HUNGARY’S INDUSTRY OVERVIEW
1. Overview of the economic sectors

2. The flow of foreign operating capital

3. Governmental measures for improving the Hungarian business environment

4. Description of the most important sectors:
   I. Vehicle industry
   II. Electronics
   III. Life sciences
   IV. Medical technology
   V. Information and communication technology
   VI. Food industry

5. The most important associations operating on a given area
### Overview of the Economic Sectors

<table>
<thead>
<tr>
<th>Industry sector</th>
<th>Gross value added</th>
<th>Number of employees</th>
<th>Number of operational enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle trade and repairs</td>
<td>31%</td>
<td>10%</td>
<td>16%</td>
</tr>
<tr>
<td>Administrative protection</td>
<td>10%</td>
<td>9%</td>
<td>19%</td>
</tr>
<tr>
<td>Property trade</td>
<td>9%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>Transport and storage</td>
<td>8%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>Professional, scientific, and technological activities</td>
<td>6%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Information and communication</td>
<td>5%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Education</td>
<td>5%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>Agriculture, forestry, fishing</td>
<td>4%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>Healthcare and social services</td>
<td>4%</td>
<td>4%</td>
<td>5%</td>
</tr>
</tbody>
</table>

*Note: The percentages indicate the contribution of each sector to the overall economy.*
From the five most important economical sectors, industry contributes the most to the gross value added and employs the most workers; however, the most enterprises operate in the commerce sector.
MOST IMPORTANT ECONOMIC SUBSECTORS

COMMERCIAL, VEHICLE REPAIRS

- VEHICLE MANUFACTURING

INDUSTRY

- ELECTRONICS

AGRICULTURE

- FOOD INDUSTRY

INFORMATION AND COMMUNICATION

- INFORMATION AND COMMUNICATION TECHNOLOGY

SCIENTIFIC AND TECHNICAL ACTIVITIES

- LIFE SCIENCES
- MEDICAL TECHNOLOGY
Hungary is an open economy where particular emphasis is placed on encouraging foreign direct investment (FDI). Partnership with potential investors is a national priority; special attention is paid to the needs of companies already settled in Hungary, and to the further improvement of the business climate.

The government's commitment is to further improve the business climate.

<table>
<thead>
<tr>
<th>YEAR 2016 FDI STOCK % OF GDP</th>
<th>YEAR 2017 FDI STOCK % OF GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUN 64</td>
<td>CZE 72</td>
</tr>
<tr>
<td>CZE 62</td>
<td>SVK 58</td>
</tr>
<tr>
<td>SVK 53</td>
<td>POL 45</td>
</tr>
<tr>
<td>POL 40</td>
<td>SVN 34</td>
</tr>
<tr>
<td>SVN 31</td>
<td>SOURCE: OECD FDI DATABASE</td>
</tr>
<tr>
<td>IN ORDER TO IMPROVE THE BUSINESS CLIMATE, THE HUNGARIAN GOVERNMENT</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
<tr>
<td>...has introduced a new incentive scheme supporting technology intensive investments.</td>
<td></td>
</tr>
<tr>
<td>...has created the most competitive CIT in the EU with 9% flat rate.</td>
<td></td>
</tr>
<tr>
<td>...further improved the practice-based dual education system built on industry needs.</td>
<td></td>
</tr>
<tr>
<td>...has modified its taxation and incentive system related to R&amp;D activities to make Hungary the innovation hub of CEE.</td>
<td></td>
</tr>
<tr>
<td>...is committed to further reduce taxes on employment.</td>
<td></td>
</tr>
<tr>
<td>...offers companies a strategic partnership, and provides them with fast access to the Government.</td>
<td></td>
</tr>
<tr>
<td>...is helping companies to function reliably by providing a clear agenda on economic development and FDI strategy.</td>
<td></td>
</tr>
<tr>
<td>...has introduced its unique economic development plan based on Industry 4.0 requirements.</td>
<td></td>
</tr>
</tbody>
</table>
I. VEHICLE INDUSTRY
I. THE VEHICLE INDUSTRY IN HUNGARY – 1.

SIGNIFICANT PRESENCE OF LARGE, MULTINATIONAL VEHICLE INDUSTRY COMPANIES

- More than 90% of companies engaged in vehicle manufacturing employ at least 250 people.
- More than 700 suppliers operate in the vehicle industry. Out of the 100 largest direct vehicle industry suppliers of the world, 40 are present in Hungary. The largest ones include Bosch, Continental, and Denso.
- The Audi factory is planning to increase its current 9600 positions by 2100 on the long term. Audi also provides work to an additional 15 thousand people through its suppliers.
- The Suzuki factory employs 3100 people and provides work to an additional 20-30 thousand people through its 330-340 Hungarian part suppliers.
SIGNIFICANT GOVERNMENT SUPPORT

- Favourable governmental regulatory system (tax credits and non-refundable loans)
- Dual educational programme through the close cooperation of market operators and educational institutions
- This dual educational programme became available in 26 institutions in the academic year of 2017/2018, allowing for the participation of more than 50 thousand students. The number of partnered market operators increased to nearly 600.
- Developments related to artificial intelligence and self-driving cars receive special attention
- Government investments into the development of self-driving cars (Zalazone test track)
I. THE VEHICLE INDUSTRY IN FIGURES

**OVER 40 OF THE TOP 100 GLOBAL OEM PARTS SUPPLIERS**

More than 700 suppliers in the automotive industry

**AROUND 500,000 PASSENGER CARS WERE MANUFACTURED IN HUNGARY 2017**

4 OEMs have already chosen us (Audi, Mercedes, Opel, Suzuki)

**1,194 EUR/MONTH AVERAGE GROSS EARNINGS IN THE AUTOMOTIVE INDUSTRY (HSCO, 2017)**

**91.8% OF THE AUTOMOTIVE INDUSTRY’S OUTPUT IS EXPORTED**

**175,800 – THE NUMBER OF PEOPLE EMPLOYED IN THE AUTOMOTIVE INDUSTRY IN 2017 Q4, WHICH IS 4% OF TOTAL EMPLOYMENT**

---

**EUR 26.1 BILLION**

The production value of the automotive industry amounted to EUR 26.1 billion in 2017.

**13%**

The production value of the automotive industry achieved an annual average growth of 13% between 2010 and 2017.

**28.7%**

The automotive industry accounted for 28.7% of manufacturing output in 2017.

**8%**

According to KPMG Study, production in Hungary is estimated to grow with a compound annual growth rate of roughly 8% (2017-2024) – vs. – 3% for China and less than 1% for Western Europe*

**175,800**

Main export market EU 87%
I. HIGHER EDUCATION CENTRES RELATED TO THE VEHICLE INDUSTRY

BUDAPEST
- Budapest University of Technology and Economics
- Óbuda University
- Eötvös Loránd University
- Dennis Gabor College
- Pázmány Péter University

MISKOLC
- University of Miskolc
- Faculty of Materials Science and Engineering
- Robert Bosch Faculty of Mechatronics

GYŐR
- Széchenyi István University
- Audi Hungaria Faculty of Automotive Engineering

VESZPRÉM
- University of Pannonia

PÉCS
- University of Pécs

DUNAÚJVÁROS
- University of Dunaujváros

DEBRECEN
- University of Debrecen

KECSKEMÉT
- John Von Neumann University

SZEGED
- University of Szeged

Number of students in the field of engineering and IT:
- 4,700
- 25,800
- 3,200
- 4,350
- 1,470
- 1,000
- 1,750
- 2,600
- 1,500
- 1,000
- 1,500
- 1,470
- 4,700
I. LARGER VEHICLE INDUSTRY RESEARCH AND DEVELOPMENT CENTRES

VIP cash grant for the support of R&D activity

Deductible R&D costs: corporate income tax base and social contribution reduction possibilities

Favourable taxation system: 0% social contribution payable after employees with PhD

I. LARGER VEHICLE INDUSTRY RESEARCH AND DEVELOPMENT CENTRES

BUDAPEST
AVL
BOSCH
CONTINENTAL
NNG
KNORR-BREMSE
THYSSENKRUPP

GYŐR
AUDI

DUNAVARSÁNY
IBIDEN

DEBRECEN
NI

VESZPRÉM
CONTINENTAL
VALEO

SZOMBATHELY
TDK (EPCOS)

ZALAEGERSZEG
ZALAZONE TEST TRACK

KECSKEMÉT
KNORR-BREMSE
PHOENIX MECANO

SZEGED
NNG
I. LARGEST RESEARCH AND DEVELOPMENT PROJECTS

**Continental**
- Product development of capital equipment, Advanced Driver Assistance Systems (ADAS)

**AVL**
- Powertrains, measuring tools and software development

**Valeo**
- Product development of electronic control and camera control units, driving assistance systems

**Knorr Bremse**
- Mechanical components (for brakes and drive trains) and electrical systems and components (software, hardware), pneumatic brake systems, SW components, I-Com Assist (Drives Advisory System)

**Bosch**
- Autonomous driving and e-mobility related projects

**Ibiden**
- Design and manufacturing Diesel Particle Filters for vehicle exhaust gas and Sealing Materials for automotive catalytic converters

**Audi**
- Engine development (CNG engine), humanoid robot hands

Hungarian Tourism Agency
I. LARGEST RESEARCH AND DEVELOPMENT PROJECTS

1. **TDK**
   - smart-car parts development such as keyless entry and ignition system, optical parking assist systems, lane departure warning systems, or various board recognition

2. **thyssenkrupp**
   - electronic and autonomous steering systems (e.g. cross-wind compensation, lane keeping assist, parking assistance), autonomous driving

3. **NNG**
   - development of navigation and various software for the automotive industry, which are used by more than 30 OEMs

4. **PHOENIX MECANO**
   - development of plastic and mechanical components

5. **NATIONAL INSTRUMENTS**
   - cutting-edge measurement and automation devices
I. THE GEOGRAPHICAL DISTRIBUTION OF THE VEHICLE INDUSTRY

- Budapest
- Hatvan
- Eger
- Miskolc
- Debrecen
- Szeged
- Kecskemét
- Szombathely
- Győr
- Szentgotthárd
- Zalaegerszeg
- Veszprém
- Pécs
- Dunaujváros

Related to the Vehicle Industry:

- VEHICLES MANUFACTURING
- VEHICLE INDUSTRY RESEARCH AND DEVELOPMENT
- EDUCATION PROGRAMMES RELATED TO THE VEHICLE INDUSTRY
- VEHICLE INDUSTRY SUPPLIERS
I. ELECTRO-MOBILITY: ÁNYOS JEDLIK PLAN

<table>
<thead>
<tr>
<th>Icon</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image.png" alt="Electric Car" /></td>
<td>Hungary was first to adopt an electro-mobility concept in the Central and Eastern European region</td>
</tr>
<tr>
<td><img src="image.png" alt="Bar Graph" /></td>
<td>Direct and indirect incentives for popularising e-mobility</td>
</tr>
<tr>
<td><img src="image.png" alt="Charging Station" /></td>
<td>Governmental programme for increasing the number of charging stations</td>
</tr>
<tr>
<td><img src="image.png" alt="Percentage" /></td>
<td>The target is increasing the ratio of electric vehicles within public transport fleets to 25%</td>
</tr>
<tr>
<td><img src="image.png" alt="Flag" /></td>
<td>The target is increasing the ratio of electric vehicles within the state vehicle fleet to 30% by 2030</td>
</tr>
<tr>
<td><img src="image.png" alt="Chart" /></td>
<td>Support for research, development and innovation activities related to e-mobility</td>
</tr>
<tr>
<td><img src="image.png" alt="Award" /></td>
<td>The goal of Hungary is to become Europe's number one electric accumulator manufacturer</td>
</tr>
</tbody>
</table>
II. ELECTRONICS
II. THE ELECTRONICS INDUSTRY IN HUNGARY

HUNGARY IS ONE OF THE MOST PRODUCTIVE CENTRAL AND EASTERN EUROPEAN COUNTRY IN THE ELECTRONICS INDUSTRY

- It makes up 4% of the Hungarian GDP
- 20.8% share within the entire Hungarian manufacturing industry
- A production value of EUR 17.4 billion

THE PRESENCE OF MULTINATIONAL COMPANIES WITH A LARGE NUMBER OF EMPLOYEES

- A non-exhaustive list of the largest electronics companies operating in Hungary: CONTINENTAL, ERICSSON, GE, HUAWEI, SIEMENS, BOSCH, JOHNSON ELECTRIC, VIDEOTON, FLEXTRONICS, HONEYWELL, SAMSUNG, ROSENBERGER, ALPINE, NATIONAL INSTRUMENTS

EDUCATION RELATED TO THE ELECTRONICS INDUSTRY ACROSS THE COUNTRY

- All leading Hungarian universities offer courses in electronics, which are in line with the highest national standards.
- These institutions also incorporate knowledge centres and research and development facilities, all of which are working in close cooperation with electronics and IT partners.
EDUCATION RELATED TO THE ELECTRONICS INDUSTRY ACROSS THE COUNTRY

- All leading Hungarian universities offer courses in electronics, which are in line with the highest national standards.
- These institutions also incorporate knowledge centres and research and development facilities, all of which are working in close cooperation with electronics and IT partners.

II. THE ELECTRONICS INDUSTRY IN FIGURES

**ELECTRONICS INDUSTRY IN NUMBERS**

- **27.8%** Share of electronics in total of Hungarian exports
- **170,000** Total number of employees in the industry
- **93.5%** Export ratio
II. GEOGRAPHICAL DISTRIBUTION OF THE ELECTRONICS INDUSTRY

- Budapest
- Göd
- Budaörs
- Vác
- Gyál
- Szigetszentmiklós

- Jászfényszaru
- Jászárókszállás
- Jászberény
- Törökszentmiklós
- Nagykőrösszentmárton
- Óbuda
- Kecskemét
- Fót/Veresgyháza
- Nagykáta
- Hatvan

- Páty
- Biatorbágy
- Tataján
- Komárom
- Dunaharaszti
- Sáregyháza

- Szombathely
- Veszprém
- Sárvár
- Zalaegerszeg
- Nagykanizsa
- Kapuvár
- Marcali
- Pécs
- Tamásı
- Tab

- Szeged

- Szügy
- Salgótarján
- Özd

- Miskolc
- Tiszaujváros
- Nyíregyháza
- Nyírbátor
- Hajdúszoboszló
- Debrecen

LARGER ELECTRONICS COMPANIES

EDUCATION PROGRAMMES RELATED TO THE ELECTRONICS INDUSTRY
II. GEOGRAPHICAL DISTRIBUTION OF THE ELECTRONICS INDUSTRY

BUDAPEST:

EÖTVÖS LORÁND UNIVERSITY
- supports the preparing of the development of research strategies

UNIVERSITY OF ÓBUDA
- electrical engineering, mechanical and safety engineering. Operates a knowledge centre focusing on robot technology R&D

PÁZMÁNY PÉTER CATHOLIC UNIVERSITY
- nanotechnology, nanoelectronics, designing and measuring microelectronics systems, medical diagnostics

HUNGARIAN ACADEMY OF SCIENCES
- Technical Physics and Materials. Focuses on areas such as nanostructures, microtechnology and protonics

BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS
- mechanical and chemical engineering, electronics and IT, and transportation engineering

PÉCS:

UNIVERSITY OF PÉCS
- architecture, civil engineering, environmental engineering, electrical engineering, IT and architectural design

SZEGED:

UNIVERSITY OF SZEGED
- technical faculty with educational and R&D experience

GYŐR:

SZÉCHENYI ISTVÁN UNIVERSITY
- industrial simulation projects and engineering development services for the automotive industry

MISKOLC:

UNIVERSITY OF MISKOLC
- energy-, mechanical-, IT-, electronic engineering - Knowledge centre by Bosch, Electrolux and MOL

VESZPRÉM:

UNIVERSITY OF PANNONIA
- Medical IT R&D centre - IBM software research centre; an infotech, biotech, and nanotech centre

DEBRECEN:

UNIVERSITY OF DEBRECEN
- building and environment engineering - Research groups building automation, electric vehicle development
III. LIFE SCIENCES
(PHARMACEUTICAL AND MEDICAL INDUSTRY)
III. LIFE SCIENCES IN HUNGARY

6.3% The share of pharmaceuticals in total manufacturing value added

4.9% of total exports Largest exporter of medicinal and pharmaceutical products in the region

EUR 3.1 billion FDI stock in pharma industry

Labour productivity

8 out of globally Top 10 Drug and biotech companies have manufacturing or R&D activity in Hungary

EUR 1,614 Average monthly gross wage in pharma sector

48,000 Pharma and medtech employees

The pharmaceutical industry provided for 35.8% of the manufacturing industry’s R&D expenditures in 2016
III. EDUCATION, RESEARCH AND DEVELOPMENT RELATED TO LIFE SCIENCES

BUDAPEST
Semmelweis University
(Department of imaging and medical instrumentation)

University of PÉCS
(János Szentágothai Research Centre)

University of SZEGED
(Hungarian Biotechnology Association)

University of DEBRECEN

LIFE SCIENCE EDUCATION, RESEARCH AND DEVELOPMENT
More than 21 thousand students studying life sciences in a Hungarian higher education institution in the academic year of 2016/2017.

The pharmaceutical and medical technology sectors employ a total 48 thousand people (Central Statistics Office, 2017).

The Hungarian workforce is highly qualified and cost-efficient, which contributes to the competitiveness of the country.

Hungary is the leading country in the region in terms of wage-adjusted workforce productivity in the pharmaceutical and medical technology sectors (Eurostat, 2015).

The gross average monthly income in the pharmaceutical industry is EUR 1.614 (Central Statistics Office, 2017).
III. CLINICAL TRIALS

- Hungary has a worldwide reputation for international clinical trials, with more than such trials registered every year. This is an outstanding number considering Hungary's population of 10 million.

- National Health Insurance Fund offer a unique means of access to patient data. Such concentration of information makes Hungary an even more favourable choice for companies engaged in clinical research.

**BENEFITS OF CLINICAL TRIALS IN HUNGARY**

- Higher incidence of certain disorders than in Western Europe
- EU compliant legislation
- Local study monitors and CROs are more highly skilled than the international average
- Patients trust physicians and Western medicine
- Fast and reliable patient recruitment
- Patients trust physicians and Western medicine
- Centralized health care systems concentrate large numbers of patients
- Modern hospital and diagnostics equipment to support complex trials
- Excellent English language skills
- Wide availability of untreated patient populations
- Local study monitors and CROs are more highly skilled than the international average
- High density of well-equipped Phase I study centres

- Highly motivated and loyal investigators
- Outstanding data quality
EGIS (SERVIER)

Egis – established in 1913, now member of the Servier group – is one of the leading generic pharmaceutical companies of the CEE region. Egis has 4,364 employees, the company operates subsidiaries and offices in 18 countries and its products are available in 62 countries. Egis’ activities cover the whole pharmaceutical value chain from R&D, active ingredient and finished product manufacturing to sales and marketing. In 2013 Egis launched the first biosimilar monoclonal antibody in the EU.

SANOFI

Sanofi Hungary is a healthcare leader which mission is to improve the health conditions and quality of life of Hungarians focusing on patients’ needs. Sanofi offers therapeutic solutions for healthcare problems in diabetes, oncology, human vaccines, innovative drugs, consumer healthcare and rare diseases. Sanofi is Hungary’s 21st largest company in terms of sales, the 16th largest exporter and the 2nd largest pharmaceutical company in terms of domestic sales. With 100 years of history and 2000 employees working on 4 sites (Csanyikvölgy, Nagytétény, Újpest, and Veresegyház), Sanofi is present in Hungary with a wide range of activities: Development, Production, Commercial and Distribution.
GEDEON RICHTER

The nation’s first large-scale pharmaceutical producer, Richter was established in 1901 and remains the national flagship manufacturer. The largest independent drug maker in CEE, the company operates a highly regarded R&D centre, employing ca. 1,000 people. Richter runs joint research programs with more than 30 leading university faculties and academic research institutes. The company is also active in original research, which is mainly focused on diseases of the central nervous system.

GLAXOSMITHKLINE

GSK is a three legged company group in Hungary. GSK Pharma deals with prescription drugs, vaccines and provides medical information. GSK Consumer Healthcare offers over the counter products and is one of the key healthcare companies in Hungary. GSK Vaccines has a cutting edge production site in Gödöllő. Gödöllő has a key role in producing purified Diphtheria and Tetanus antigens which are used in DT containing vaccines all over the world. During last two years GSK invested more than EUR 55 million in Hungary. These investments help secure the long-term supply of two of our vaccines to meet global demand, improve the technology on site and involve the creation of more than 110 new jobs.
III. DEVELOPMENTS AND SUCCESS STORIES

Leading Hungarian pharma producer Gedeon Richter announced to expand its capacities dedicated to biosimilar development and manufacturing in the town of Debrecen via a capital expenditure program worth EUR 48 million. The investment creates 125 new jobs.

Egis – with consortium partners University of Pannonia, University of Szeged and Research Centre for Natural Sciences of the Hungarian Academy of Sciences have undertaken a common project in Körmend. With the about EUR 18 million investment, the company develops new galenic products on the basis of already known APIs.

GlaxoSmithKline announced a development project of its Hungarian production site in Gödöllő in a value of EUR 57 million, creating 104 additional jobs. As a result GSK will manufacture Diphtheria and Tetanus Toxoids for broader scale of application.

Danish Xellia Pharmaceuticals has been completed at its Kőbánya site, Budapest a centre of excellence laboratory as part of EUR 11 million development. It will operate as a testing centre for active ingredients produced by all units. As a result of the expansion, more than 40 new jobs have been created so far.

Hungarian Béres Gyógyszergyár Zrt. has carried out expansion and technology development at its Szolnok production unit to the value of EUR 10.3 million. As a result of the project, the production and logistics area increased by almost one and a half times, a new technology is applied, and 60 new jobs were created.
IV. MEDICAL TECHNOLOGY
IV. MEDICAL TECHNOLOGY IN HUNGARY

THE LARGEST PHARMACEUTICAL AND MEDICAL INDUSTRY EXPORTER IN THE REGION
- 4.9% share within the total export of Hungary
- 150 export-oriented companies operate in the medical technology sector
- The pharmaceutical and the medical technology sectors employ a total of 48 thousand people

THE RATIO OF MEDICAL TECHNOLOGY WHEN COMPARED TO THE GROSS PRODUCT OF THE COUNTRY IS THE HIGHEST IN THIS REGION
- 1.5% share within the gross domestic product of Hungary

LEADING KNOWLEDGE AND DEVELOPMENT CENTRES RELATED TO THE MEDICAL SECTOR ACROSS THE COUNTRY
- Budapest, Debrecen, Pécs and Szeged

MEDICLUSTER: TIGHT COMMUNICATION NETWORK BETWEEN MEDICAL SUPPLIERS AND SERVICE PROVIDERS
IV. THE MAIN FACTORS OF SUCCESS

- Long-term access to all key factors of sustainable cost-effectiveness and successful operation
- Solid base for large scale manufacturing of a range of medical devices
- Multinationals and Hungarian SMEs create an ideal ecosystem
- 100 years of widely acknowledged innovation in medical technology
- Rich traditions in natural, technical and medical sciences
IV. MEDICAL TECHNOLOGY EDUCATION

- Cutting edge research and development in university spin-offs
- Leading knowledge and research centres related to medical technology
- Some of the research areas: medical imaging, electrical- and biosensor devices, laboratory diagnostics
BUDAPEST, THE HUB OF R&D

- Hungarian Academy of Sciences, Institute for Technical Physics and Materials Science
- GE Healthcare's R&D Centre
- Budapest University of Technology and Economics, Healthcare Technologies Knowledge Centre
- Semmelweis University, Department of Imaging and Medical Instrumentation

SZEGED

- GE Healthcare's R&D Centre
- University of Szeged, Institute of Informatics, Department of Image Processing and Computing Graphics

PÉCS

- University of Pécs, Szentágothai Research Centre

DEBRECEN

- University of Debrecen, Medical and Health Science Centre
In the school year 2015/2016, 559,272 Hungarian primary school students and 495,701 secondary school students were learning foreign languages, mostly English and German.

Hungary has approximately 200 bilingual primary and secondary educational institutions, where over 40,000 young Hungarians study mainly in English, German, French, Italian, Spanish, Russian and Chinese.

**IV. MEDICAL TECHNOLOGY WORKFORCE**

**TERTIARY EDUCATION IN HUNGARY**

**ACADEMIC YEAR**

2016/2017

**NO. OF INSTITUTIONS**

65

**total number of students**

287,018

(of which 205,560 are full-time)

Hungarian universities appear in the QS World University Rankings® 2018 (which is one of the most widely read university comparisons listing the world’s top 959 universities).

Source: HCSO
IV. DEVELOPMENTS AND SUCCESS STORIES

**Becton Dickinson (BD)**
- invested **€235 million** in the last 10 years
- inaugurated a **€20 million plant** in Tatabánya
- currently employs **800 people**
- **8,000 different types of research reagents** for flow cytometry

**Coloplast**
- Coloplast bought a **plot of land of 100,000 sqm** (for a three-phase factory) in Tatabánya and started production in 2001.
- Coloplast was **very satisfied with the development of mass production in Hungary** and quickly purchased more land in Eastern Hungary – Nyírbátor. Third phase of the Nyírbátor factory was completed in May 2018, which gives the possibility of future volume growth.

**B. Braun**
- invested **€200 million** in the last 40 years currently employs more than **2000 people**
- **65 million products** are manufactured per year
- operates **18 dialysis centres** countrywide providing treatment to 2,500 chronic patients

**HOYA**
- Hoya’s plant in Mátészalka (Eastern Hungary) is specialised in glass lenses
- the company employs more than **1,000 people** here.

**CooperVision**
- more than **1,200 employees** at present
- inaugurated a **$30 million development investment**
- manufacturing site at Gyál (near Budapest) produced more than **half billion contact lenses** in 2015
V. INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)
V. ICT IN HUNGARY

THE ROLE OF PRESTIGIOUS INTERNATIONAL COMPANIES
- Nearly two thirds of the gross value added was generated by companies with headquarters located abroad. In the previous years, the largest role was played by companies headquartered in the USA, the UK, or Germany.
- The internationally owned companies in the sector are characterised by high productivity, since the gross value added per employee is nearly twice as much as in the case of companies with Hungarian owners.

SIGNIFICANT INCREASE IN ICT EXPORT IN THE RECENT YEARS
- The average annual increase between 2010 and 2017 was 6.4%
- ICT made up 8.2% of the total export of Hungary in 2017

THE RATIO OF FOREIGN INVESTMENT IN THE SECTOR (FDI STOCK) IS THE LARGEST IN THIS REGION
- The value of the FDI stock generated by the ICT sector in 2016: nearly EUR 5 million

R&D CENTRES WITH A HIGHLY COMPETENT, COMPETITIVELY PAID WORKFORCE
SIGNIFICANT INCREASE IN ICT EXPORT IN THE RECENT YEARS

- annual increase between 2010 and 2017 was 6.4%
- ICT made up 8.2% of the total export of Hungary in 2017

### VALUE OF EXPORTS OF IT SERVICES IN HUNGARY

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1247</td>
</tr>
<tr>
<td>2011</td>
<td>1217</td>
</tr>
<tr>
<td>2012</td>
<td>1268</td>
</tr>
<tr>
<td>2013</td>
<td>1390</td>
</tr>
<tr>
<td>2014</td>
<td>1516</td>
</tr>
<tr>
<td>2015</td>
<td>1633</td>
</tr>
<tr>
<td>2016</td>
<td>1747</td>
</tr>
<tr>
<td>2017</td>
<td>1955</td>
</tr>
</tbody>
</table>

(Source: HCSO, 2017)

### COMPANY SERVICES PROVIDED

- **CITIBANK** IT support
- **COMPUTACENTER** IT support
- **GETRONICS EMEA** IT support
- **GREIF** IT support
- **GREPTON INFORMATICS** IT services, Outsourcing
- **DXC** IT consulting, implementation, support services
- **IBM** Operating System Support
- **CAPGEMINI** System support
- **IT SERVICES** IT services, Outsourcing
- **KBC** Data center services
- **TRANSCOSMOS** IT support
- **ORACLE** IT support, IT consulting
- **PACTERA** Testing, IT support
- **SAP** SAP support, Cloud support
- **TATA CONSULTING** Services Support
- **T-SYSTEM** Remote support services
- **UNISYS** IT outsourcing, Application support
- **ZTE** Network operation center
V. ICT SERVICES AND THEIR SHARE OF THE GROSS VALUE ADDED IN THE REGION

SHARE OF THE ICT SECTOR IN TOTAL VALUE ADDED BY SUB-SECTOR, 2015 (%)

- **IT and other information services**
- **Software publishing**
- **Telecommunications**
- **Computer, electronic and optical products**

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Hungary</th>
<th>Czech Republic</th>
<th>Slovakia</th>
<th>Slovenia</th>
<th>Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT and other information services</td>
<td>2.4</td>
<td>2.7</td>
<td>2.1</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Software publishing</td>
<td>0.1</td>
<td>0.3</td>
<td>0.04</td>
<td>0.01</td>
<td>0.1</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>1.9</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.3</td>
</tr>
<tr>
<td>Computer, electronic and optical products</td>
<td>0.9</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.5</td>
</tr>
</tbody>
</table>
- Hungary is an ideal location for R&D centres, large pool of local professionals are available with reasonable cost and exceptional knowledge of the industry.

- Hungary hosts several R&D centres, which focus on the development of applications and systems, whether for their parent companies or for external clients.

## V. ICT RESEARCH AND DEVELOPMENT CENTRES

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>SERVICES PROVIDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALBACOMP</td>
<td>IoT engineering</td>
</tr>
<tr>
<td>BETSSON</td>
<td>Back-end development</td>
</tr>
<tr>
<td>BLACKROCK</td>
<td>Methodology development centre</td>
</tr>
<tr>
<td>CLOUDERA</td>
<td>Hadoop-based data analytics solutions</td>
</tr>
<tr>
<td>DEALOGIC</td>
<td>Integrated content, analytics</td>
</tr>
<tr>
<td>EPAM</td>
<td>Software development</td>
</tr>
<tr>
<td>ERICSSON</td>
<td>Development of network management software, R&amp;D centre</td>
</tr>
<tr>
<td>EVOSOFT</td>
<td>CAD</td>
</tr>
<tr>
<td>GE</td>
<td>Digital solutions development</td>
</tr>
<tr>
<td>HUAWEI TECHNOLOGIES</td>
<td>Software development, network related R&amp;D</td>
</tr>
<tr>
<td>IBM BUDAPEST LAB</td>
<td>Cloud Video solutions development</td>
</tr>
<tr>
<td>LUFTHANSA SYSTEMS</td>
<td>Development of applications for the air transport industry</td>
</tr>
<tr>
<td>MORGAN STANLEY</td>
<td>Application development</td>
</tr>
<tr>
<td>MSCI</td>
<td>Application development</td>
</tr>
<tr>
<td>NATIONAL INSTRUMENTS</td>
<td>Systems development</td>
</tr>
<tr>
<td>NNG</td>
<td>Application development</td>
</tr>
<tr>
<td>NOKIA SOLUTIONS AND NETWORKS</td>
<td>Application development, R&amp;D</td>
</tr>
<tr>
<td>NETWORKS</td>
<td>CAD, IT consulting, IT Support</td>
</tr>
<tr>
<td>ORACLE</td>
<td>CAD, testing, IT support</td>
</tr>
<tr>
<td>PACTERA</td>
<td>Cloud application development</td>
</tr>
<tr>
<td>PREZI</td>
<td>Development of SAP SCM and cloud HCM applications</td>
</tr>
<tr>
<td>SAP</td>
<td>Applications for Siemens solutions</td>
</tr>
<tr>
<td>SYSDATA PSE</td>
<td>for the mobile and fixed telecom operators</td>
</tr>
<tr>
<td>T-SYSTEMS</td>
<td>Software development, remote support services</td>
</tr>
</tbody>
</table>
The strategic directions and development priorities for the domestic infocommunications and telecommunications sector in the 2014–2020 period are set out in the **National Infocommunications Strategy harmonized with the Digital Agenda of the European Union**.

The framework of the strategic action plan is determined in the Digital Nation Development Program (DNDP).

**THE GOALS OF THE DEVELOPMENT:**

- Strengthening (via digital technology) togetherness of local communities and the entire Hungarian society
- From 2019 at least **30 Mbps** internet will be available in every household, and **100 Mbps** internet in every second household
- The **Industry 4.0 program** supports digital transformation in all sectors of the Hungarian economy
- Assessing the relationship between public transport and **e-mobility**
- The **Digital Workforce Program** places emphasis on the training of a workforce with a high level of digital professional qualifications within the scheme of vocational training
- Hungary’s fourth generation (4G) **mobile Internet coverage** will be complete by the end of the year. The current rate is **95%** compared to the 59% EU average
- Adult education, retraining and continuation training
Over 60,000 ICT companies in Hungary. (HCSO, 2017)

App. 400,000 jobs related to digital economy in Hungary. (IVSZ, 2017)

Hungarian ICT labour is considered cost effective by international standards. In 2017, average gross monthly earnings in the field of IT services were EUR 1,652 in Hungary — one of the lowest in the region. (Vienna Institute for International Economic Studies, 2017)

Higher ICT employment ratio than in other CEE countries.

The Hungarian Association of IT Companies estimates that every new job added in the ICT sector creates 2.25 new jobs in other sectors, indicating the high significance of ICT professionals in the Hungarian economy.
Hungarian universities appear in the QS World University Rankings® 2018 (which is one of the most widely read university comparisons listing the world's top 959 universities).

Source: HCSO
In the school year 2015/2016, 559,272 Hungarian primary school students and 495,701 secondary school students were learning foreign languages, mostly English and German.

Hungary has approximately 200 bilingual primary and secondary educational institutions, where over 40,000 young Hungarians study mainly in English, German, French, Italian, Spanish, Russian and Chinese.

### SOME OF THE ALTERNATIVE IT EDUCATION PROGRAMS

- **CodeCool** – a private school offering 18-month courses for software developers
- **Blend Your Solution/IT Career Programme** – a three-to-four-month course for individuals with professional backgrounds other than informatics
- **Green Fox Academy** – offers a similar fast course in informatics with personal mentors
- **Ruander Education Centre** – offers various programming and IT courses
- **PentaSchool** – offers a very comprehensive IT and application development educational portfolio
- **Masterfield Training Centre** – offers basic IT and programming courses + specialized training programmes, such as banking informatics
- **Training360** – offers various IT, programming and IT management courses
- **NetAcademia** – offers online courses primarily in the field of programming
V. ICT IN HIGHER EDUCATION AND AMONG MARKET OPERATORS

COOPERATION BETWEEN HIGHER EDUCATION INSTITUTIONS AND PRIVATE ENTERPRISES

UNIVERSITIES IN OTHER CITIES

UNIVERSITY OF PANNONIA VESZPRÉM
- Continental
- Flextronics
- GE
- IBM
- Valeo Auto-Electric
- ZIEHL-ABEGG

UNIVERSITY OF PANNONIA VESZPRÉM
- Genesis
- Flextronics
- GE
- IBM
- Valeo Auto-Electric
- ZIEHL-ABEGG

UNIVERSITY OF PÉCS
- DSS Consulting
- ESRI
- Flextronics
- Hauni
- IT Services Hungary
- LG Electronics
- Novell
- Precognox
- Siemens
- ZIEHL-ABEGG

UNIVERSITY OF DUNAÚJVÁROS
- Budapest Public Transport Co.
- Cisco
- DORSUM
- Evosoft
- IntelliFactory
- MÁV Hungarian Railways
- National Instruments Hungary
- Siemens
- SwiconGroup
- Sybase
- Texas Instruments
- Wescast Hungary

UNIVERSITY OF MISKOLC
- Dolphio Technologies
- Johnson Electric
- Misys Hungary
- Mobile Engine
- National Instruments
- Robert Bosch
- Saigo Logistics
- SimpleSoft
- SzinvaNet
- Takata Safety Systems Hungary
- Vodafone

UNIVERSITY OF DEBRECEN
- 4iG, Delta Informatika
- I-QRS, IT Services Hungary
- Leonar3Do
- National Instruments Hungary
- Satrax

Szent István University, Gödöllő
- 4iG, Siemens
- Tata Consultancy Services, Xerox
The innovative capabilities of the Hungarian ICT sector are best illustrated by the high number of local innovative companies that have emerged in recent years. Many of them operate on international markets and are regarded as leading innovators in their respective fields worldwide. Some of the most innovative companies are listed below:

**CLOUD SERVICES**
- LogMeIn
- Prezi
- Neostratus
- MiniCRM

**MOBILITY**
- Attrecto
- MobileEngine
- Cellum
- NNG
- Intelliport
- Koonsys
- BOOKR Kids

**BIG DATA**
- Gravity
- Starchema
- Enbrite

**FINTECH**
- Appello
- Wyze

**SECURITY**
- Balabit
- Kúrt
- Navayo
- Research
- CrySys Lab
- TresorIT
- Seon
- Quadron

**3D ANIMATION AND VIRTUAL REALITY**
- Digic Pictures
- Dolphino Technologies
- Leonar3do
- ARWorks

**TEXT AND SPEECH RECOGNITION**
- AITIA
- Nextent
- Nydeum

**WEB DEVELOPMENT**
- CarnationGroup
- Isobar Budapest
- P92RDI
VI. FOOD INDUSTRY
100% GMO FREE

ONE OF THE 3 LARGEST CROP PRODUCERS OF THE REGION

DUE TO ITS EXCEPTIONAL GEOGRAPHICAL LOCATION, IT ENABLES THE AGRICULTURAL PRODUCTION OF A MULTITUDE OF CROPS
VI. TOP 6 FOOD INDUSTRY SEGMENTS

MOST RELEVANT SEGMENTS
OF THE HUNGARIAN FOOD INDUSTRY

1. meat processing and preserving
2. mineral water, soft drinks, alcoholic and other beverages
3. pet food and feed production
4. milk processing, dairy products
5. sweets, snacks, convenience and other foods
6. fruit and vegetable processing and preserving

DISTRIBUTION OF THE PRODUCTION VALUE OF FOREIGN AFFILIATES IN THE HUNGARIAN FOOD SECTOR BY CONTROLLING COUNTRY, 2015

- 22% Switzerland
- 18% USA
- 17% Austria
- 9% Germany
- 8% France
- 7% Netherlands
- 7% Italy
- 3% Belgium
- 3% Czech Republic
- 3% Other countries

*Please note that due to lack of available data on beverages sector in the UK and the Czech Republic, the graph incorporates only the food segment for these two countries.

Source: HCSO FATS Statistics, Manufacture of food products and beverages 2015
VI. THE GEOGRAPHICAL DISTRIBUTION OF FOOD INDUSTRY EDUCATION

As of February 2018.

10 INSTITUTIONS OF HIGHER EDUCATION

are engaged in food industry related programs. Several additional universities provide agriculture, biology, chemistry and health related BSc, MSc courses and higher-level vocational trainings as well.
Similarly to education research activities, Hungary’s agriculture and food industry has a long history. Seed breeding has an important status in agricultural research and is an integral part of each organization on the next page.

Hungarian basic research is internationally recognized, and applied research has produced a number of new products and technologies. The main focus of agriculture related scientific studies is on developing climate-proof, yet GMO free crops (grains, soy and sorghum).
Hungary has a strong and highly differentiated system to develop skills and competencies required by the food industry.

There is a traditionally strong institutional system for agricultural training, education and research. Classical trades and crafts (such as butchers, bakers, machine operators, etc.) are taught in the framework of secondary vocational training, while the system of training technicians, managers, and other mid-level professionals can only be entered by students having completed secondary vocational or grammar schools.

Globally acknowledged human capital at a competitive cost

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Average Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1944</td>
<td>Manufacturing and mining manager</td>
<td>$1,175</td>
</tr>
<tr>
<td></td>
<td>Food industry engineer</td>
<td>$1,352</td>
</tr>
<tr>
<td></td>
<td>Chemist</td>
<td>$1,381</td>
</tr>
<tr>
<td></td>
<td>Food industry technician</td>
<td>$842</td>
</tr>
<tr>
<td></td>
<td>Butcher</td>
<td>$594</td>
</tr>
<tr>
<td></td>
<td>Baker, confectioner</td>
<td>$594</td>
</tr>
<tr>
<td></td>
<td>Food and beverage products machine operator</td>
<td>$717</td>
</tr>
<tr>
<td></td>
<td>Packaging, bottling, and labelling machine operator</td>
<td>$674</td>
</tr>
</tbody>
</table>

Source: National Labour Office - HUF/EUR=309.9
*The wages are dependent on the region, on the skills and on the experience of the employees.
LIST OF THE MOST IMPORTANT ASSOCIATIONS OPERATING IN THESE AREAS
Vehicle industry, electronics:
Hungarian Vehicle Industry Association (MAGE) http://mage.org.hu/
Hungarian Association of Automobile Dealers (GÉMOSZ) http://www.gemosz.hu/
Hungarian Electrotechnology Association (MEE) http://www.mee.hu/fooldal

Life sciences:
Hungarian Biotechnology Association http://www.mrns.hu/

Medical technology:
Association of Medical Devices Manufacturers http://www.amdm.hu/
Association of Health Technology Suppliers and Medical Device Manufacturers (ETOSZ) http://www.etosz.hu/rolunk.html
Scientific, Educational and Advocacy Association of Hungarian Diagnostic Equipment Manufacturers and Distributors (HIVDA) https://hivda.hu/
Association of Distributors for Public Health (FESZ) http://www.gyogyasz.hu/

Information and communication technology:
ICT Association of Hungary (IVSZ) http://ivsz.hu/
Association of the Leading IT Professionals of Hungary (MVISZ) https://mvisz.hu/

Food industry:
Association for Innovative Agricultural Technology http://imbe.hu/egyesulet
Hungarian Food Science and Technology Association (MÉTE) http://mete.hu/
National Association of Foodstuff Manufacturers (ÉFOSZ) http://www.efosz.hu/
OECD FDI database

Központi Statisztikai Hivatal (KSH) – Hungarian Central Statistical Office (HCSO)

Nemzeti Befektetési Ügynökség – Hungarian Investment Promotion Agency (HIPA)

- Automotive Industry in Hungary (2018.09.20.)
- Electronics Industry in Hungary (2017.07.11.)
- Food Industry in Hungary (2018.09.20.)
- ICT in Hungary (2018.09.20.)
- Life Sciences in Hungary (2018.09.20.)
- Medical Technology in Hungary (2018.09.20.)