SWOT analysis BUT (January 2020)

Strengths

Brandf

- Traditional technical university with long historical roots, recognized by the public as one of the two main technical universities in the CR (together with CVUT).
- Able to attract young, talented, technically-oriented students, mostly from Moravia and Slovakia (still being preferred to other technical universities in these regions).

Education

- Education program covering many technical disciplines (potential for interdisciplinary research).
- To some extent (especially in some study programmes), capable of generating motivated students with very good theoretical backgrounds, ready to compete with those from established foreign universities.

Infrastructure

- Availability of modern and often state-of-the-art laboratories – up-to-date equipment (OP VaVPI projects), lots of physical space.
- Updated building infrastructure (mostly completed).

Research

- Nuclei of high-quality science across the university with a potential to approach top-level status.

Societal Impact and PR

- Education and information of society on technology advances (e.g. Open University, Brno Electron Microscopy Days, Excursions to laboratories).
- Increasing quality of public relation activities.

Weaknesses

Academic environment

Underdeveloped scientific environment throughout the university compared to foreign research universities – insufficient perception of the unity of teaching and research as a general university cultural principle, and students research activities as a regular part of learning.

Examples

- Common saying at BUT: "we are a university and so we should preferentially teach").
- Research as extra work (hobby)? – extra load for some researchers due to unfair distribution of teaching and research duties (at departmental level).
- Scientific work is sometimes considered as "fake" and useless (e.g. citations are being negotiated and scientists are just another kind of mafia).

Vision and Mission

- Missing vision and mission having clear ambitious key goals, communicated, discussed and accepted by a broad academic community including key academic workers. Consequently, effective non-formal straightforward strategy for achieving the vision and mission is not available.

- Weak all-university policy and support in strategically important directions, subjects, and activities - too big institutional fragmentation.

- "Walls" between individual university units (low interest in all-university issues, loose identification with the university and low shared responsibility) – potential for a synergy effect not released – low motivation for intra-university and interdisciplinary/inter-department collaboration.
- Key development issues of the university are being determined mostly by officials and administrators and formal boards without direct collaboration with/involving key academic workers with solid international experience and background.

Scientific outputs

- Low motivation for achieving top and unique scientific results and, consequently, for their publication in peer-reviewed scientific journals.
- High percentage of TAČR and MPO grants – natural and beneficial to technical universities. However, in many cases they can be achieved without significant publication record and they do not explicitly require "hard" outputs (either licensed patents or publications).
- Too big orientation on contracted research with companies (rather a routine service than research delivering unique publishable results).

Consequently, very poor average science output by means of citations and publications (i.e. when benchmarked with similar institutions in EU15).

Internationalization

- Too low recruitment of scientists and their teams from abroad – the international faculty (academic staff) ratio is low.
- No English as a lingua franca.
- Low number of study programmes taught in English.
- The international student ratio is low.
- Low level of long-term (6 to 24 months) mobility abroad among post-docs and junior researchers.

Faculty members

- Wide spread and generally accepted cronyism at various levels – in practice, no international competition for scientific and managerial positions.
- Academic carrier progress is supporting inbreeding – easier to "sit down" to become a junior or senior academic – long-term internships abroad rather make academic career progress more difficult.
- Consequently, almost all academic staff at the university are its former students.
- No systematic support for excellent researchers and teachers by means of special funds/weak in retaining the excellent people. ***Are excellent competitive researchers from other universities truly welcome?*** And is BUT attractive for them?
- New academics do not have the appropriate financial and spatial conditions to set up new research groups.
- Too high ratio of students/academics.
- Sabbatical leave is rarely used (are they welcome?).
- Insufficient number of researchers have ever been working in research centres or universities abroad.

Management

- In principle, no evaluation of management structures, institutes, departments and groups based on methods used in highly ranked universities abroad (only at a limited scale at CEITEC), evaluation of key activities, involvement of international boards of experts.
- Often, very old-fashioned management structure (from the department to rectorate level), run to preserve, not to grow.
- Lack of international competitions for all management positions (head, director, dean, rector).
- Missing body representing interests of top scientists (Board of Advisors).
- No stable and continuous professional management (e.g. technology transfer, finance).
- No continuous and thorough HR processes, no aims and goals defined (all levels).
- High administrative load of researcher. Research team leaders spend more time with non-research management activities and funds gathering than with management of the research or the research itself.
- No effective strategy for exploitation of alumni support.

Students

- Low attractiveness for talented high-school students.
- Limited programmes to search for talented high-school students, poor selective tools (CVs and motivation letters not required as a part of application for study).
- In some departments, students have highly restricted access to university laboratories and facilities outside scheduled lectures.
- In some departments, low number of scientists who can attract students (having a good research topic and a project to support them). Not enough supervisors can teach PhD students how basic research is being done at established universities and research centres.
- Low number of inter-faculty PhD programmes.

- Low number of motivated students for innovations and running start-ups.
- Minimal student support for extracurricular activities (student clubs, …).

Innovation

- Low level of industrial involvement/low or very low level on participating in the core industrial programs.
- No coordinated programme to search for investors.
- Non-focused marketing at long-term goals of the university.
- Very low level of technology transfer and third role of the university.
- Very low number of start-ups and spin-offs.
- Insufficiently developed university environment truly motivating and supporting researchers and students to develop BUT know-how into a business, e.g. spin-offs and start-ups (a-priori criminalization).
- Innovative researchers run own businesses in the field of their expertise without participation of BUT.

Financing

- Too high ratio of competitive funding – high insecurity preventing from planning long-term research group development.
- Short-term financial planning at all levels (departments, faculties, university).
- Minimum of non-project (curiosity) research activities.
- Low direct mobility funding for non-EU destinations for doctoral and academic staff.

Opportunity (mostly external factors)

Unique environment in the Czech Republic:

- Brno as an emerging science and innovation hub (concentration of high-tech companies unique in Central Europe).
- Regional support for research and innovation (JIC, Technology Innovation Transfer Chamber).
- Location and "direct" access to the main airport (Vienna).
- Ability to carry out cross-domain and multi-disciplinary research.
- Availability of highly educated and skilled human resources in the Brno area.
- Existing strategic partnerships with well established universities in nearby Vienna.

Further
- Good and deepening contacts with top EU universities.
- Available EU funding (H2020).
- Possibility to get involved in the various EU structures, i.e. Centre of Excellence network.
- New evaluation methodology M17+.
- Czech Republic is one of the world's safest countries.
- Brno and Czech Republic often cited as one of the best student destinations (QS).

Threats (mostly external factors)

- Other Czech universities will form the network of excellence before BUT manages to reorganize.
- Limited financial sustainability.
- Unclear possibilities (financial sources) to innovate current up-to-date research infrastructure within the next 10 years.
- Very high maintenance cost of the research infrastructure(s) – strong dependence on public funding for renewal and service.
- Fierce competitions for talents from other universities.
- Evaluation methodology M17+.
- Our low level representation in decision making bodies.
- Low salaries base – difficult to compete with foreign and even some Czech universities (brain drain).
- High dependence of teams and research groups on short-term project funding (short "lifetime" of groups).