The Kenya sugar industry has been employing more than 16% of Kenyans and hence a strategic sector. However, the performance of the industry has been adversely affected by the high cost of sugar production. Consequently, the locally produced sugar has been more expensive and thus incompetent in the domestic market relative to imported sugar from COMESA FTA and other low cost world sugar producers. Adversely affected have been the local cane farmers, millers and domestic sugar consumers. Survival of the industry is also threatened from the proposed liberation of industry that will allow unlimited importation of sugar from COMESA FTA at duty-free tariff with effect from May 2007. Whereas the sector is politically, socially and economically strategic, it was imperative that the problem of cost be addressed with the aim of reducing it in order to maximize profitability, competitiveness, productivity, value and sustainability. A research focusing on value chain analysis was therefore selected to identify, trace and eliminate costs in all aspects of downstream and upstream stages of the sugar production chain. The study was based on descriptive research design and was conducted in the sugar belt regions of Western, Nyanza and Rift Valley Provinces. The population of the study comprised of eight sugar companies and ten outgrower companies. Convenient sampling design was used to select 6 operational sugar firms and six outgrower companies. Stratified random sampling design was used to select respondents from the six outgrower companies while convenient sampling was used to select respondents from the six sugar companies. The study comprised of a sample size of 102 respondents. Questionnaires, personal interviews, data sheets and secondary data sources were used to collect data. Descriptive statistical techniques were used to analyze data with SPSS as an aid. It was found that on average, value chain practices had not been significantly embraced in the Kenya sugar industry due to awareness and sensitization education. However, in the upstream stages, nucleus estate firms had significantly embraced and implemented value chain practices and hence lower farming, harvesting and cane transportation costs than small scale outgrowers. In the downstream stages, Mumias sugar company had very significantly embraced and implemented value chain practices and hence had lower milling, distribution and total sugar production costs and higher profitability than other firms. Hence, it was established that implementation of value chain practices reduced farming, harvesting, transportation, milling, distribution and total production costs and improved profitability. Government sugar policy had not significantly reduced costs in the sugar industry. Policy related impediments to cost reduction were identified as: heavy and multiple taxation, lack of subsidy incentives, poor state of infrastructure, high cost of sugar farming and processing inputs and high cost of fuel among others. It was recommended that the government, sugar companies and outgrower institutions formulate and implement specific strategies that addressed cost reduction and value creation at every stage of the industry in order to bring, down the high cost of sugar production and thereby regain sustainable competitiveness, profitability, attractiveness and long term sustainability of the Kenya sugar industry.