

Abstract

Denim clothing has surpassed the boundaries of social and economic classes and is the most popular clothing across the globe. However, denim production is completely dependent on cotton production which is highly water and chemical intensive in addition to being burden on economy by being expensive. Replacement of pure cotton in denim production with Cotton-hemp-banana blend as a first step towards cleaner production to completely eradicate the usage of cotton proved to be successful. Material flow analysis of the process of the production of blended denim garment proved it sustainable as compared to that of conventional cotton denim garment for less consumption of water, chemicals and labor cost on hemp and banana production. Moreover, economic indicators have shown that blended cotton denim garment is more profitable than that of conventional one. The comparison between sustainable garment and conventional garment in terms of economic profitability calculated at 5% interest rate and 10% discount rate shows that sustainable garment has lesser payback time period (1.35 years), higher net present value (\$237,170.81), higher benefit to cost ratio (1.26%) and higher internal rate of return value (53.45%). However, the capital cost for manufacturing of both products remain same, it's the Operational and maintenance cost that makes the difference due to difference of raw material and its processing. Moreover, consumer behavior analysis showed the inclination of European and USA market towards purchase of such sustainable garment while UK market showed mixed behavior.