

VAZ and Higher Education Institution: Historical Parallels. Experience in Implementing Development Strategy 2020

Togliatti State University
V.V. Yeltsov, V.G. Doronkin

In Togliatti, the automobile plant and the state university were established approximately at the same time and developed simultaneously. Currently, AVTOVAZ development strategy includes the program of personnel training and retraining. The strategy of Togliatti State University implies development of new engineering education programs in cooperation with the professionals of the automobile plant. Such programs will allow developing professional qualities in demand within automotive business sector. With business and education overlapping, it is possible to boost the national economic growth.

Key words: Togliatti State University, JSC AVTOVAZ, development strategy, economic stability, education quality, personnel training, education programs, automotive industry.

The history of AvtoVAZ began on July 20, 1966, when the Soviet government decided to construct an automobile factory in Togliatti. As late as April 19, 1970, the first six cars VAZ 2101 "Zhiguli" were launched. On October 28, 1970, the first vehicles were transported to Moscow by train. The 100000th car of this model was produced on July 16, 1971. On December 22, 1973, the factory was officially approved by the State Commission. The design capacity was 660 thousand cars annually [1].

On March 10, 2010, the AvtoVAZ Board of directors adopted a business-plan until 2020, according to which the vehicle production should reach 1.2 million items per year by the end of 2020. In February 2012, the design capacity of the factory was 900 thousand vehicles annually.

Automotive industry is one of the branches of engineering manufacture that determine the economic and social level of several regions of the country. However, the situation of the industry has been ambiguous for the last ten years. The growth of the Russian car market is not conditioned by the increase in the share

of domestic producers. Thus, the share of Russian engineering reduces and the engineering staff leaves the industry.

The leading international car producers, who entered the Russian automotive industry, did not intend to launch contemporary cost-efficient production of car components for foreign cars in Russia. It is explained by the fact that the Russian legal system does not bind them a big amount of production capacity. Moreover, a lot of car components for Russian vehicles are produced in other countries. This fact made the Russian government elaborate a comprehensive strategy for the automotive industry development to 2020, which was adopted in 2010.

The strategy for the automotive industry development includes such basic measures as:

- development of the national base of R&D and automotive clusters;
- a complex of state measures to support domestic automotive industry including a medium-term activity plan [2].

The implementation of these activities aims at the following objectives:

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V.V. Yeltsov



V.G. Doronkin

1. to develop infrastructure for R&D to design new vehicles, auto components and technologies that are competitive on the global market;

2. to improve a staffing system of the industry based on a comprehensive prediction of enterprises' needs in competencies that meet current and prospective level of technology and management.

Currently, the problem of staff training for the domestic automotive industry is acute. Graduates with a Bachelor's degree both from universities and colleges do not have the competencies required by the employers, the training process being out of touch with the production, and the education facilities being out of date. Apart from this, low income level and job prestige in the industry do not encourage students to acquire new knowledge and competencies and to stay in the industry.

Thus, the Strategy for the automotive industry development in Russia states: « To train top-ranked professionals who are able to cope with the design and production tasks of a modern industry, to develop a multi-level higher education system that includes both profound fundamental (theoretical) training, and sufficient professional skills obtained during design, production, technological and pre-degree internships. It is necessary to develop requirements for new professional standards according to jobs and positions in the industry, educational and curricular documentation for State Educational Standards of new generation, and targeted training programs coordinated with the enterprises of the industry [2].

The strategy of "AVTOVAZ" complies with the development strategy of the Russian automotive industry in structure and content. Thus, it contains the same clusters and areas as the Federal strategy of automotive development has. Some activities in the frame of the strategy aim at interaction with Russian universities, including the biggest regional higher

institution – Togliatti State University, which, apart from the automobile plant, is a "town-forming factor".

The history of the University dates back to 1951, when the branch of Kuybyshev Industrial Institute was founded. The first hydraulic and electric engineers graduated the University in 1956. With 2800 students and three faculties, it was reorganized in Togliatti Polytechnic Institute (TPI) in 1966. The foundation of the TPI was also conditioned by the demand for personnel for the plant under construction. In 2001, TPI became Togliatti State University (TSU).

Having made a progress from the branch of Kuybyshev Industrial Institute to the modern University, over 65 years, TSU have trained about 70 thousand graduates of different specialties. TSU alumni are country's leaders, mayors of cities, State Duma deputies, and top managers of big enterprises including JSC "AVTOVAZ". The TSU graduates have created a highly qualified environment both in Togliatti and Samara region [3].

Togliatti State University, as a big regional higher education institution, regards the problems of Togliatti as a global challenge of all Russian "one-company towns" as well as understands modern challenges of the automotive industry. Thus, the University developed the strategy of the University development. In 2010, "TSU Development Strategy till 2020" was first adopted. It was discussed and coordinated by a wide range of stakeholders: faculty members, the Academic Council, the Board of Trustees, and top and production managers of "AVTOVAZ".

Taking into consideration the main provisions of both the Federal Strategy of automotive industry development and the Strategy of "AVTOVAZ", TSU recognizes the following priorities in its development: "Education", "Science, Innovation, Engineering and Consulting", "Management and Human Resource", "Service and Infrastructure", "Marketing, Positioning and Promotion".

One of the strategic areas in education

is to adjust TSU education programs to professional standards and employers' requirements with regard to growing competition in the education market that results from Russia's WTO accession and distance technologies. It is implemented through the following activities:

- to ensure strategic partnership with the key employers of the city and region, and professional communities to develop qualification requirements, competence model of the graduate and professional standards;
- to use the monopoly of TSU in main areas of engineering training in the city and the domination in the automotive industry of the region [4].

Since 2010, TSU have carried out the following activities to implement the TSU development Strategy and interaction with the automotive enterprises in terms of training of engineering staff and doing research and development:

1. TSU is claimed to be a "reference university" in the Program of innovative development (PID) of "AVTOVAZ", which is the company with state participation. TSU is chosen as a research and education center with approved research and technological areas and amount of cooperative work (in design and technology), as well as developed programs to improve education and training professionals for hi-tech industry.

The main R&D activities carried out by "AVTOVAZ" in collaboration with Russian higher education institutions and research centers over the period 2011-2016 are as follows [5]:

- development of advanced and upgrading of serial engines,
- advanced systems and parts of electrical equipment and electronics for vehicles,
- electric and hybrid vehicles,
- virtual design,
- methods of construction development,
- compliance with advanced vehicle standards,
- vehicle ergonomics,

- advanced technological processes,
- new materials.

To determine priority areas of research and development in the medium term (5 years) and for 1 year, a united scientific and engineering council in cooperation with Samara University was founded. It consists not only of the leading faculty members of the universities, but also specialists of "AVTOVAZ", who are involved in implementing the projects of the enterprise development.

2. Targeted training is provided by TSU for particular production conditions and needs of employers, which is based on a trilateral agreement between the University, "AVTOVAZ", and a student. "AVTOVAZ" funds additional training courses for the students, including foreign language courses, for better adaptation of the TSU graduates in the production structures of AVTOVAZ-Renault-Nissan Alliance.

3. There is a practical experience in providing training courses, modules, and internships at the plants of "AVTOVAZ" and the enterprises producing auto components.

4. The grants in the frame of decisions № 219 and 220 of the Ministry of Education allowed TSU to purchase the equipment for research and training activities. The equipment was chosen with regard to the nomenclature of education programs approved by "AVTOVAZ" and the enterprises producing auto components.

5. According to the contract with the automotive plant, TSU provides retraining and professional development courses for the engineers responsible for design and technology at the plant, but having "non-core" qualification.

6. TSU offers 10 master's, 14 bachelor's, and 6 specialist's degree programs for automotive industry. Three education programs "Mechanical-engineering Technology", "Equipment and Technology of Welding Industry", and "Power Supply to Industrial Facilities" were accredited according to «EUR-ACE» criteria. These programs are listed in European Network

for Accreditation of Engineering Education (ENAE) register. According to the accreditation conditions, the graduates of these programs can be recognized as "Professional Registered Engineer", on meeting the ENAE requirements. Most of these graduates work for JSC "AVTOVAZ". In February 2016, the Accreditation Center of Association for Engineering Education of Russia (AEER) assessed five master's degree programs in terms of their compliance with the standards. The AEER Accreditation Board decided to award «EUR-ACE» label to the programs.

7. The representatives of "AVTOVAZ" take part in state assessment committees that are involved in assessment of engineering degree's thesis.

8. In 2013, TSU won a competitive tender in the frame of President's Program of Professional Development of Engineers, 2013-2014, to provide further education programs for engineers in the spheres of "Energy Efficient and Environmental Friendly Transport with Alternative Energy Sources" and "Advanced European Requirements Related to Vehicle's Passive Safety". The first stage of the President's program has been completed. Both courses are finished. 30 employees of "AVTOVAZ" have successfully defended their thesis and been awarded with a certification of professional development. The final stage of the training in the frame of the President's was internship with UTAC-CERAM (France) and MES s.a. (Switzerland). The graduates had the possibility of learning modern and advanced approaches to electro mobile development and functional parts implementation. The Internships allowed them to know about current and prospective legal and technical requirements to passive safety, as well as to obtain practical experience in application these requirements and protocols in concrete situations. The program was implemented in cooperation with TSU and "AVTOVAZ".

9. Project-based learning is one of the well developed forms of educational

process in TSU. The example is the international education, engineering and sport project "Formula Student", which was launched by the American Society of Automotive Engineers (SAE). The project has been implemented in TSU since 2008. Students of different specialties design and build a racing car, and introduce it on international racing competitions. The training involves such practical courses as "Mechanical-Engineering Technology", "Cutting Work", "Welding Processes", and "Assembly Process". The results are reflected in course papers and graduate thesis of the TSU students. "AVTOVAZ" takes an active part in implementing "Formula Student" project. The participants' skills are highly valued at the enterprise, and the graduates take well-paid jobs with prospects.

At the same time, it is necessary to note that the intensity of collaboration between the alliance and the University has significantly reduced since "AVTOVAZ" joined the alliance "AVTOVAZ-Renault-Nissan" and Mr. Anderson was appointed the head of the enterprises. In addition, the level of localization of Russian vehicle production has also reduced, because some Russian producers of auto components were substituted by foreign companies. Structural changes of engineering department, which led to engineering staff reduction, and collapse of some Russian auto components producers had a negative impact on the enterprise-University interaction in terms of research and development and staff training. In particular, the program of targeted training for the enterprise was first reduced from 100 students to 30, and then to zero. The united scientific and engineering council including representatives of "AVTOVAZ", TSU and Samara University, which was established in 2012 and chaired by Mr. Dibuan, was abandoned when the chairman was dismissed. The alliance may have economic reasons. However, pursuing only profit, the alliance should remember that the Russian Federation spends a big amount of funds to support

the automotive industry. Thus, it does not seem promising for regional and national economic development to transform the auto plant into "screwdriver industry" without any engineering structures, research and development activities, professional development of the staff, as well as without involving Universities in mutual implementation of the development strategies.

Conclusions

1. Implementation of joint activities that

comply with the development strategies of TSU and "AVTOVAZ" ensures effective development of not only the program participants, but also the whole automotive industry of the country.

2. Current experience of the alliance-TSU interaction in the frame of strategic area development reveals the necessity to multiply the points of contact between education and research activities of University and production and innovative activities of automotive enterprises.

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