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ENHANCING EXPORT COMPETITIVENESS OF THE ELECTRICAL INDUSTRY OF UZBEKISTAN

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Abstract: Uzbekistan is currently trying to fill in its manufacturing base under the "Uzbekistan 2030" strategy but is still lagged behind in global electrothermic household appliances market. The HS-8516 story illustrates a clear knowledge gap – while exports of HS-8516 products are five times larger than they were in 2017, most sales remain close to home in the regions close to Uganda, partially driven by easy access to regional markets: the country's rapidly growing production capacity is not so far leading to more diverse high-value exports on the global market. Combining STEP analysis with national policy benchmarking and analysis, this mixed qualitative and analytical study investigates the potential for Uzbekistan to develop a competitive export niche translated to human-like style. This is characterized by rapid growth production, high export volumes, and a regional market. However, the sector remains to depend on greater than 90% of its elements being imported, minimal rdl and also a lack of complete compliance with global guidelines, such as the CE marking.. Results show that substantial unrealized export potential still exists for many product classes, particularly for mid-technology machinery. The study suggests Uzbekistan about increasing their international competition by modernising manufacturing, enhancing certification and QA, expanding innovation capabilities, and widening its export geography. Investment in technology, skills and compliance frameworks are the keys to turning this growth into an international export niche that is sustainable.

Keywords: Market Research, Electrothermic Household Appliances, Export Potential, Manufacturing Competitiveness, STEP Analysis, Industrial Modernization, International Standards, Technological Upgrading, Market Diversification, Policy Suppor.

Introduction. With Uzbekistan restructuring into a more diversified, technology-oriented economy it notices an increasing role of electrotechnical manufacturing, particularly electrothermic household appliances. The country, therefore, aims to continuously strengthen high value production as it pursues the targets set by the Uzbekistan 2030 strategy in building a long-term development model [1]. This sector relates to wider themes present in industrial competitiveness theory, export diversification and technological upgrading, which in greater detail illustrate how emerging economies build capabilities and progress up into more sophisticated markets [2]. Trade data reveals a consistent increase of appliance exports from Uzbekistan over the last decade, but the relationship between domestic industrial reform, technological preparedness, certification level, and global market access is yet known only partly.

While prior studies have analysed the diversification of Uzbekistan's manufacturing sector as well as broader challenges of supplying local markets with products meetingt international standards, this segment-level focus in the case of electrothermic appliances remains scarce. It tends to either consider macroeconomic variables or exports, but not developed in the context of industrial modernisation and policies for STEP analysis or Canadian cases that have ever developed similar export nitches [3]. This gap does not allow for the evaluation of how production capacity, regulatory fit, and market structure can and do interact to define the parameters of long-term competitiveness. To overcome these limitations, the current mixed

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method qualitative–analytical approach integrates sector specific enterprise data, policy document analysis, comparative benchmarking and STEP evaluation to build a holistic view of industry preparedness.

This would mean that the research would both clearly show progress and develop structural constraints, and thus the findings confirmed this dual reality. Exports are climbing, demand in domestic markets remains resilient, and many product categories possess strong unrealized potential. Meanwhile, both dependency on foreign-made components, a weak R&D base and inconsistent adherence to international standards remain sticking points in pursuing greater integration into global value chains [4]. The findings imply that with better investment, enhanced certification ability, and more robust innovation ecosystems, Uzbekistan can progress rapidly from simple manufacturing to competitive, technology-based exports. These have serious ramifications as they require strategic decisions on how the sector can be developed to further reinforce its role a sustainable engine of national growth.

Methodology. This study employs a mixed qualitative–analytical methodology to assess Uzbekistan's potential for developing an export niche in electrothermic household appliances. The analysis is based on a systematic review of national policy documents, including the "Uzbekistan - 2030" strategy and sector-specific industrial development programs, combined with secondary data from international trade databases, government statistical reports, and industry publications. A STEP (Social, Technological, Economic, and Political) analytical framework is applied to evaluate the external and internal factors shaping the competitiveness of the electrotechnical sector [5]. Comparative benchmarking with successful exporting countries is used to identify structural gaps and strategic opportunities. Together, these methods provide an integrated foundation for understanding the dynamics of export readiness, regulatory alignment, and sectoral growth potential within Uzbekistan's electrotechnical industry.

Results. From January to October 2025, the country's foreign trade turnover reached $66.5 billion, marking a 21.5% increase compared with the same period last year, when the turnover was $54.7 billion. Exports contributed $29 billion to the turnover, rising 27.8% year-on-year, while imports totaled $37.5 billion, up 16.9% over the same period. China, Russia, Kazakhstan, Turkey, and South Korea remain Uzbekistan's key trade partners, accounting for a significant share of foreign trade. China alone represented 19.7%, followed by Russia with 15.9%, Kazakhstan 5.9%, Turkey 3.7%, and South Korea 2.2% (Figure 1) [6].

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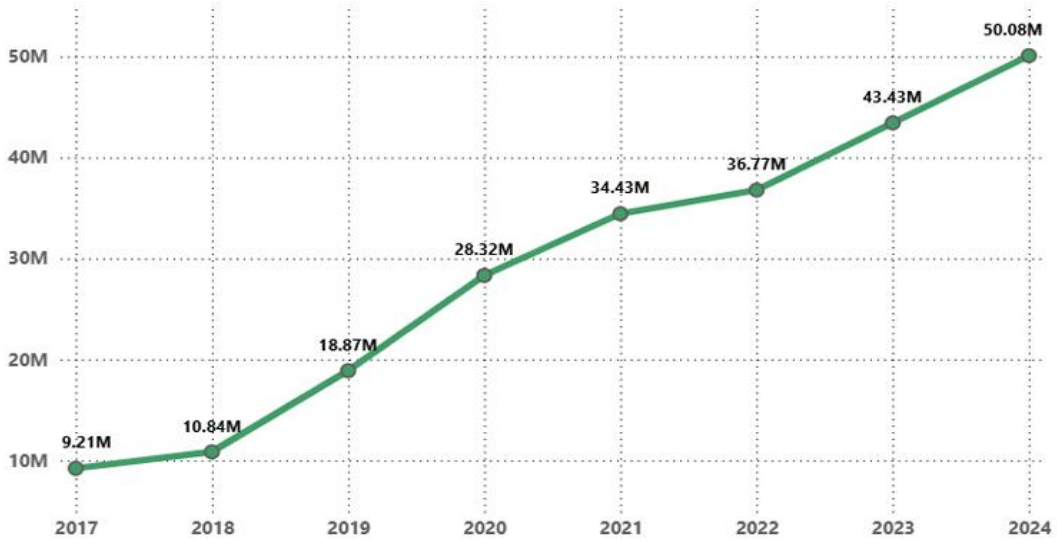

Figure 1. Trends in Uzbekistan's Exports of HS-8516 Electrothermic Household Appliances, 2017–2024

According to the data presented in the line graph, between 2017 and 2024, Uzbekistan's exports of HS 8516 household electrical appliances exhibited a consistent and substantial upward trajectory, attributable to both enhanced production capabilities and heightened international market demand. During this timeframe, export revenues escalated from approximately USD 9.2 million in 2017 to exceeding USD 50 million by 2024, representing a greater than fivefold expansion over the specified period. Particularly significant accelerations in annual growth rates were observed between 2018–2019 and 2019–2020, indicative of advancements in manufacturing efficiency, strategic product diversification, and the enhanced capacity of domestic enterprises to access novel regional markets [7]. The sustained expansion from 2021 to 2024, even amidst global supply chain disruptions, further highlights the increasing competitiveness of the sector and the efficacy of current industrial modernization initiatives designed to augment exports of high-value electrical products (Figure 2).

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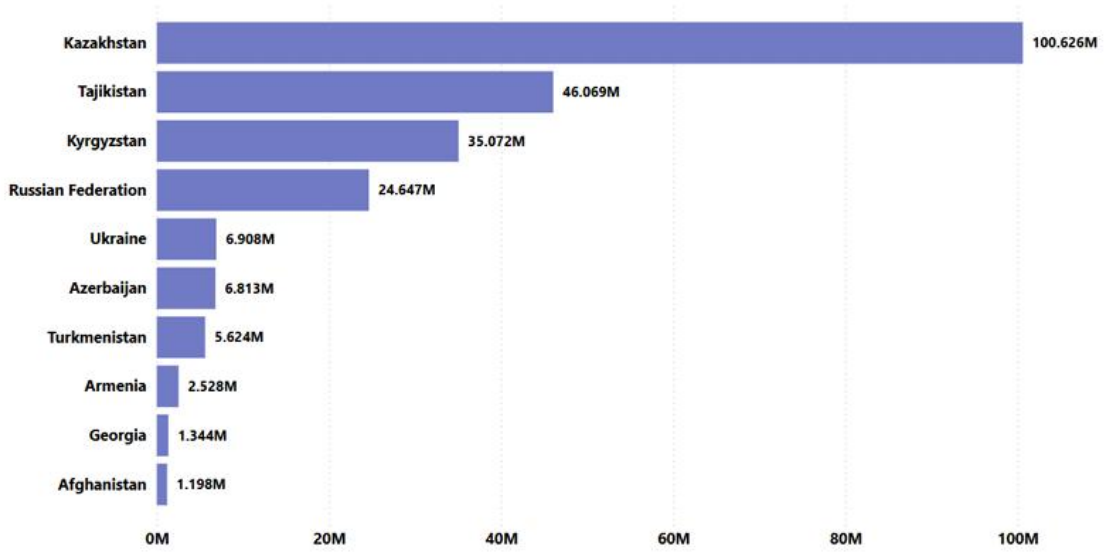

Figure 2. Uzbekistan's Exports of Electrothermic Household Appliances to Key Partner Countries by Value (2017-2024) [8]

The bar chart provides empirical confirmation that Uzbekistan's export structure for HS-8516 products displays a highly concentrated market orientation, with a small cluster of neighboring regional partners accounting for the overwhelming majority of trade flows. The data show that Kazakhstan alone absorbs more than USD 100 million, followed by Tajikistan (USD 46 million) and Kyrgyzstan (USD 35 million), illustrating both the geographic proximity effect and the strong role of regional economic integration. This omnipotence, which indicates that Central Asian partners are probably the natural spillover markets for Uzbekistan's electro-thermic household appliances on account of underlying logistics efficiencies, the likeness of consumer demand constructions and the renaissance of non-tariff barriers to distant markets. Equally interesting, export volumes drops steeply outside of the top three partners, with Russian Federation accounting for around USD 24.6 million, with each of the other destinations staying below USD 10 million. A second tier of medium to low-volume markets includes Ukraine, Azerbaijan, Turkmenistan, Armenia, Georgia and Afghanistan. While these markets are useful for diversification purposes, their scale relative to other markets is limited, in a way emphasising the structural constraints Uzbekistan faces in going beyond neighbouring regional corridors [9]. This trend mirrors both supply-side constraints in terms of capacity and the competitiveness challenge to entering a more technologically advanced or saturated market. Crucially, over 40 partner countries remained in commercial contacts with Canada, but only ten exceeded the threshold level of USD 1 million in the period of 2020-2024. This means that the geography of Uzbekistan's exports in this group of goods is wide but shallow, as most partner countries are involved in only nominal or opportunistic trade [10]. The gap highlights a two-fold problem: both the opportunity to centralize and scale open high-capacity markets and the need to unblock weak links from becoming steady offtakers. From an academic perspective, this asymmetry suggests an export portfolio that is regionally reinforced but globally under-optimized, pointing toward opportunities for targeted promotion, standardization improvements, and long term competitiveness strategies.

Discussion. The treemap below illustrates Uzbekistan's export potential across a range of electronic and electrical products, highlighting both realized and unrealized export opportunities. By far the highest dormant potential is in the segment refrigerating/freezing

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equipment and storage/display units, showing a 58% realized potential and indicating both significant performance already achieved and yet large performance gap potential. Within other bulk categories like: electric domestic ovens (at 35%), electric conductors not fitted with connectors (at 53%), and electric water/immersion heaters (at 45%) a similar trend of partial potential realization points to Uzbekistan's growing mid-tech manufacturing capabilities. It shows that we are stepping from basic raw-material-based exports to more value-addition based industrial goods, falling in line with the larger economic modernization agenda of the country. Meanwhile, a number of product categories with high unserved demand signal diversification and upgrade opportunities in the electronics value chain. Specifically, washing machine and centrifugal dryer have a high potential realization rate of 70%, indicating their strong competitiveness and demand in overseas markets. Besides, smalle categories, but still strategically important, such as air conditioning machines for walls (34%), vacuum cleaners (31%) and other electrical parts like winding wires, connectors and lighting equipment speak about emerging niches also, which are possibly be developed for production scaling and supplemented with export capacity of Uzbekistan. As seen in the treemap, the presence of many small-box segments indicates a wide industrial base that can provide support to component-level exports, a key enabler of insertion into global supply chains (Figure 3).

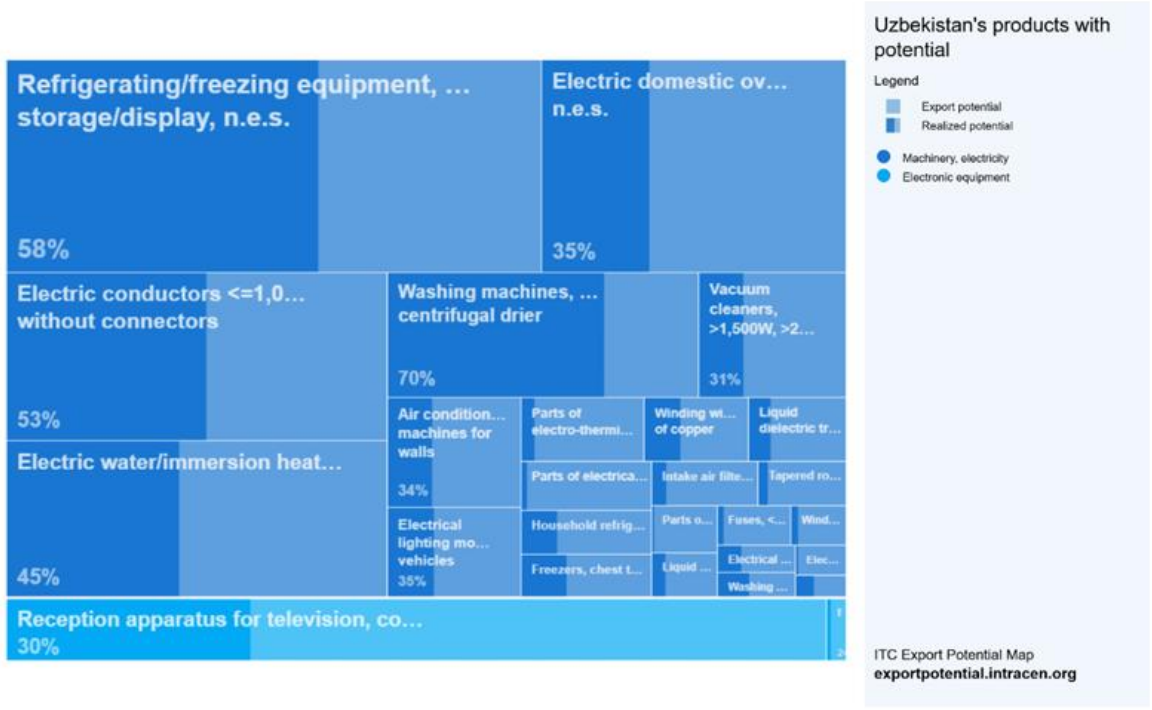

Figure 3. Uzbekistan's electronics-related export potential [11]

Overall, the map indicates that Uzbekistan's electronics-related export potential is growing but still underutilized in several major product lines. Strengthening technological capabilities, deepening industrial linkages, and improving production efficiency could help capture the remaining unrealized potential across these categories. Strategic policies aimed at enhancing quality standards, certification, and market access particularly in regional markets could further elevate Uzbekistan's position as a competitive exporter of electronic and electrical equipment. STEP analysis is a macroenvironmental analysis tool that is used in marketingD4471183 and presents the systematic examination of social, technological, economic, and political factorsD4471184 and one of the most critical components of market research as it can make a

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wider contribution to the enhanced competitiveness of apricot products. There are usually many more, but expert may treat the factors in one or more of each section when completing a STEP-analysis. Experts individually identify macroenvironmental factors relative to the strength of their influence on the enterprise. Subsequently, these factors are categorized within a four-cell matrix corresponding to the social, technological, economic, and political dimensions [12] (Table 1).

Table1. STEP-analysis in the export of electronical products [13]

Social Analysis	Technological Analysis
• Increasing global demand for affordable consumer electronics and electronic components; • Development of engineering skills and creation of high-tech jobs for youth; • Strengthening cooperation between universities, research centers, and electronics manufacturers; • Rising domestic interest in high-tech products encourages production scale; • Growth of specialized training programs for technicians, assembly workers, and IT-engineers.	• Introduction of modern assembly lines and automation technologies; • Dependence on imported high-precision components (chips, sensors, microcontrollers); • Insufficiently developed R&D base for designing competitive electronic devices; • Need to implement international standards (CE, ISO, IEC certification); • Limited access to advanced testing laboratories; • Development of digital platforms, smart-manufacturing, and industrial iot.
Economic Analysis	**Political Analysis**
• Growing opportunities to expand export volume to markets with demand for low-cost electronics; • Strong competition from China, Korea, and Southeast Asia; • High logistics costs due to landlocked position; • Limited experience in global branding and marketing; • Investment demand for upgrading factories and ensuring product quality; • Foreign currency fluctuations affecting import of components; • Necessity to meet standard norms for electromagnetic compatibility and safety.	• Active government support for the development of the electronics industry (tax incentives, sezs); • Ongoing WTO accession process influencing export rules; • Customs procedures improving but still sometimes bureaucratic; • International sanctions/regulations on certain high-tech components affecting supply chains; • Government programs supporting foreign investment into electronics clusters; • Cooperation agreements with foreign companies influencing export opportunities.

In the STEP analysis, social and technological factors are most likely to affect export activities of electronic products from Vietnam. The social aspect is very interesting because global demand for more affordable electronics and the availability of engineering talents are creating more room for local production [14]. Nevertheless, substantial technological limitations persist: high-precision components are largely imported to manufacturers, and advanced R&D and testing facilities to produce highly competitive, innovation-driven devices are mostly absent. Even so, the presence of automation, global standards, and digital factory technology gives the promise of incremental progress. The sector enjoys certain advantages as well as disadvantages economically and politically. Emerging export demand is growing, but there is intense competition globally from Asia which needs branding, quality assurance, and upgrades to the sophisticated economy. Utilization logistics cost and currency risk is a bottleneck. On the political side, government incentives, special economic zones, and enhanced cooperation with foreign partners support sector development, while customs processes and

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international regulations have more permanent ramifications on supply chains [15]. In summary, STEP analysis reveals a promising but strategically delicate and technologically stagnant sector.

Conclusion. It is revealed that by restructuring the industrial base of electrothermic household appliances in Uzbekistan and reaching the level of modern international standards in this field (at least CE marking), the country has opportunities to increase its export potential. More importantly it need expansion in R&D capabilities that will lead to creation of higher value products & will reduce dependency on components import. To reinforce this industrial progress, it is also important to develop skilled engineers, technicians and assembly workers in demand-specific training with much closer cooperation between universities and manufacturers. Market access is another critical area with great opportunity. With stronger branding, more diversified exports and greater compliance with international standards, Uzbekistan should be able to overcome the regional focus that confines it. Simultaneously, optimizing logistics and supply chains is essential for minimizing costs and ensuring timely deliveries, especially due to the landlocked nature of the country. Adapting to factors including global directions in technology, consumer demand, and regulatory change will ensure that the long-term export potential of the sector continues to be realised.

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