

Learning about Ethics in International Logistics and Quality Control in Border Areas  
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### **Abstract**

Industrial engineering presents unique challenges to those seeking to use ethics cases for ethics education. Subjects such as logistics, trades, interpretation of quality specifications, and international concerns are an everyday part of industrial engineering. To address these challenges, a multiple stage research program was developed. Two ethics cases were prepared in the area of international logistics and quality control as a first stage. The results of this stage showed that ethics in industrial engineering play a very important role for professionals along the border area between United States and Mexico. Engineers practicing international logistics along the international border face multiple ethical dilemmas due to the diversity of activities and the intense and exhausted procedure of trading. Engineers practicing quality control along the border also face ethical situations in designing and developing new products. The challenges of trading along the border prompts situations that require honesty, trustworthiness, and extreme responsibilities to trade goods with the best quality to satisfy the customers requirements while meeting both nation's laws and international concerns such as tariffs and trade, i.e., GATT and ISO 9000 for quality management systems.

The second stage will consist of testing and refining the two ethical cases; this will be done in three phases. The first phase is collecting available ethics codes related to these two areas from both the United States and Mexico. The case study packages will be tested in a senior capstone design industrial engineering class. At final phase these packages will be collected and analyzed to draw final conclusions with the assistance of graduate and undergraduate students, professors, and some industry representatives from both countries.

### **Introduction**

Ethics in industrial engineering has a very important role for professionals along the border area between the United States and Mexico. Subjects such as logistics, trading, interpretation of quality specifications, dealing with customer requirements, delivery times, and international concerns are an everyday part of industrial engineering. Indeed, maquiladora industry provides a potential environment for industrial engineers practicing international logistics and quality control and also represents a challenge for industrial engineers to face multiple dilemmas and ethical situations. The impact of these challenges creates a tremendous need for industrial engineering students, interested on working in the maquiladora industry, to be prepared, be exposed to, and learn different ethical situations. Unfortunately, there is limited information available about ethics cases in industrial engineering focused on situations of the border area. Therefore, a research program was developed to prepare ethics cases for industrial engineers

along the international border between Mexico and the United States. This paper will present a summary of the most relevant information related to two ethics cases and a description of a methodology to test and refine these cases with the participation of industrial engineers, graduate and undergraduate students, professors and some industry representatives from both countries.

### **International Logistics and Ethics**

A daily activity in international logistics is the process of exporting goods from the United States to Mexico or from Mexico to the United States. Goods are exported from manufacturing facilities (the place of origin) to customer's facilities. International logistics ensures that the customer's requirements are satisfied. In addition, when exporting goods from the United States to Mexico or vice versa, international logistics has two specific functions: one is business logistics focused on issues related to "transportation, inventory, warehousing, and order processing." The other is global logistics that takes care of domestic, customs administration, consolidation, clearance, and banking" {1, 2}.

One of the most important ports of entrance to Mexico is Cd. Juarez, a border city between Mexico and the United States. Cd. Juarez has increased manufacturing operations of the Maquiladora Industry more than 300% during the past ten years. Due to this increase, Cd. Juarez offers a variety of opportunities for employment, development of new technologies and professionals, and improvement of the international market operations for importing and exporting goods from different countries. Mechanisms such as North American Free Trade Agreement (NAFTA), General Agreement on Tariffs and Trade (GATT), and ISO 9000 for quality management systems regulate and control, part of these activities {1, 2}.

Based on these opportunities and mechanisms, American companies have greatly increased their exporting operations. Thus, trading risks have increased. For engineers practicing international logistics, these new opportunities are of great significance.

Basically, the first party in transactions is the company exporting goods and the second is the customer that requires the goods. An intermediary party is the broker whose job is related to global logistics. Industrial engineers practicing logistics may be brokers. Therefore, they may be aware of the laws and regulations as well as the informal environment.

One of the jobs of brokers is dealing with the Mexican and American officials in the border. Brokers should be very knowledgeable and experienced people. The differences of traditions, manners, beliefs, and idiosyncrasies of people, may create ethical situations such as what is wrong for one side of the border may be right for the other side of the border. Therefore, the company and the broker should understand the type of negotiations related to Mexico and the United States about implementing NAFTA and GATT. For example, the regulations for trucking across the Border and safety and environmental regulations have been a controversy between both countries. A recent issue on transportation is that American trucks should transport goods up to the border and not to their final destinations in Mexico. Thus, goods should be transferred to Mexican trucks before they cross the border {3}. Engineers practicing logistics

along the border are typically required to speak both English and Spanish. Although English is not a second required language in Mexico, an enormous number of Mexican people speak both languages due to the need of communication when doing business. Speaking English has been a great challenge for Mexican industrial engineers.

In addition, companies should be updated daily about the recent certified list of goods to export to Mexico and about changes in regulations related to standards such as labeling requirements. Goods must meet labeling standards, which are health warnings, content listings, and names. All labels have to be in Spanish. When exporting goods to Mexico, the company has to make sure to understand the labeling standards and translate everything from English to Spanish including slogans and any particular text. In general, companies should be in constant communication with the United States and Mexican Commerce Secretaries.

### **Ethics Codes in international logistics**

In exporting, company and broker "must be objective and truthful in professional reports, statements or testimony. They shall include all relevant and pertinent information in such reports, statements or testimony, which should bear the date indicating when it was current. They shall disclose all known or potential conflicts of interest, which could influence or appear to influence their judgment or the quality of their services. They shall advise their customers when they believe a project will not be successful" {4}.

### **Quality Control and Ethics**

Quality control involves a variety of activities when designing and developing a new product along the border area. First of all, it is necessary to identify the customer requirements such as quality characteristics, product liability, delivery time, and cost. Second, it is important to make a plan including all activities that the customer and supplier should do to deliver the final product in the specified time. For example Figure 1 presents a typical deal between customer and supplier related to quality {5}.

Figure 1 Deal between Customer and Supplier

Ethical issues in quality control Examples of the ethical issues include the method of selecting the supplier and the given information: specifications and details enough to manufacture and design

the part. Communication between the company and supplier, the analysis of decision-making when designing the part, and the activities and responsibilities of the team are additional.

### Testing and refining the cases

To address these issues, two ethics cases were written. The second stage of the research program will consist of testing and refining the two ethics cases; this will be done in three phases. The first phase was collecting the available ethics codes related to these two areas from both countries. Many specialists, scientists, societies, and professional associations have been working on developing ethics codes. For example, in the United States, the National Society of Professional Engineers (NSPE) has issued the Code of Ethics according to new challenges and circumstances that surround engineers. The Institute of Industrial Engineers (IIE) and the American Society of Quality have also contributed to the development of the ethics codes for industrial engineers. In Mexico, different agencies and institutions of higher education, have contributed on developing ethics codes for engineers. For example, the Union Mexicana de Asociaciones de Ingenieros, A.C. (UMAI), Secretaria de Educacion Publica, National Institute for Engineering Ethics, Instituto Mexicano de Ingenieros Quimicos, A. C. (IMIQ), Electronic Data Processing Auditors Association (EDPAA), and the Institute of Electrical-Electronics Engineers all have contributed to create Codes of Ethics.

Along the border between Mexico and United States, many efforts have been done under the North America Free Trade Agreement to define and create the Principles of Ethical Conduct in Engineering Practice Under the North American Free Trade Agreement. Recent trading challenges in business practice along the border require honest, trustful, and responsible engineers. Engineers practicing international logistics and quality control in this area, should be involved in "societal, economic, cultural, environmental, and safety aspects" {6}.

Part of this first phase is to disseminate the codes, the cases and relevant information related to definition of ethics and ethical conduct, definition of morality, definition of a United States and Mexico profiles, main cultural aspects of both countries. Also, information on moral principles is included: what is good, bad, right, wrong, and necessary, cultural traditions and beliefs, conducts that can be accepted rules in every culture, and actions that can be permitted.

The second phase will consist of testing the cases in a capstone design industrial engineering class. During this phase, the students will first summarizing the case and bring up the most important ideas and facts related to ethical issues from the cases. The students must create important questions that relate the conduct of the engineers with the ethical conduct, which may represent any possible violations to the Codes of Ethics.

The third phase is the discussion and analysis of the cases. The participants will compare the facts and the ethics codes and also the profile of each country. They should find out what happen and how exactly happen. The participants must detect what it should be done about the conduct of engineers in the cases and finally draw the conclusions related to engineers practicing logistics and quality control, may violate violate the applicable Code of Ethics.

## Conclusions

Industrial Engineering presents a challenge for developing ethics cases for students to learn about ethics dilemmas and situations along the border and the way to solve them by applying the Code of Ethics. The reality is that there is limited agreement practice between business and ethics due to the diversity of activities, people, cultures, traditions, and beliefs. It is important to distinguish that exporting goods to Mexico is not for amateurs in trading. Each country has its own regulations and different ways to approach situations. There are a lot of political issues and diversity of interests involved in exporting. Mixture of interest, desires, and opinions affect all engineers and every student.

## References

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