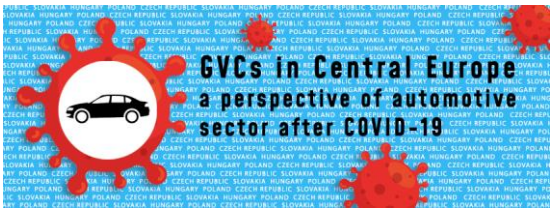

Visegrad Fund

GEARWHEEL FACTORY

A case study by Andrea Szalavetz

The case was developed with support of the Centre of Economic and Regional studies (CERS), Budapest, Hungary and by the Visegrad Fund in 2021. It is intended to be used as a base for discussion in courses focusing on Management, International Business and Marketing.

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Fogaskerékgyár Ltd. (Gearwheel Factory) is a typical domestic-owned company, established nearly 30 years ago, in 1992. It is owned by three Hungarian private persons and has 60 employees (2019). Its turnover was EUR 2.5 million in 2019. Export accounted for nearly 10% of sales. Since the main profile of the firm is designing, manufacturing and repairing drive gears and manufacturing drive-technical elements, sales are project-based1, that is, the company does not manufacture in long production runs. Consequently, the company abstains from participating in pure cost-based competition2: its value proposition rather concerns quality, and is based on decades-long knowledge accumulation in design, engineering, and repair-related issues.

The company has two manufacturing plants – one in Tata and another in Budapest, in Csepel (both are established industrial regions). Additionally, it has an engineering office in Budapest.

The customers and business partners of Fogaskerékgyár are very heterogeneous. As the manager interviewed put it, “we are suppliers of almost the whole Hungarian industry”3. Consequently, automotive supplies account for a minor share of total sales, even if the industry is considered broadly, including heavy duty vehicles manufacturing firms, such as Rába, public transport companies, such as the one serving the transport of Budapest (Fogaskerékgyár delivers components to funiculars and undertakes repair and retrofit work for the company), and the Hungarian Railway Company.

By contrast, except for some services provision4, Fogaskerékgyár’s supplies to automotive OEMs are indirect, since the company has not obtained the quality certificate necessary for direct automotive supplies. (Although Fogaskerékgyár obtained an ISO 9001 quality assurance

[1] The fact that the company specialises in individual and specially designed products accounts for the volatility of sales and export ratios. In 2018, for example, export accounted for 30% of sales.
[2] The manager interviewed recounted a story to substantiate this claim. A global automotive supplier with three manufacturing plants in Hungary, specialised in the assembly of axles and drives, inverters, sealing products etc. contacted them requesting a quote for specific gearwheels. It turned out that the potential customer was very rigid concerning the prices it was willing to pay. As the manager interviewed put it, it was not a Chinese but rather a Vietnamese price level they had in mind. The company interviewed did not sign the contract. Although competition in this field is quite strong in Hungary, the global company has apparently been unable to find a supplier, since it recently opened a fourth manufacturing plant in Hungary, specialised in manufacturing drive system components (e.g. drive gears) for internal use.
[3] Gear drives are important components of the production equipment in practically all industries. Accordingly Fogaskerékgyár supplies mill and furnace drives for the cement industry, extruder drives for the plastic industry, mill drives for the paper industry, crane drive gears, conveyor drives, agricultural drive gears, and so forth.
[4] Examples include the modification or reconditioning of machine tools for OEMs, e.g. to make them suit the production tasks related to new products manufacture.

system in 2003 and it and regularly renews it since then, this is not sufficient for being entitled to supply automotive OEMs directly.) Accordingly, it happens from time to time that a certified supplier of an OEM is entrusted by the OEM to design an auxiliary equipment performing certain tasks at a production line, and the certified supplier would then prepare the design and outsource the manufacturing of the given special-purpose machine to Fogaskerékgyár.

Upgrading for the company refers mainly to new technology implementation, enabling, for example, precision CNC machining, 3D printing, and/or special measurement and testing. Since purchasing new kinds of special machinery requires massive investment, the company regularly submits applications for public subsidies aimed at promoting SMEs' technological upgrading.

One of the most recent automotive-specific programmes Fogaskerékgyár managed to participate in, is the so-called Complex Innovation Programme for creating jobs in the Pons Danubii region. This programme is cross-border one, funded by INTERREG. The Pons Danubii region includes the twin cities in Slovakia and Hungary: Komárom and Komárno, as well as additional neighbouring cities, such as Tata, Oroszlány, Kolárovo, Hurbanovo and Kisbér. This region hosts a surprisingly large number of car manufacturing and automotive component manufacturing plants. According to a complementary interview carried out with the head of the employment office of the government office of Komárom–Esztergom county, there are more than sixty notable automotive companies in the Hungarian part of this cross-border region.

The aim of the INTERREG programme was to promote the upgrading of the automotive sector in this region, and enable automotive stakeholders to respond to the paradigm changes this industry is facing in innovative ways, e.g. by developing new products and providing improved training to the workforce. Altogether, the programme envisages the creation of high value-added jobs in this automotive region.

The role of Fogaskerékgyár in this programme is to host an 'innovation laboratory', that is, a shared development centre for regional SMEs. The company received subsidies to purchase a 3D printer, equipment for advanced material analysis, and a CNC machining centre – to be used for the design, preparation and testing of prototypes.

As the manager interviewed explained, if an SME has a new product idea, it can rapidly turn this idea – shown initially only on paper – into a fully-fledged product, or rather, a prototype. Product design is helped by a CAD design programme (purchased also in the framework of this project), allowing for testing and modifying the concept, and fixing any emerging problems

virtually. Next, the innovator SME can move on, to CAM (computer-aided manufacturing) by feeding the relevant software programme into the CNC machine or the 3D printer.

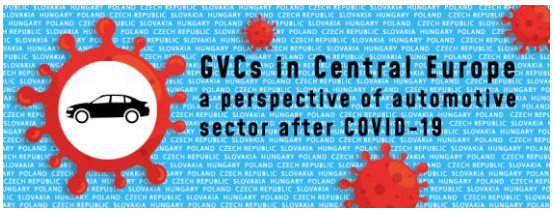
This kind of prototype development and testing is too expensive to be affordable for individual SMEs. This INTERREG project started only recently, consequently there are no entrepreneurial success stories yet. Fogaskerékgyár was willing to host this laboratory in the hope of getting access to these services easily. It was also hoping that it can find new collaboration partners among the participating entrepreneurial SMEs. At the same time, the company also hosts a dual education workshop equipped with virtual technology for trainees. This latter workshop was also funded by the INTERREG programme.

Although government support programmes subsidising the implementation of advanced manufacturing technology, and the aforementioned INTERREG programme provide non-negligible support for upgrading, these programmes tie up a lot of Fogaskerékgyár's resources. Consequently, in order to avoid the well-known trap of an excessively rapid expansion of assets, the management of the company decided to 'slow down' and focus on better absorbing and mastering the new technological solutions before initiating further expansionary projects.

Nevertheless, the company has several further strategic objectives, each of which involves upgrading. The first one is the implementation of an enterprise resource planning system, to be able to better calculate costs and expenses – also in terms of working hours and machinery capacity. Furthermore, an ERP system is expected to improve capacity planning and enable a greater transparency of the state of affairs.

Another medium-term objective is to complement the portfolio of the company's current manufacturing and engineering services with products characterised by larger batch sizes. According to the manager interviewed, this will require not only changes in the production equipment but also organisational changes, and a change in the corporate culture. "Large-scale manufacturing is completely different from what we have been doing so far. It requires a different managerial approach, different ways of working, not only in production but also in support functions. Consequently, we will organise this activity into a separate division."

The results of this latter strategic step will be interesting to investigate by means of longitudinal research. If this strategy turns out to be successful, the case could demonstrate that upgrading is possible not only by shifting from relatively low value added, scale economy-based mass production to fully customised and high value-added activities but also the other way round, by diversifying towards larger batch sizes.



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Questions related to the case study:

1. Provide examples of Slovakian companies that have abandoned cost-based competition. Describe the antecedents, the features of prior strategy (how was cost-based competition manifested), describe what motivated the new orientation, and provide evidence of strategic choices that suggest that they are now competing based on non-cost considerations.
2. Does the implementation of new digital technologies necessarily involve upgrading? Please argue for and against.
3. The case study argues that upgrading is possible not only by shifting from relatively low value added, scale economy-based mass production to fully customised and high value-added activities but also the other way round, by diversifying towards larger batch sizes. Do you find this assumption plausible? What are the complementary conditions that are necessary to make such a shift indeed exemplify an upgrading case?