

Preface

In 1965, Mexico started an industrialization program focused on promoting the establishment of industries in the northern region. Years later, in 1992, Mexico signed the North American Free Trade Agreement (NAFTA) with the United States and Canada. The goal of this agreement was to remove barriers to trade and investment between the involved countries. However, it only came into force in January 1994.

The NAFTA agreement therefore strengthened the Mexican industrialization program, especially in Ciudad Juárez, Chihuahua. As a result, the city currently caters for approximately 326 of the 482 manufacturing companies established in the United States, and 5074 that exist worldwide. In other words, 6.42 % of the world's manufacturing industry is located in the Ciudad Juárez region, making it the seventh manufacturing center in Latin America.

Manufacturing companies in Ciudad Juárez have parent companies located overseas, and such parent companies have brought a series of technologies and tools for manufacturing. Two of the most relevant technologies are lean manufacturing (LM) and Kaizen as an LM tool. Kaizen originated in Japan inside Toyota plants.

The general objective of this book is to identify the main critical success factors (CSFs) for proper Kaizen implementation inside manufacturing companies of Ciudad Juárez. To reach this goal, we divide the Kaizen implementation process into three phases: planning, execution, and control. Similarly, a survey was administered to manufacturing companies in the region to identify Kaizen activities carried out and the obtained benefits. The survey had to be answered using a Likert scale.

Finally, information collected is captured and analyzed using SPSS software. However, to relate Kaizen activities with Kaizen benefits, we propose a series of structural equation models run with WarpPLS software. To interpret relationships, these models show a dependency measure between the analyzed latent variables.

This book is divided into 13 chapters comprised in five sections. Section 1 presents a literature review of Kaizen. In this section, we also discuss Kaizen origins and evolution by proposing a timeline. On the other hand, Section 2

addresses all the Kaizen critical success factors and benefits reported in the literature.

Section 3 describes the research methodology followed to achieve the general objective of this book. We discuss the survey elaboration and administration process, the data capture procedure, and the database population and screening. Similarly, we discuss the factor analysis performed to define the latent variables, the creation of the structural equation models, and the efficiency indices employed.

Section 4 provides a descriptive analysis of Kaizen critical success factors and benefits. Chapters comprised in this section discuss dispersion and central tendency measures used to analyze information from a univariate perspective. Finally, in Section 5 we propose the structural equation models. Three models are developed for each Kaizen phase (planning, execution, control). The first two associate four latent variables, while the third construct is an integrative model developed through second-order factor analysis.

Considering its content, this book mainly aims at company managers who wish to know the quantitative dependence of Kaizen activities on Kaizen benefits. However, we also dedicate this work to academics, researches, and graduate and undergraduate students in engineering and management-related programs who are familiar with the industrial sector.

The advantage of this book over some others is that the structural equation models proposed are grounded in information gathered from an empirical study carried out in one of the most important manufacturing regions in Latin America. We thus hope that this work is useful to our readers and can support their decision-making.

Ciudad Juárez, Mexico

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