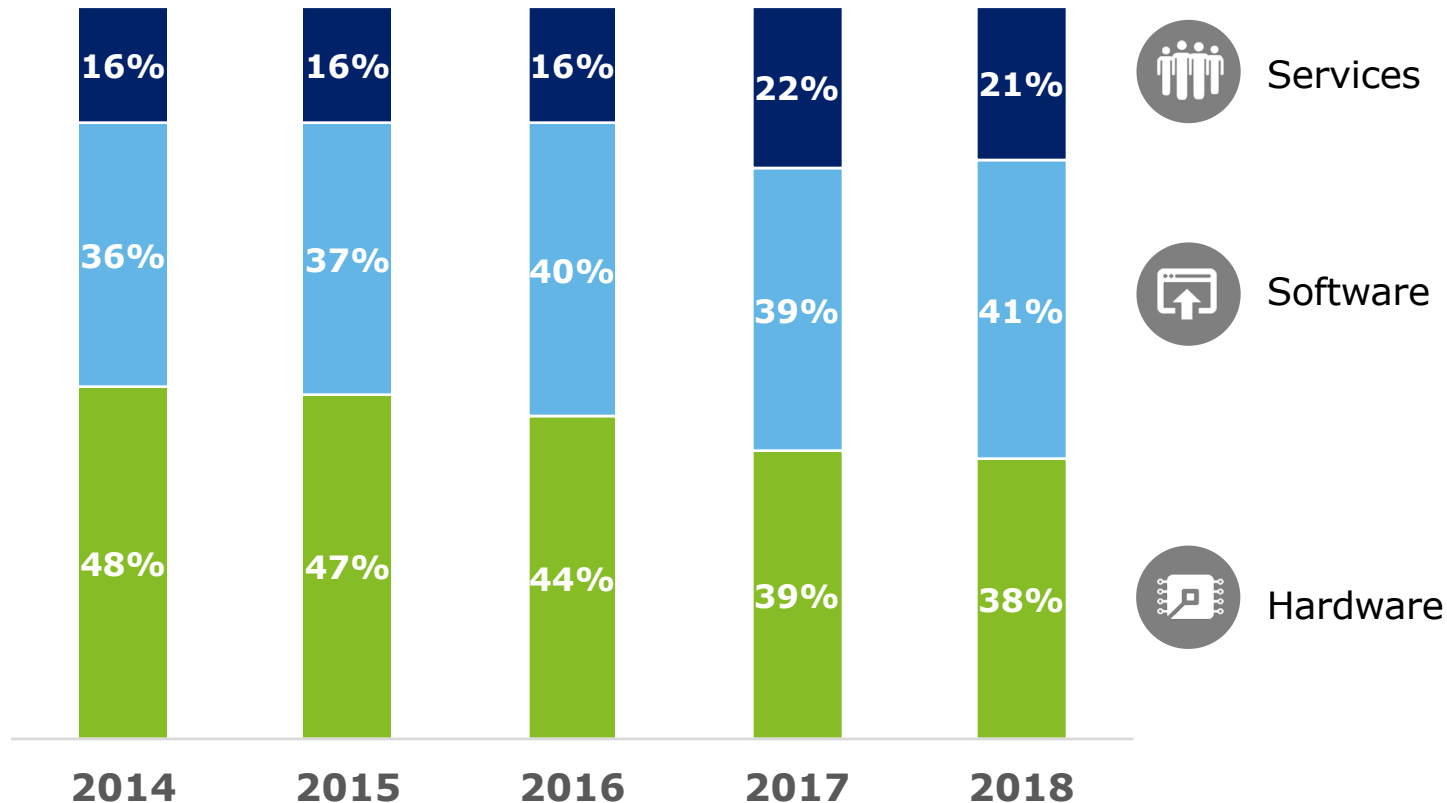


Note: Sums may differ due to rounding. Annual changes refer to comparable growth rates

Shares of subsectors over time

The mix of sector components has been trending closer to that of developed countries since 2014 and the share of value-added activities, such as software and services, has continued to grow

Information Technologies Market Components

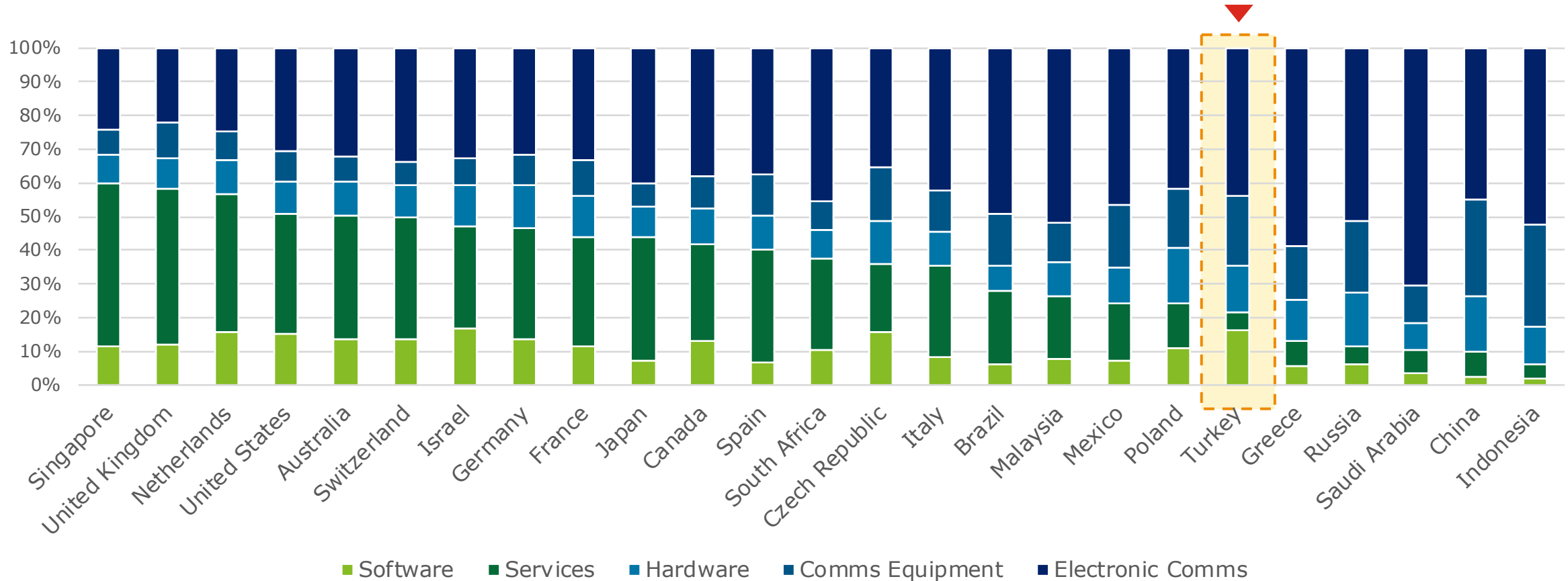


- Although the share of Information Technology remained mostly stable within the total, the distribution of its components has been evolving to favor of more value-added sectors as software and services.
- Hardware sales slow down parallel to global trends yet sales of services and software, which have high domestic origin, increase.
- In addition to companies' basic digital transformations in terms of ERP and CRM, increasing analytics and digital transformation investments indicate that this trend will continue to grow for upcoming years.

Shares of subsectors over time

Turkey expresses a similar profile comparing to developing countries in terms of total share of services and software which have high value added domestic

Information and Communication Market Components



Source: TÜBİSAD, Gartner, Deloitte analysis

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Technology Development Zones (Technoparks)

12% of the total sector volume was generated through Technoparks in 2018

| Technoparks in Turkey | 2017 | 2018 | % Change |
|---|--------|--------|----------|
| Number of Technoparks | 69 | 81* | 17.4% |
| Number of Companies | 4,624 | 5,334 | 15.4% |
| Number of Employees | 45,274 | 51,574 | 13.9% |
| Total Revenues (bn TRY) | 13.0* | 16,0 | 23.1% |
| Total Exports (bn TRY) | 2.9 | 3.8 | 31.0% |
| Revenue per Company (million TRY) | 2.8 | 3.0 | 6.7% |
| Revenue per Employee (thousand TRY) | 287 | 310 | 8.0% |
| Exports per Technopark (million TRY) | 42.0 | 46.9 | 11.6% |
| Exports as a share of Revenues | 22.3% | 23.7% | 140 bps |

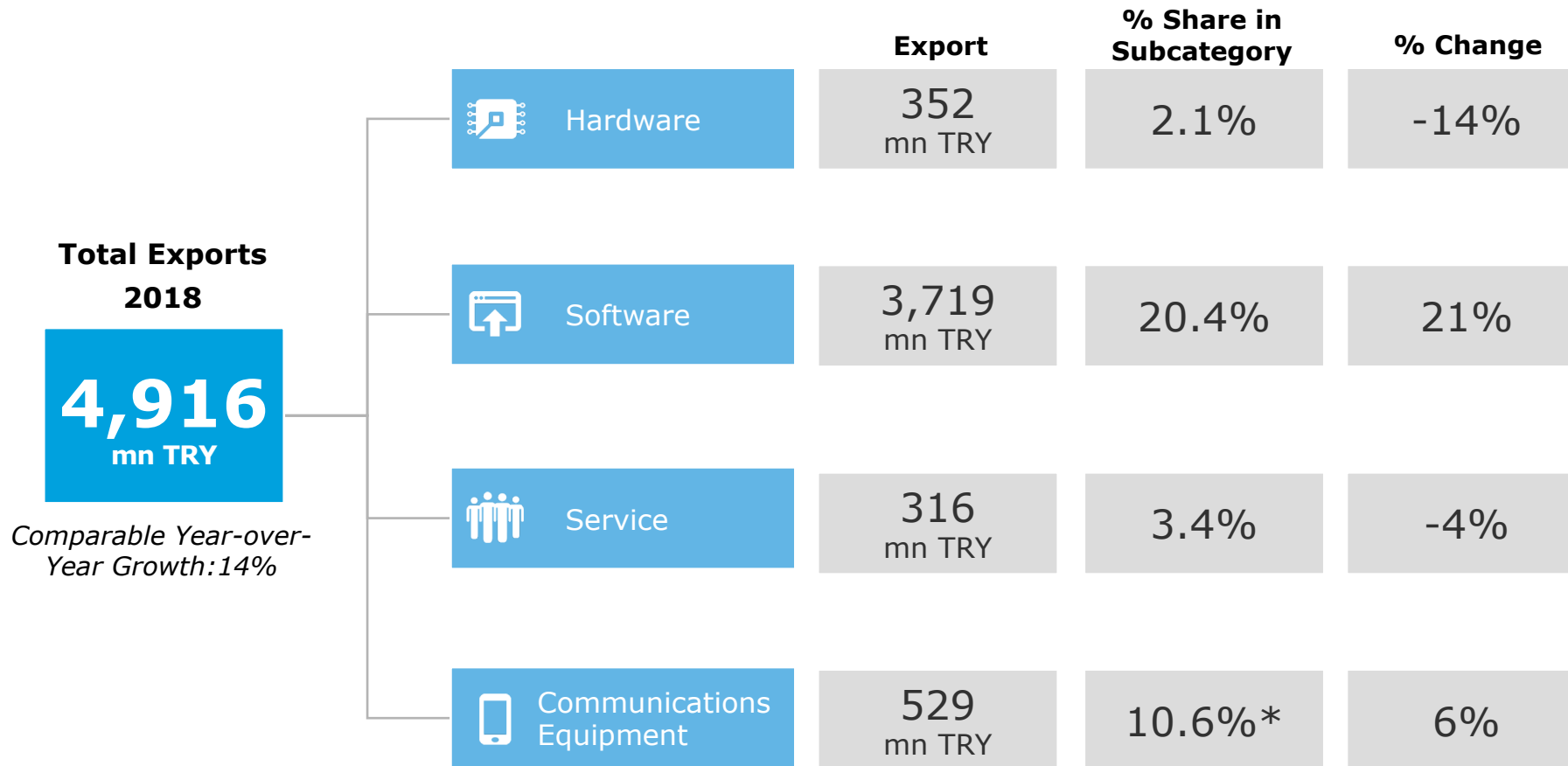
Source: Republic of Turkey, Ministry of Industry and Technology

*2017 revenue data was updated by the Ministry of Industry and Technology. There are 61 operating technoparks. Remaining 20 technoparks are not operating due to ongoing infrastructure construction.

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ICT Exports

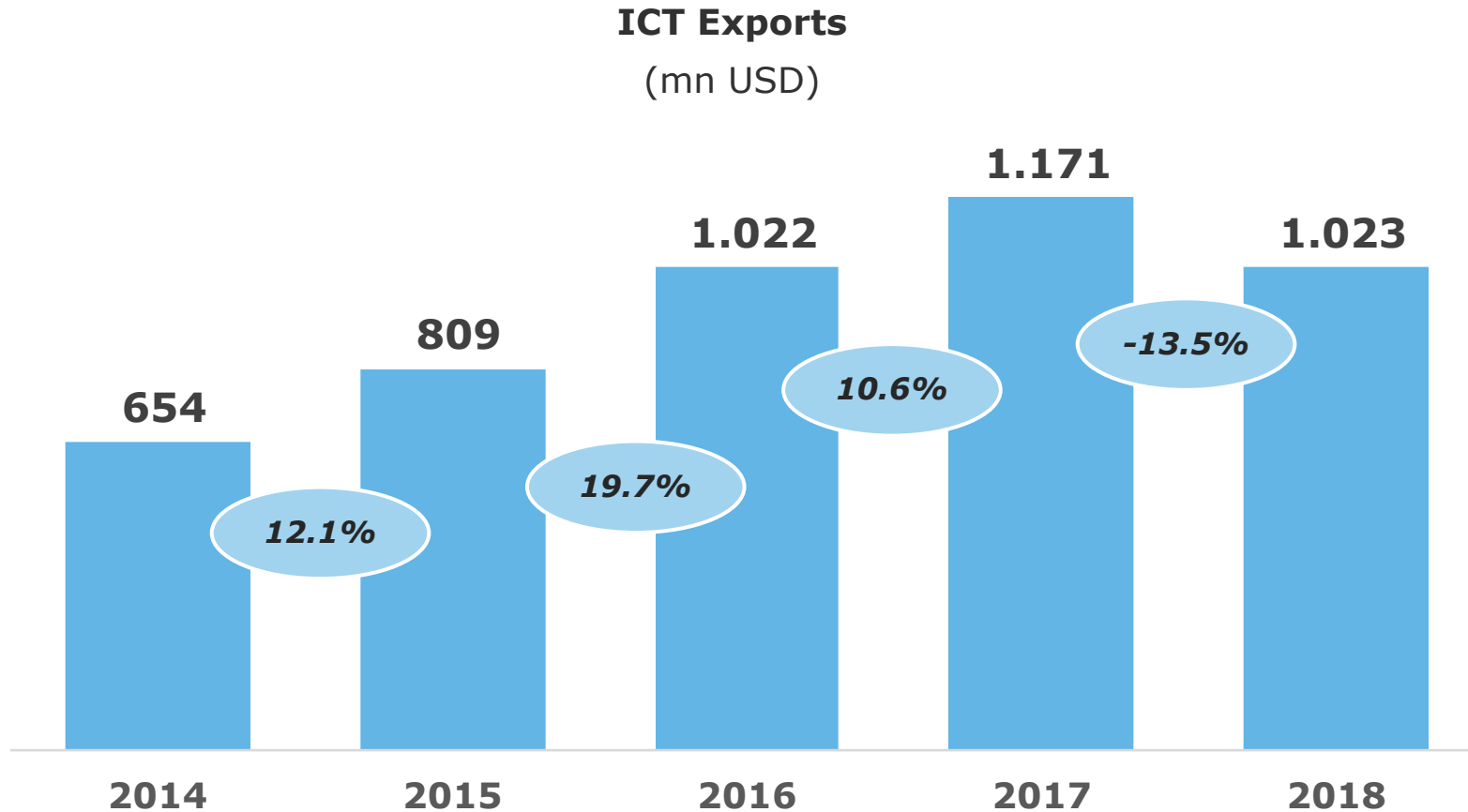
mn TRY



*Mobile phones are excluded.

ICT Exports

ICT exports have reached USD 1.1 bn level by growing since 2014 yet this year it shrank to USD 1.0 bn level.

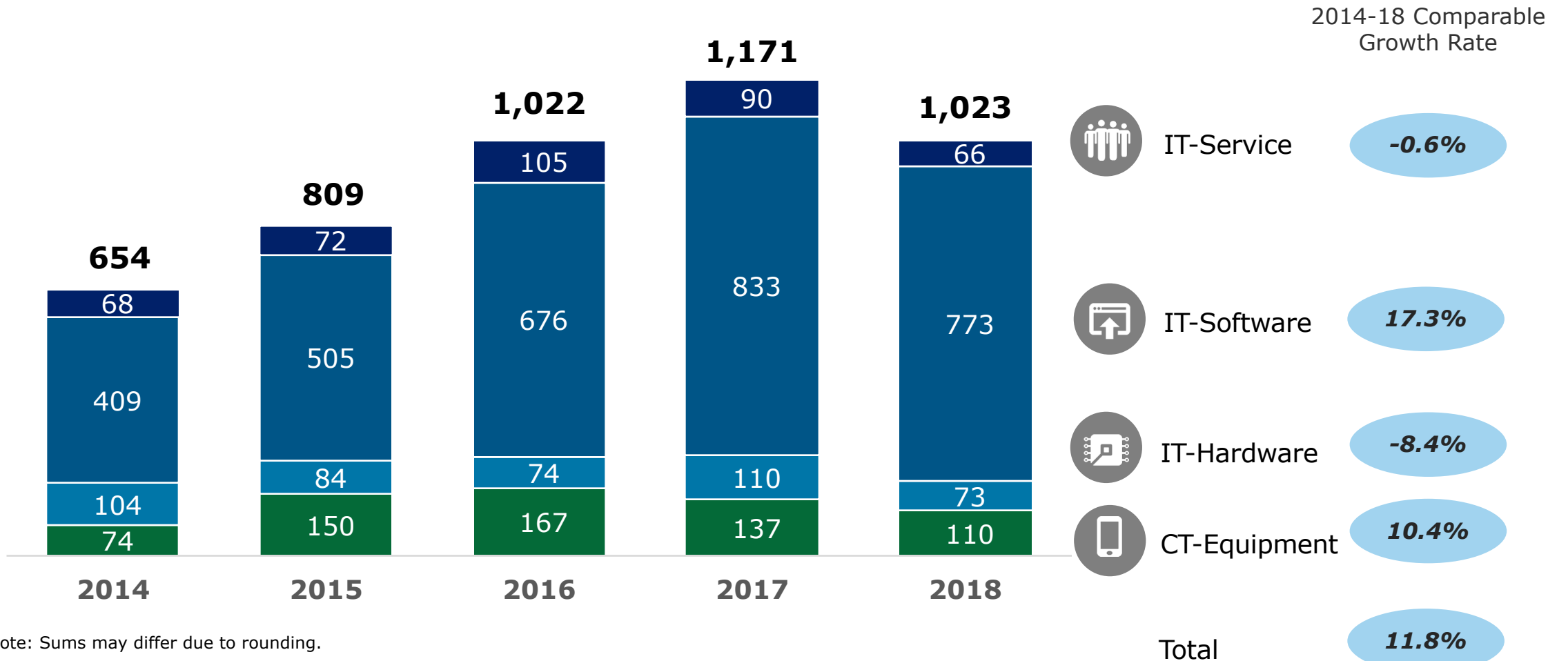


- ICT exports continue to grow in terms of TRY yet 32% depreciation of the Turkish lira causes ICT exports to shrink in USD terms in 2018.
- Europe Zone maintains its leading position by increasing its share in terms of target market yet domestic firms performed limited efforts in some markets such as leading American market and growing Asia market.
- Institutional capacities of technology firms are needed to grow for increasing ICT export. Besides, target market diversification efforts should be supported.

ICT exports

Development of sub categories- mn USD

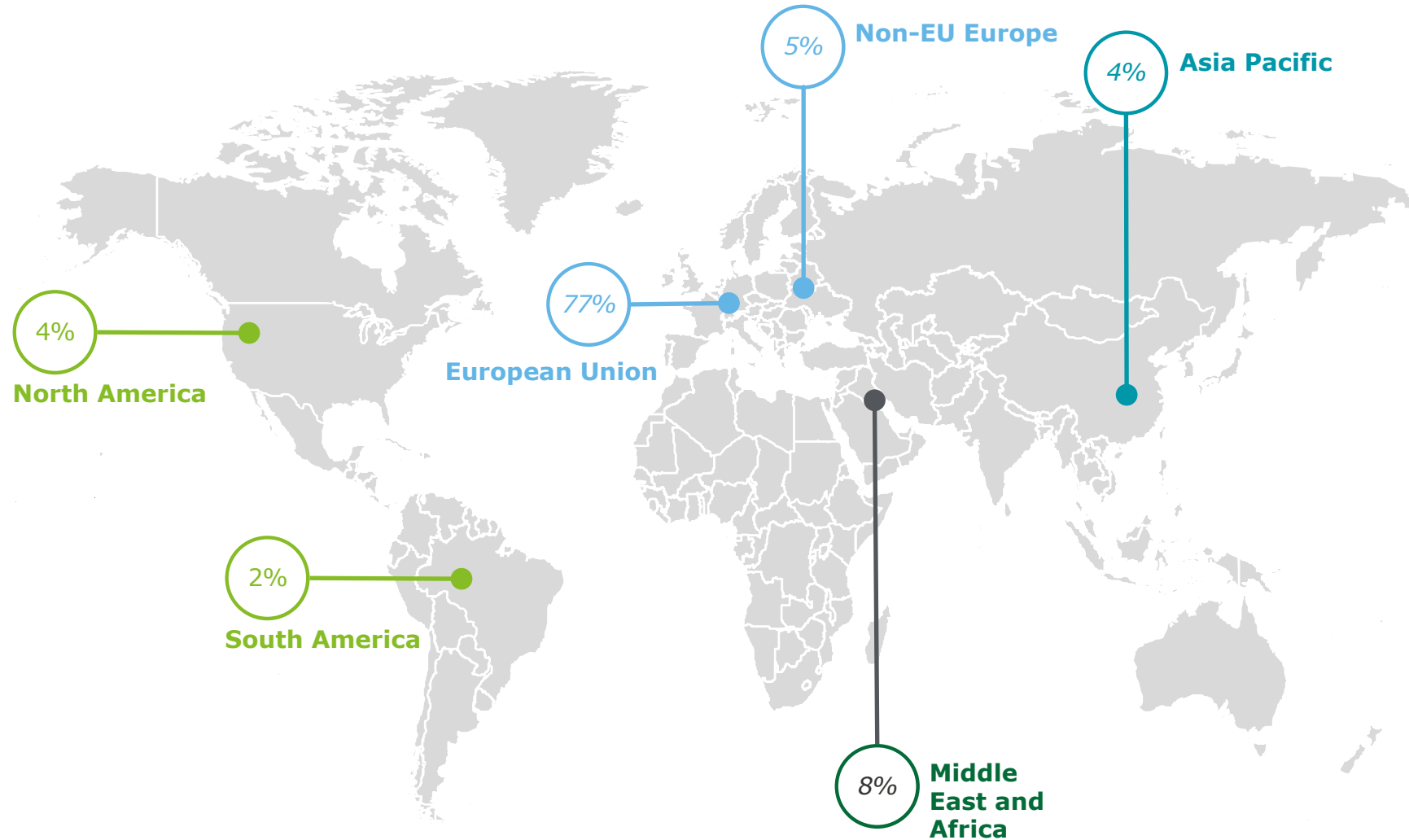
ICT Exports
(mn USD)



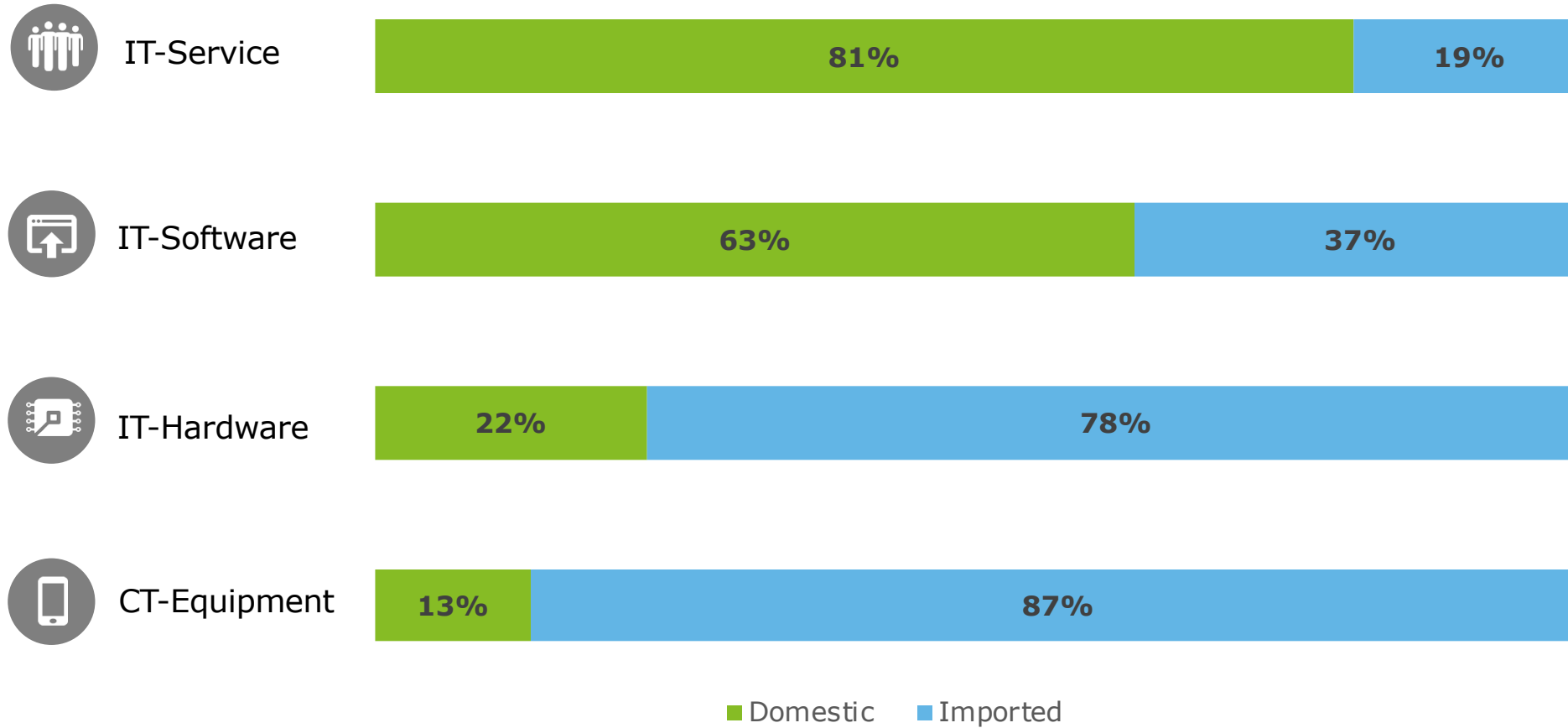
Note: Sums may differ due to rounding.

ICT export destinations

Breakdown of total exports by region 2018



Origins of product and services 2018

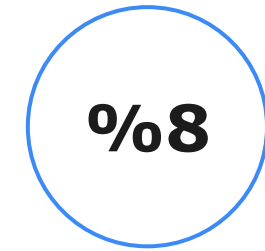


Source: Deloitte analysis

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Cloud Computing

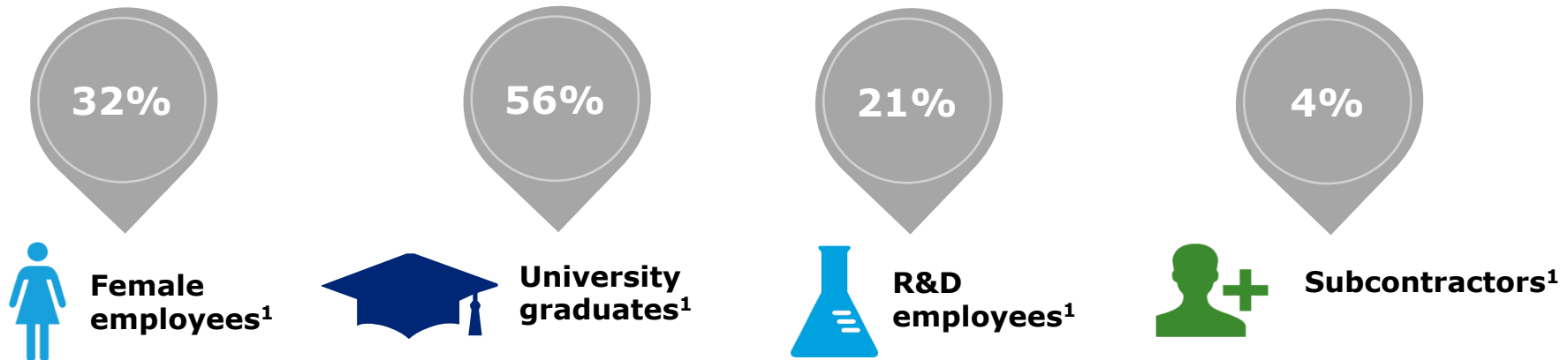
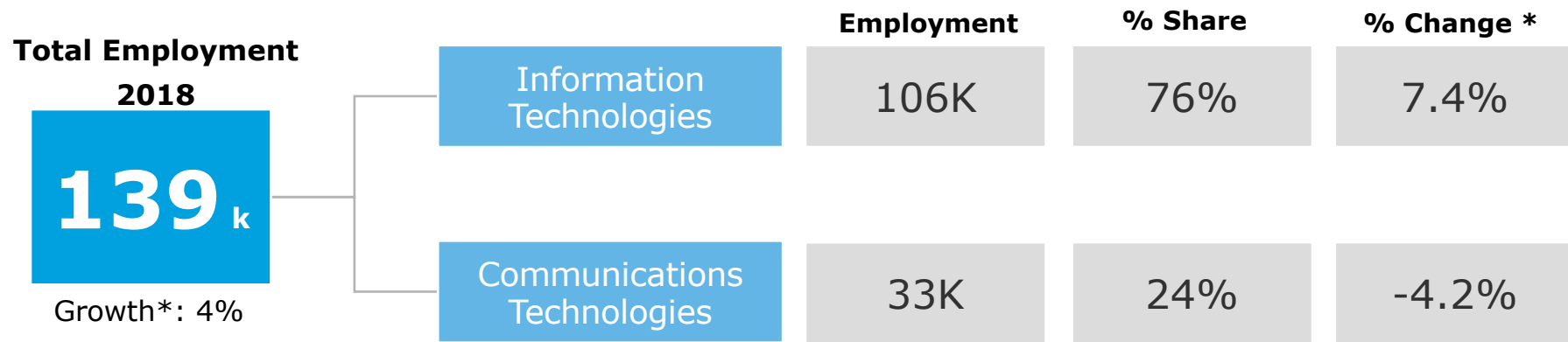
Does your business have any cloud computing related revenue in 2018 ?



Share of cloud computing in ICT revenue ¹

¹ Based on responses of 112 firms answering the question

ICT employment in thousands



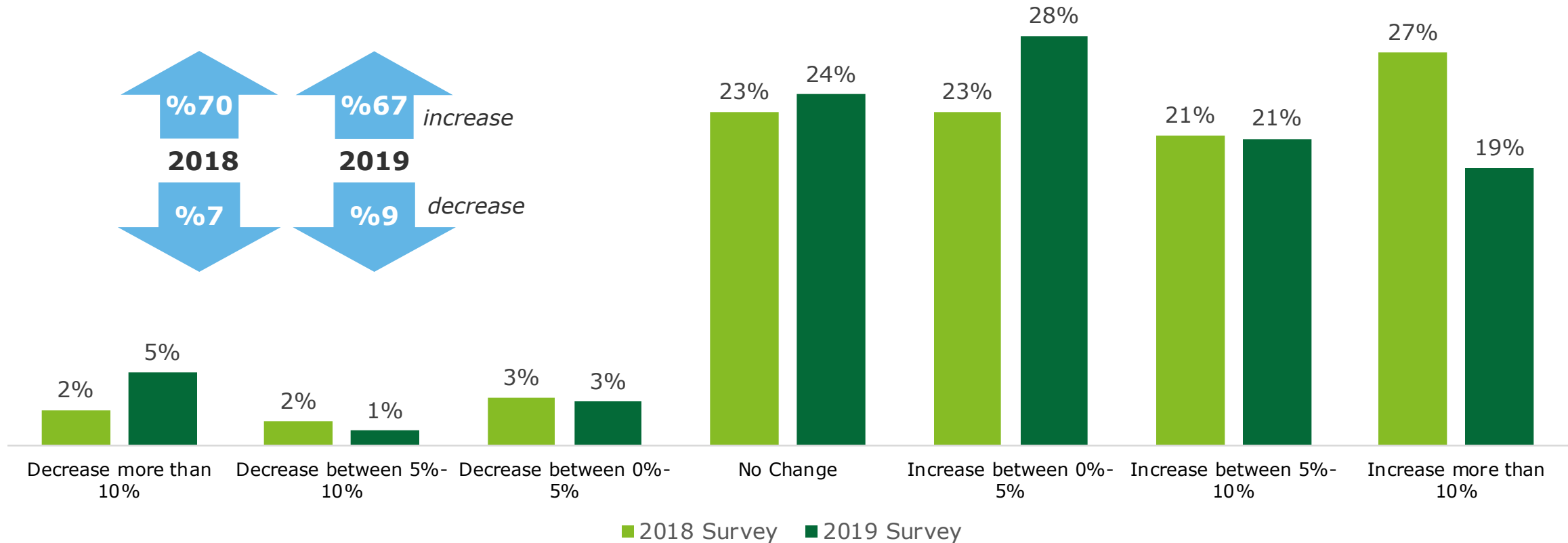
¹ Based on survey responses and BTK data

* Growth rates represent comparable rates (calculated by excluding surveyed firms for the first time this year)

ICT employment

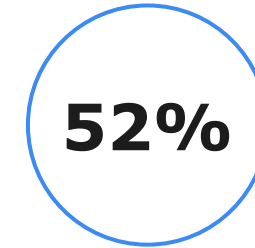
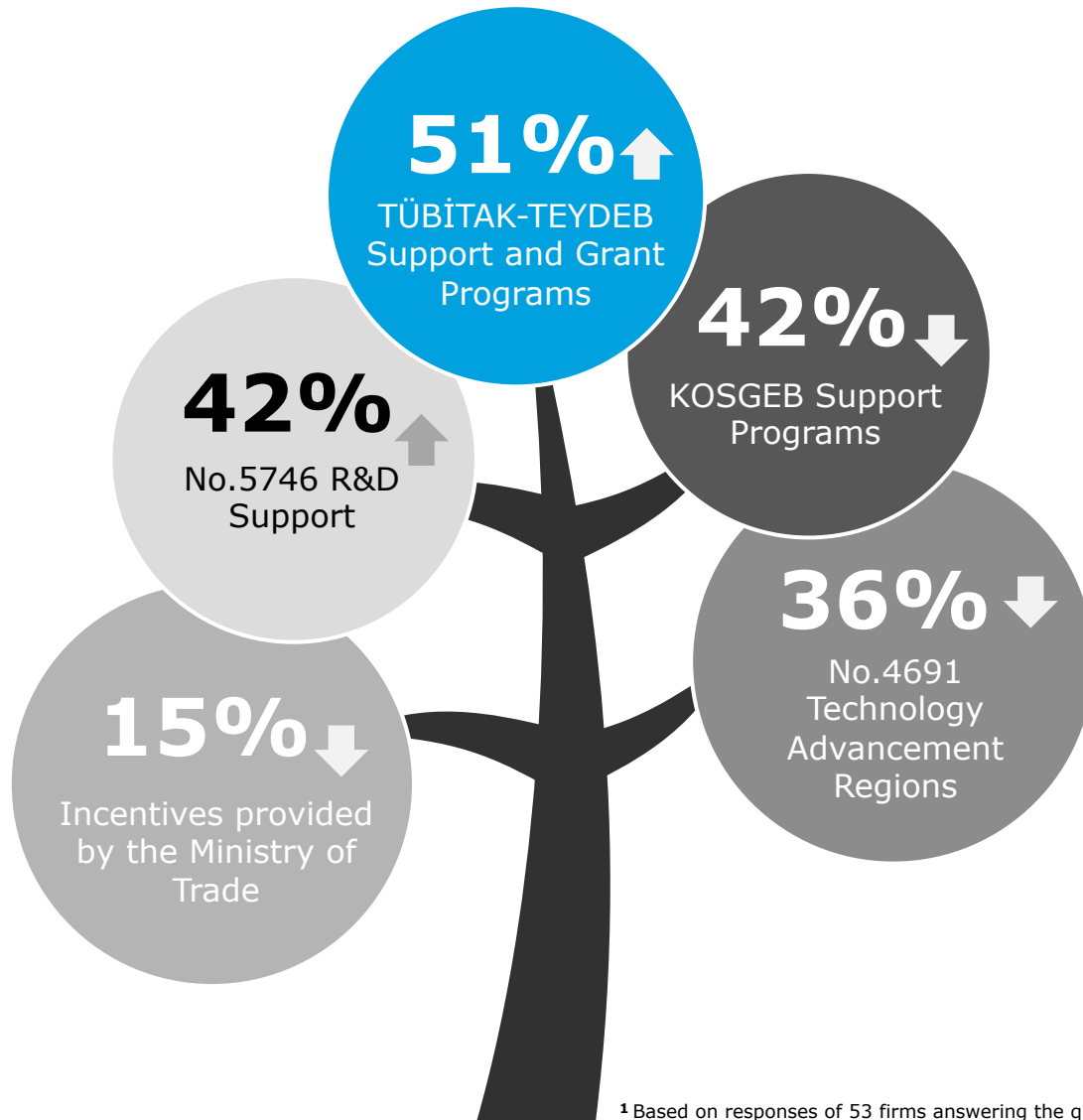
Trends over time

In your view, how is the number of employees for your company likely to change this year?



2019 N = 112; 2018 N = 124

State Incentives Utilized by the ICT Companies



% of firms that utilized incentives in 2018¹



Total value of incentives used

¹ Based on responses of 53 firms answering the question

Key issues in the ICT sector

Over the years, sector companies have been raising the same concerns in a consistent manner. Additionally, foreign exchange fluctuations pointed as the leading issue impeding growth in 2018

**Foreign exchange
fluctuations**

**Lack of qualified
talent**

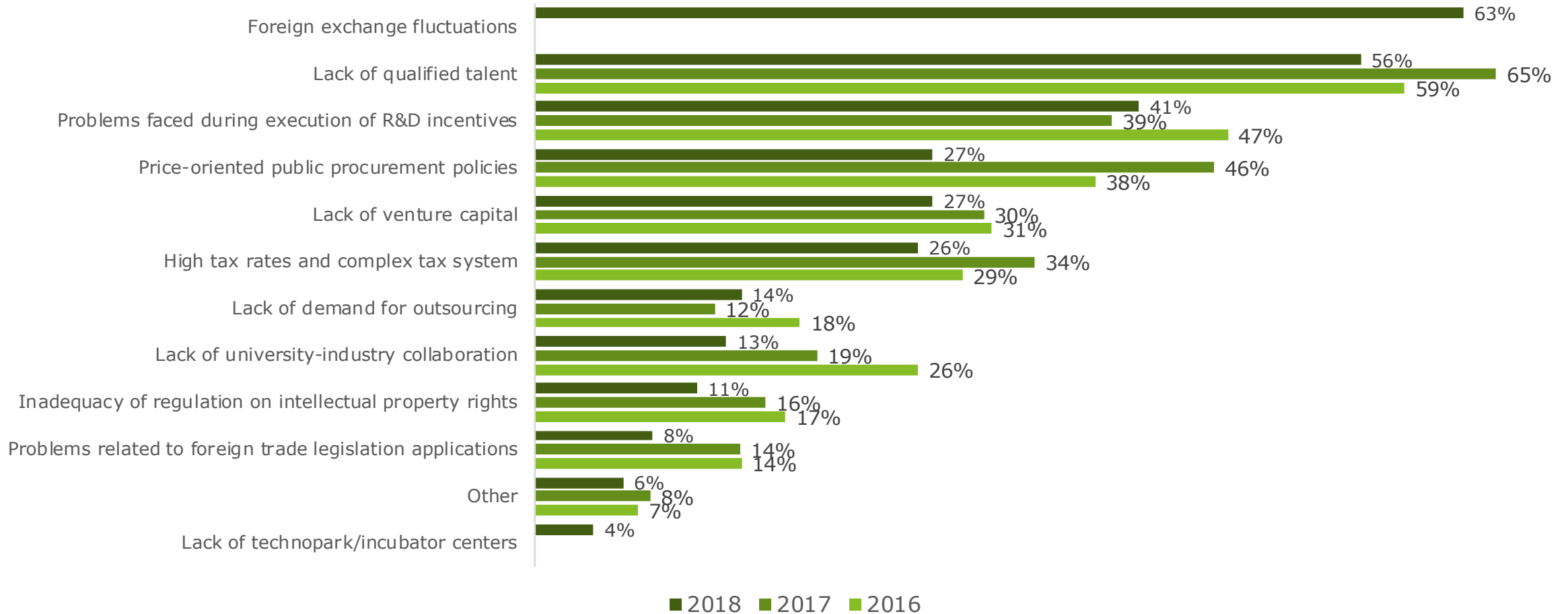
**Price-oriented
public procurement
policies**

**Problems faced
during execution of
R&D incentives**

**Lack of venture
capital**

Key issues in the ICT sector

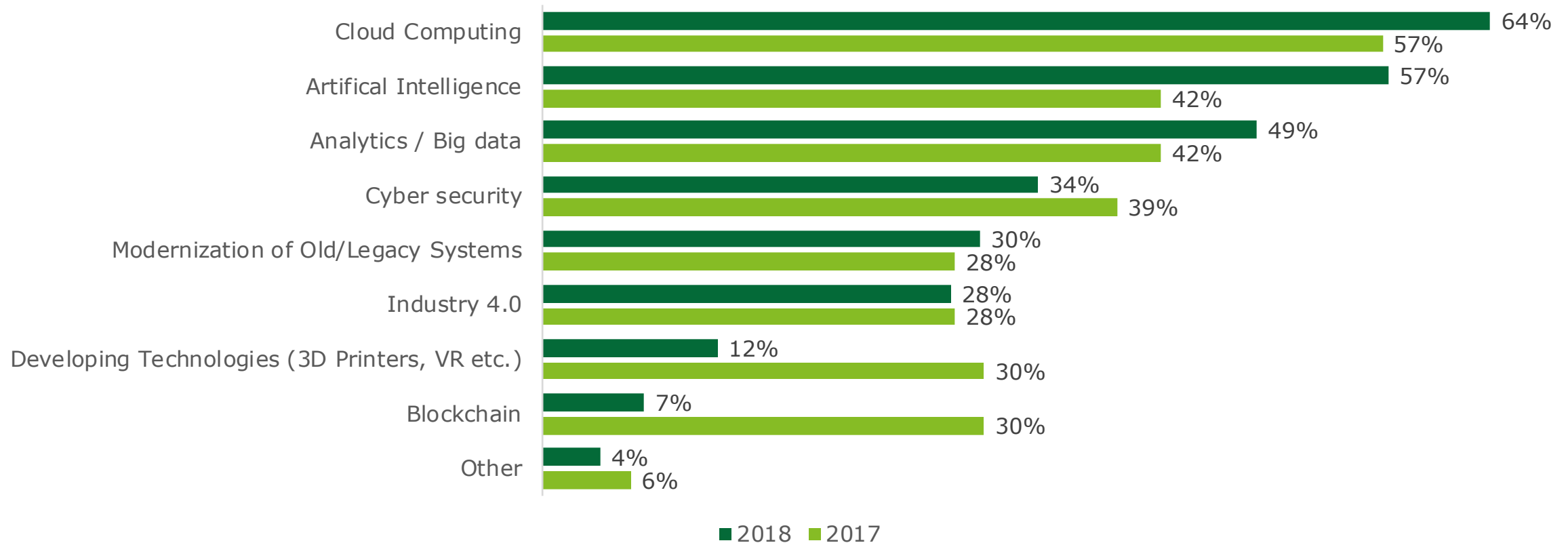
What are the 3 major problems faced in the sector?



Criteria: 112 firms that responded to the question. Foreign exchange fluctuations and lack of technopark/incubator centers were added in 2018 so their values do not exist for 2016 and 2017.

Impact Areas

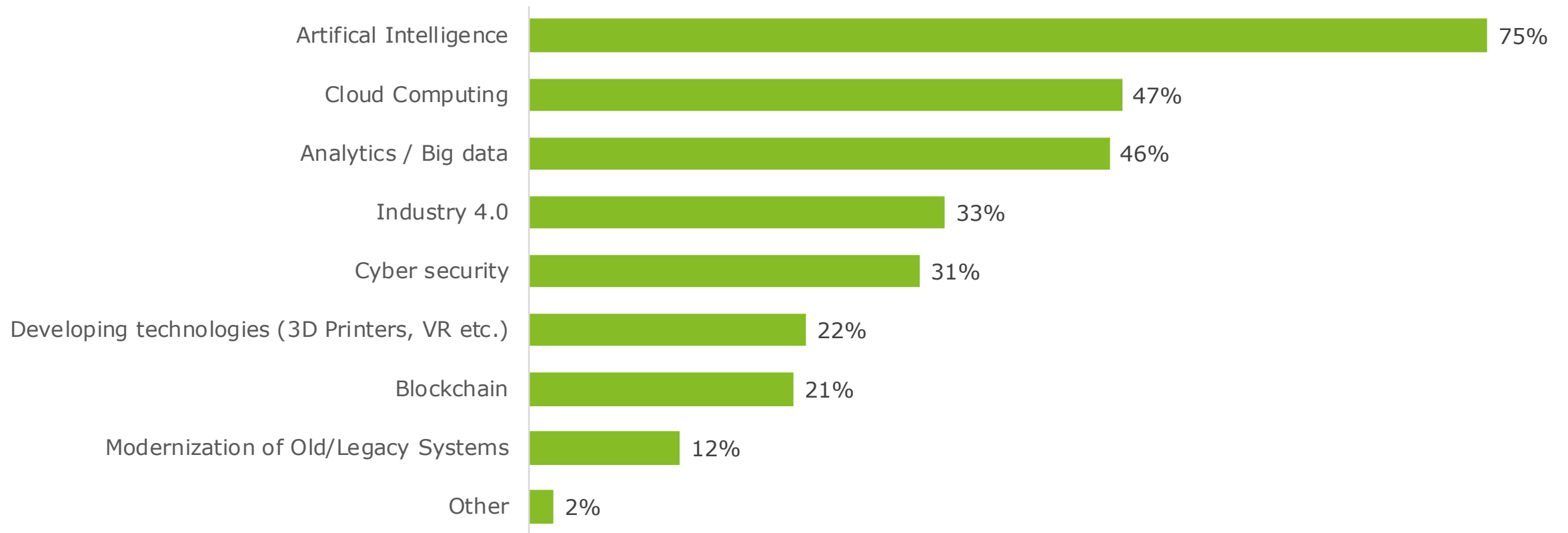
For the next one year, which of the following technological areas will have the most impact on your sector (Choose at most three answers)



N = 112. In 2017, this question was asked for two years instead of one year. 2017 categorization is used for relevant technological areas due to diversification of question's choices in 2018.

Impact Areas

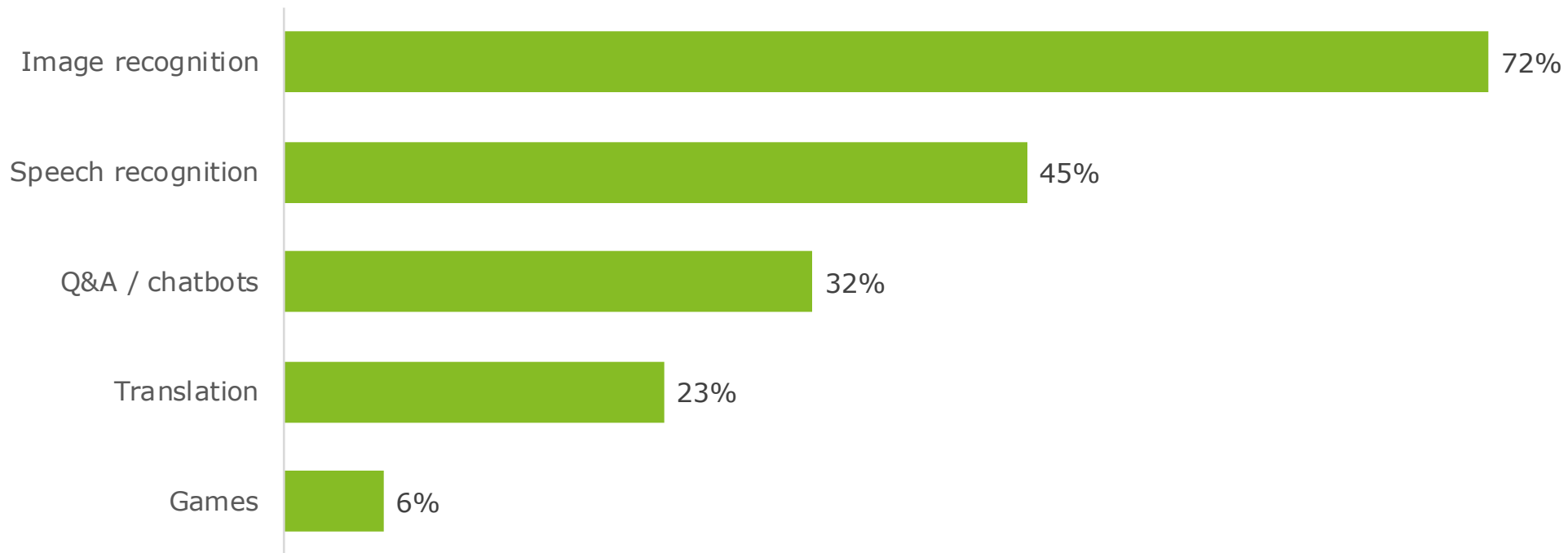
For the next five years, which of the following technological areas will have the most impact on your sector (Choose at most three answers)



N = 112

Artificial Intelligence

Which of the following artificial intelligence applications will have the most impact on your sector (Choose at most two answers)



%35

Share of companies which have activity on AI applications¹

¹ Based on responses of 112 firms answering the question

2018 ICT Market in Turkey

bn TRY

2018 ICT Market in Turkey

Total Exports
4.9 bn

Total Market Size
131.7

Total Employment
139k

Information Technologies

44.7

 Hardware

17.1

 Software

18.3

 Service

9.4

Communications Technologies

86.9

 Equipment

27.9

 Electronic Comms

59.0

Note: Sums may differ due to rounding.

2018 ICT Market in Turkey

bn USD

2018 ICT Market in Turkey

Total Exports
1.0 bn

Total Market Size
27.4

Total Employment
139k

Information Technologies

9.3

 Hardware

3.6

 Software

3.8

 Service

2.0

Communications Technologies

18.1

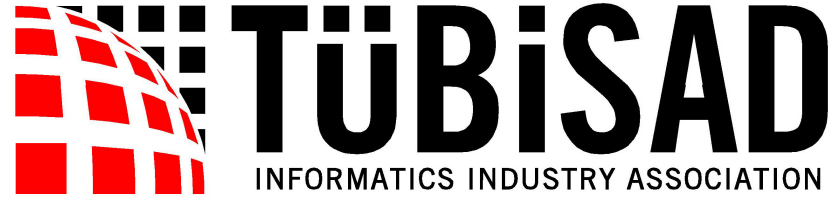
 Equipment

5.8

 Electronic Comms

12.3

Note: Sums may differ due to rounding.



Thank You

We would like to thank to
Ministry of Industry and Technology, BTK, SASAD, Context,
TÜBİSAD members and sector companies
for their valuable contributions.

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