ORGANISATIONAL CHANGE AND IT*†

Education Support Systems for Innovation

Tommaso Cariati1,2† and Gianpaolo Iazzolino1†

1 Dipartimento di Organizzazione Aziendale
University of Calabria
Ponte Pietro Bucci
87036 Arcavacata di Rende (CS)

2 I.T.C. “Vincenzo Cosentino”
Via Verdi - Rende (CS)

ABSTRACT

This paper examines conditions for the effectiveness of Information Technology in organisations in the light of varying and uncertainty in the environment referred to.

The paper concentrates on the importance of the human factor and its attitude towards technology and describes an IT-based system and a user training strategy aimed at enabling the acquisition of a favourable and innovative mental approach.

The paper presents an approach for use of IT in education faced to build a forma mentis favourable for an effective Information Systems development process and an example of IS application in an educational context.

1. INTRODUCTION

The ferment typifying the current economic climate, owing to such conditions as increasing competition, the presence of radical innovations and marked alterations in market demand, determine very complex competition mechanisms that are driven by a series of

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‡ Tel. +39 984 492236; Fax: 0984 839569
§ Tel. +39 984 492235; Fax: 0984 839569; E-mail: iazzolino@unical.it
factors difficult to isolate and to study separate from the situation in which they occur and which, in turn, are the basis of the dynamic evolution of companies and company systems.

The main challenge in a firm is to generate competitive advantages within such conditions of discontinuity, even by modifying the organisation.

One of the relevant elements to the above aim is the learning ability of the organisation, this means the flexibility and the ability to continuously review strategic choices and to give attention to all signals especially those coming from the external environment (Nonaka, Johnson, 1985).

Learning is generated not only by internal relations, but also by external ones and such relations are not only related to buying and selling, but also to "co-operation in generating/acquiring knowledge" (Miggiani, Scilletta, 1992).

A relevant tendency is the fact that many big companies organise themselves internally into independent units, i.e. business units, teams, project groups (Migliarese, Paolucci, 1995) on the border of market and hierarchy (Williamson, 1975).

In another paper (Cariati, Iazzolino, Tancredi, 1996) we wrote that the main problem of some new organisational forms, that we called hypointegrated, is not decision support but communication support and, with this aim, information technology has a key role.

Since there is a great deal of technology available from both a qualitative and quantitative point of view and the organisational forms are extremely changeable, a varying strategy lies in the capacity of the human factor to succeed in using it well and to therefore make the technology effective.

2. INFORMATION TECHNOLOGY AND ORGANISATIONAL DESIGN

The fundamental importance of information technology in organisations is witnessed by the fact that some classic planning models belonging to the Theory of Organisation place varying information as the central element.

Galbraith's model (1973; 1977) identifies a scale of organisational solutions to be adopted with a growth in the quantity of information to undertake necessary tasks and activities. Every solution is adequate for a specific quantity of information and the scale is cumulative, that is the use of a solution presupposes resorting also to previous solutions.

The amount of necessary information \( I \) grows with the increase in three variables: uncertainty connected with the tasks \( (u) \), the number of relevant elements \( (n) \) for carrying out the activity, the degree of interdependence among the parts \( (c) \): \( I = f (u, n, c) \).

For high values of \( I \) two possible organisational alternatives open out:

a. Reduce the amount of information to be dealt with (reduce \( I \)), by means of the organisational planning of:
   - self-contained tasks
   - increase in reserve resources (stock, personnel, time etc.);

b. Increase the capacity of the organisation to deal with information. In this case \( I \) is left unchanged and the organisational capacity for dealing with information is increased by:
   - vertical and horizontal informative systems
   - lateral relations.

The characteristics of growing competitiveness and dynamism of the economic environment modify the amount of information needed for carrying out the activities.