Background: Currently, globalization, economic uncertainty and fluctuating market demands prompt leaders all over the world to improve their operations and to enhance innovations in processes, products and services in a very reactive manner. Literature shows that the adoption of an integrated Lean Six Sigma tool can assist them to compete with the rest of the world in a manner where productivity, quality and operational costs reduction are crucial for economic success. Aim: This article investigates the integration of Lean and Six Sigma tools as a unified approach to continuous improvement and develops a Lean Six Sigma framework for selected automotive component manufacturing organizations in KwaZulu-Natal (KZN), South Africa. The target population (42) was organizations within the Durban Automotive Cluster of which five were used for the pilot work. An empirical study was conducted using a survey questionnaire in measurable format to gather practical information from the sample organizations on the status of their existing business improvement programmers and quality practices. Results: The results of the study demonstrated that the organizations had a very low success rate of Lean and Six Sigma adoption as standalone systems, as they found it difficult to maintain the transition from theory to practice. Conclusion: Hence the adoption of an integrated Lean Six Sigma approach was absent and it can be concluded that the proposed Lean Six Sigma framework affords the KZN automotive sector a unique opportunity to integrate and operate with both tools of quality that complement its management style and industry demands.