

## Chapter 12

# Improved Decision Support System to Develop a Public Policy to Reduce Dropout Rates for Four Minorities in a Society

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### ABSTRACT

*This chapter proposes a decision support system applied to public schooling, especially for reducing dropout rates for minorities. That is relevant enough to enable understanding of ethical data mining in a strategic planning context. This understanding explains the importance of adequate different aspects related with Strategic Planning. The authors focus their analysis on a specific problem related with reducing dropout rates based on decision support systems under uncertainty. To this end, surveys are performed to gather information about this problem using Data Mining techniques to profile a number of behavioral patterns and choices that describe social behaviors. Ethical Data Mining is used for reasons of culture to improve the socio economic development. In addition, the chapter describes innovative models that capture salient variables of modernization, and how these variables give raise to intervening aspects that end up shaping behavioral patterns in ethical and social aspects. Finally, the chapter remarks and extends discussions of the authors' approach and will provide general guidelines for future work in diverse application domains, including further analysis on how those public politics organize and operate.*

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## 1. INTRODUCTION

The dropout rates, student backwardness and terminal efficiency are facing more complex and frequent problems faced by Higher Education Institutions (ANUIES, 2001). The rate of public school dropout is a major problem that characterizes many of the Mexican higher education institutions.

In the literature, different studies on data mining oriented education to monitoring (Dekker, 2009), combat and predict (Valero, 2009) the dropout rate. Some other studies complement the applications of data mining to address the socio-economic impact to generate predictive models for student's dropout management of Engineering (Saurabh, 2012).

For these reasons, we will define the terms Ethical Data Mining (EDM), Socio Economic Development (SED) and Decision Support System (DSS) as well as their contrast and roles in modern societies. Then we will describe innovative model that capture salient variables of modernization, and how these variables give raise to intervening aspects that end up shaping behavioral patterns in social aspects.

We will describe the data mining methodologies we used to extract these variables related with this problem to each minority, including the analysis of diverse surveys, and provide a comparative analysis of the results in light of the proposed innovative public policies. On the rest proposed chapter, as a result of the DSS we will describe how the use of these techniques can be extended to provide a means for identifying potential social public politics. More particularly, we make allusion to behavioral pattern recognition mechanisms that would identify the importance of use Data Mining. We will close with concluding remarks and extended discussions of our approach and will provide general guidelines for future work in diverse application domains, including further analysis on how those public politics organize and

operate. Our literature review will include cases of implementation of correct public politics, and some issues, challenges, opportunities, and trends about this educational problem.

With the development of technology, today one person ostentatious amounts of data generated. These data belong to the owner that his benefit or individual concern. In the framework of the law so laid down by Directive 95/46/EC of the European Parliament and of the Council and the Law 15/1999 on Protection of Personal Data. However, the data are not always in the hands of the person who generates most of the time are deposited in repositories outside. So, the people lose ownership of something they cannot control.

Finally, the data belongs to who has the technological capacity to collect and exploit information and generate knowledge. A person to generate information and have no control of it, practically transfer the data to any entity that catch. These organizations technologic power and techniques from data mining take advantage of user information. Companies assert this, the written record with tiny letters that can make use of this information if the user does not indicate otherwise. For reasons of culture mainly in these minority groups in addition to time and expense, the individual does not indicate the use of data. A code of ethics, applied in these cases it is necessary.

While some codes of ethics carry consequences for those who violate the standards, others exist simply as a guideline for professionals, in which violations are not explicitly punishable. (Sullivan, 2009). From this ethical perspective, there is the motivation to perform the analysis of the high dropout rates in a society that contribute to a low socio-economic development, and at the same time through a public policy develop a Decision Support System

Deciding is not often easy, organizations commonly faces situations where the manager is not sure what to decide and a wrong decision can involve great loss of resources. In such situa-

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