Exploring closed loop supply chain strategies for single use medical device manufacturers toward developing sustainable and competitive manufacturing processes following the COVID-19 global pandemic

Abstract

Current research suggests the UK healthcare system is encountering significant clinical safety and supply chain challenges particularly following the emergence of the global viral pandemic, COVID-19, compounded with continuing cost reduction initiatives. One identified significant and ongoing contributory factor is the provision of Single Use Medical Devices (SUMDs); designated to be used on a single patient, during a single procedure, before being discarded as clinical waste. A cost reduction approach gaining popularity is the reprocessing of SUMDs to offer cost effective healthcare, currently being performed in the US, Europe and Asia. This practice enjoys significant cost savings, typically up to 40% of standard list unit fees, social acceptance, and environmental sustainability while maintaining a high level of clinical safety. This systematic literature research explores the opportunity, challenges and limitations for medical device manufacturers to reprocess and repurpose SUMDs within the UK healthcare system. How can medical products intended to benefit and prolong human life, be consumed in a single instance, but be maximised in their sustainability? This research attempts to understand through literature review the environmental threats, social acceptance, and economic loss of device disposal while recognising the importance of maximising the product life cycle of SUMDs.

Key Words: Medical device, closed loop, supply chain