CITY UNIVERSITY OF HONG KONG
香港城市大學

Increasing Sewing Line Productivity by Application of a Skill-set Scheme in the Apparel Manufacturing Industry

提升服裝製造業車縫生產力的技能評核方案

Submitted to
College of Business
商學院
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Business Administration
工商管理學博士學位

by

Chow Chi Wai
周志偉

June 2012
二零一二年六月

Abstract

Traditionally, the apparel manufacturing industry (AMI) has consisted of a high proportion of production workers who perform sewing operations in an assembly line. The sewing processes are the central process of the manufacturing and the most labour intensive part of apparel manufacturing. Better internal operations management is a means to enhancing the competitiveness of the apparel industry. The apparel industry is particularly dependent on the sewing machine operators (SMOs) who dominate the apparel manufacturing field and their skills affect not only the sewing line output but also the quality of garments. Therefore, it is important to examine the sewing machine operator (SMO) skill level and, after the application of a skill-set scheme (SSS), to ascertain how the performances of the sewing lines are affected.

There is a research gap in a reliable SSS to measure the ability of SMOs. This research attempts to establish a systematic SSS framework to be applied to different apparel manufacturing companies to assess skilfulness and classify SMOs in order to increase sewing line productivity. Further, it provides guidelines for sewing production planning by better understanding SMO ability. To accomplish these goals, the research objectives are twofold: (1) to develop a generic skill-set scheme for the Apparel Manufacturing Industry and (2) to verify the proposed framework via a company case study.

To achieve these goals, this research uses a case study method whereby a company was invited to conduct a case application and verification of the scheme for developing a SSS. The case study company is an apparel manufacturer of sportswear garments located in Huizhou, Guangdong province, China. The SSS is based on the principle of design science (or design research) to create an artefact by developing a

framework to increase sewing line productivity by improving managerial skills. It is also based on the core principles of scientific management and supplementary contemporary management thoughts, such as time and motion studies, Deming quality principles, and motivational theories. Based on these principles, a generic SSS framework which is applicable to different apparel manufacturing companies to enhance their internal operation productivity is developed.

The research results show significantly improved production output and quality. Productivity improvement is confirmed by the increase in production output and decrease in input (in terms of manpower and reduced wastage due to poor quality) of the apparel manufacturing process compared to the normal operation. Productivity is achieved, as results show that a higher volume of output can be achieved by given inputs or the same output from fewer inputs. The SSS can be used as a baseline measure for the AMI to identify sewing worker capability. It is believed that the scheme provides an excellent guideline for managing systematic sewing production planning when new sewing styles are implemented.

The main contribution of this research work is to develop a practical and useable SSS contributing to a design science foundation as well as linking theory and reality. The research is significant due to the fact that usually a company's stock of know-how is retained in management minds instead of formal routines. The scheme is able to make effective use of management theories to implement company processes in a practical manner. A detailed implementation of the skill-set scheme is exemplified to illustrate the implementation of the scheme into an ordinary apparel company. The developed scheme is the first of its kind in the apparel sewing industry in China, and sets the basis for rewarding and recognizing good performers.