Value Creation towards Sustainable Manufacturing using Non-Formal and Lifelong Learning Methods

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Abstract

The traditional brass industry of Sri Lanka has survived over the centuries under socio-economic and cultural diversities and several issues pertaining to triple bottom lines of sustainability can be observed. This study intended to develop a methodology which enhances value creation within this industry through sustainable manufacturing concepts. This is achieved by improving the human and social capital through Non-Formal Education and Life-Long Learning methods. The initial survey revealed that lack of raw materials, inefficient manufacturing and marketing processes, labour intensiveness and turnover were identified as socio-economic problems. Further, the proposed programme for value creation has transformed sustainable manufacturing processes of the craftsmen and it has shown that the value creation should be initiated from the family level and the technological inputs are the primary requirements which lead rest of the chain of activities of manufacturing. Continues education and training are vital to maintaining the sustainability of their manufacturing.

Keywords: value creation; sustainable manufacturing; sustainable livelihood; social impacts; Traditional brass industry; non-formal education; lifelong learning

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1. Introduction

Sri Lankan metal industry has a long history starting from 600 BC. Technologies associated with this industry would have been influenced from the times of Aryans’ settlements in Sri Lanka [1]. Several historical evidences have been identified about the metal industry. For instance, the famous Damascus swords manufactured by Ceylon steel and research on “Monsoon Steel” carried out by Jill Juleff on wind-based steel smelting are some of the evidence [2]. According to Ananda Cumaraswamy’s publication [3] on “Medieval Sinhalese Art”, rich art and craft traditions were existed in late 18th century in Sri Lanka even though it was under the western colonial rule for several centuries. During this era, most of the industries were operated as cottage industries and played a significance role of meeting the utensil household requirements, socio-cultural and religious needs [3]. Historically, Sri Lankan art and craft industry continued with traditional linkages to religion, caste system and indigenous knowledge mastered by the inherited artisans[4]. Moreover, Ryan (1993) [4] stated that the high traditional knowledge relating to pottery, brass work, drum and jewelry making etc. in Sri Lankan society inherently associated with the lower castes in the hierarchy of the Sinhalese caste structure [6]. However, traditional industries were adversely influenced due to the rapid changes of socio-economic sectors occurred after western invasions and globalization [3]. According to the craft industry report (2012), the total employed population in craft industry is approximately 200,000 in Sri Lanka [5].

The Traditional Brass Industry (TBI) is one of the most significant cottage industries which have evolved over the centuries with inherent traditional aesthetic values in Sri Lankan society. This industry used to cater the local society with a wide range of products. Similar to other traditional industries, the brass industry also faces several problems especially after the introduction of the open economic policies in late the 70s [6]. This situation is mainly created by the severe competition from the cheap and alternative products flooded the local market. Conversely, these craftsmen have not been able to recognize the transitions in the market and changes of preferences of the customers etc. in an era where the global and local market has been shifted towards mass customization. However, if the current situation persists for long, this unique traditional industry will disappear from the Sri Lankan society since already new generations of the artisans’ are engaged in different paid employment comes under white collar jobs and other businesses due to the lack of social acceptance and existing problems. The Brass manufacturers live in two districts of Sri Lanka and mainly they are catering different markets: Ornamental and religious requirements located in Pilimathalawa and Kalapuraya in Kandy district, known as cultural capital; Construction industry requirement located at Kiribathgoda in Gampaha district closer to the commercial capital Colombo. This industry provides direct and indirect employments for skilled and non-skilled artisans in both genders. Presently, there are about 60 families involved in this industry in Kandy district and another 30 families in Gampaha district. Approximately 600 workers are directly involved in the brass industry. However, this number changes with the seasonal variations and demands towards the brass products of the Sri Lankan society [1].

Currently, unavailability of raw materials (scrap brass) and marketing problems are the main problems that they encounter [1, 7, 8]. Moreover, lack of knowledge on efficient and appropriate technology, health and safety and poor environmental practices are influenced by the poor human capital of the craftsmen [8]. Except few basic power tools such as hand drill, grinder, and custom made lathe machines, vertical drilling machines etc. no significant improvements have taken place in the technological domain in the brass industry. Therefore, a gap can be seen between brass artisan and some manufacturers who engaged with other non-traditional small scale industries in the similar categories. Generally, brass artisans have involved in this industry when they were at teenage in order to support their family livelihoods. This situation has led to school dropouts at early stages of their life. Therefore, they do not possess adequate formal education in order to follow technical or vocational training which requires minimum educational qualifications. This phenomenon ultimately has an impact on the development of human capital in this sector. Moreover, changes of the aspirations and values towards employment and increasing the demand on the white collar and the decent work among the youths has influenced on the labour turnover of this industry. Therefore, it is imperative to introduce and make use of the modern manufacturing technologies to this industry in order to ensure its sustainability and to improve the product quality which will enable to compete in the
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