

# Identify and prioritize the factors affecting the implementation of agile manufacturing (Case Study: Khui Sugar Factory)

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**ABSTRACT:** Since environmental changes have affected many aspects of the organization, organizations must use appropriate solutions to adapt themselves dynamically to the environmental changes, so they can be able to sustain themselves. One of the best ways to deal with environmental changes is guiding the organization toward being an agile organization. The organization with an agile design has a unique organizational structure that causes the organization to carry out its processes with more efficiency. So, in this study, the effect of agile structure of organization in the implementation of aspects of speed, responding to customers' needs, flexibility, competence of employees, empowerment and job security has been reviewed. The research method of this study was descriptive analytical and in terms of purpose, it was an applied study. The main objective of this study was to analyze the impact of the considered aspects on making the organizations agile. In the present study, after careful study of the relevant literature, the general indicators affecting on the organizational agility were analyzed and researched. And then these variables and their impacts on the agility of manufacturing organizations were prioritized.

**Keywords:** agility, speed, flexibility, accountability, competence, empowerment and job security.

## INTRODUCTION

At the beginning of the twenty-first century, the organizations have experienced dramatic and infrastructural changes and the lack of attention to these changes threatens their survival and success increasingly. In such a situation, many of these units have revised their business priorities and strategic viewpoints and have emphasized on adaptation to changes in business environment and quick responding to the market and customers' needs through innovative ways of co-working (Bessant, 2001).

Certainly, as the main drivers of the need for agility, rapid and unpredictable changes have exerted too much pressure on organizations to change the work processes based on these changes. And their need to design an appropriate agility model is a response to being prepared enough to face with rapid and unpredictable changes of the environment (Goldman, 1995).

In the competitive market, there is an urgent need to develop and improve the flexibility and responsibility of the organization. Today, many organizations and companies are facing with increasing and uncertain competition that have been intensified due to technological innovations, changes in market environments and changing needs of the customers. This critical situation has led to major reforms in the organization's strategic vision, business priorities, reviewing traditional models and even relatively recent models. In other words, we can say that the past approaches and solutions have lost their capabilities and abilities in meeting with challenges of the organization and the external environment. Or maybe it is better to be replaced with new approaches and viewpoints. Thus one way of responding to this factor and organizational changes is (its) agility. In fact, agility is considered as a new paradigm for engineering the organizations and competitive firms. This study addressed the definitions, characteristics and key issues related to organizational agility.

### **1-2 Explanation of the problem**

With regard to the foregoing contents and given the critical and important role of organizations, the author was to examine the subject among the employees of Khoi Sugar Company. Basically, this study aimed to investigate the factors affecting the organizational agility in Khoi Sugar Company.

Many elements affect organizational agility and are associated with it. In the present study we aimed to explore and prioritize the factors affecting the organizational agility. For this purpose, after reading books, articles and learning the opinions of experts, the factors affecting organizational agility of the employees of Khoi Sugar Company were initially defined as follows: speed, responsibility, flexibility, competence, empowerment and job security.

### **Literature:**

#### **The concept of organizational agility:**

Generally, agility is an organization's ability to understand the environmental changes and fast and effective response to those changes. These organizational changes can be technological and career changes or changes in customer requirements. The word "agile" describes the speed and power of response in the face of internal and external events of organization.

In the comparative analysis of pure production and agile production conducted by Yusuf and Adeleye (2002), they did not pay much attention to the development of describing the assessment criteria for agility capabilities in their research. In this research, agility was evaluated through instruments such as low cost, quality, speed, reliability, product variability, flexibility, and organizational leadership of new products technology. The research showed significant relationship between competitive abilities and performance criteria for the agile organization. Like speed and reliability, the agility capability had an important relationship with all of the performance criteria. This study showed that the agile organizations had better performance criteria in comparison with pure organizations (2002, Yusuf & Adeleye).

In a study entitled "A major change in the innovation of production process of the Unions of United States" in 2007, Kanter concluded that in order to rescue the big U.S. corporations from economic crisis and for increased employment, there should be a major shift in organizational innovation of these corporations and this is primarily possible through organizational structure and secondly through organizational culture. Kanter states that without structural changes, the U.S. economy may look ugly for the society and the environment. Thus, a modern innovation is necessary to save the ailing economy, society and environment (Kanter, 2007).

San Carlisle and Elizabeth MacMillan (2008) in a study titled "Innovation in organizations with complex systems" emphasized on the high value of innovation in progress and development. According to their results, innovation literature in its strategic meaning has changed since 1991 and if you want to describe it in a short term, an organizational activity depends on the organizational culture. Carlisle and MacMillan that conducted a survey among large industrial companies, suggest that a culture embracing the creativity is the most important factor of innovation and creativity in organization.

## **MATERIALS AND METHODS**

Accordingly, the present study was "applied" in terms of objective and in terms of the method of data collection was "descriptive" and of "correlational" kind. The statistical population of the research was employees of Khoi Sugar Company. The number of personnel of Khoi Sugar Company was 376 and thus we used the Cochran formula to determine the sample size with limited statistical volume, and accordingly, the statistical sample size was 191 subjects in this study. Simple random sampling was used in this study.

## **RESULTS AND DISCUSSION**

### **Results**

#### **testing the hypotheses:**

There is a significant and positive relationship between the six factors (speed, responsiveness, flexibility, competence, empowerment and job security) and organizational agility of the employees of Khoi Sugar Company.

Table 1. The result of One-Sample Test

| Lower limit | Higher limit | Difference averages | of | Significance level | Degree of freedom | of t-statistic | variable   |
|-------------|--------------|---------------------|----|--------------------|-------------------|----------------|--|
| 0.27        | 0.47         | 0.37                |    | 0.000              | 1999              | 7.331          | organizational agility   |
| 0.61        |              | 0.86                |    | 3.30               | 200               | quick          | responding to environmental changes                              |
| 0.29        | 0.60         | 0.45                |    | 0.000              | 199               | 5.74           | Responding to customers' needs                                   |
| 0.37        | 0.62         | 0.5                 |    | 0.000              |                   | 7.87           | Flexibility of organization in the manufacturing the productions |
|             |              |                     |    |                    | 199               |                |  |

The value of one-sample t-Test for the variables in Table 1 shows that for the confidence level of 0.95 and error level less than 0.05, there is a statistically significant difference between the actual and presumed averages. Furthermore, based on the results given in Table 1 the actual average value is higher than the presumed average (3). Also, when significance is less than 0.05, H0 hypothesis is rejected and the author's hypothesis is accepted and thus the average dimensions of the agility are higher than the average.

**Conclusions and Recommendations:**

The one-sample t-Test (7.87) in Table 4.14 shows that with the confidence level of 0.95 and an average error level of less than 0.05, there is a significant difference between actual and assumed averages. Furthermore, the results in Table 4-13 show that the actual average (3.5) is higher than the given average (3). Also, when significance is less than 0.05, H0 hypothesis is rejected and the author's hypothesis is accepted and thus the average flexibility of organization in production is higher than the average. In terms of occupational safety, the findings of the presents study are in line with the research by Stone, 2004. Health and safety audits make the human resource managers active in getting feedback about the efficiency and effectiveness of professional safety and health programs in organizations and acting correctly and based on rules. Occupational health and safety audit makes it possible to monitor the risks systematically in a timely and planned manner and therefore some controls will be created to ensure occupational health and safety policies. In doing so, organizations must develop an integrated assessment and provide managers with the required data needed to improve health and safety performance and create a positive safety culture.

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