8-15-1997

Information Technology as a Design Parameter. Towards Integrating IT and Organization (Design) Theory

Wendy Jansen
Royal Netherlands Military Academy

Hans P.M Jagers
Royal Netherlands Military Academy, h.jagers@kma.nl

Follow this and additional works at: http://aisel.aisnet.org/amcis1997

Recommended Citation
http://aisel.aisnet.org/amcis1997/161

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 1997 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
Information Technology as a Design Parameter. 
Towards Integrating IT and Organization (Design) 
Theory'

By: Wendy Jansen  
Royal Netherlands Military Academy  
Kasteelplein 10  
4811 XC Breda  
The Netherlands  
Phone: +3176 527 3234 

Hans P.M. Jägers  
Royal Netherlands Military Academy  
Kasteelplein 10  
4811 XC Breda  
The Netherlands  
Phone: +3176 527 3200  
Fax: +3176 527 3273  
E-mail: h.jagers@kma.nl

The majority of organizations think traditionally in terms of hierarchical and vertical lines of authority, 
while the information organization demands new design principles in which coordination takes place 
mainly horizontally in the form of automated information systems.

Abstract

There is a growing need for a new framework which helps in seeking the right solutions to current 
problems - the demand for flexibility, customer-orientedness, knowledge management, adequate logistical 
concepts and the integration of information technology in the organization - facing so many of today's 
organizations.

We believe that the integration of the study of organizations and IT is necessary to help solve the many 
problems and dilemmas. In this article two types of information-organization are described, which combine 
effectively IT and design variables.

The transitional phase

In practice most organizations are in transition. On the one hand, signs of the information-based 
organization are already manifest (more 'information workers' in organizations, internal and external 
integration, empowering multiple teams etc.) but, on the other, a number of impediments are emerging 
which, precisely because they are occurring simultaneously, make for an unstable and problematical 
or ganizational structure and functioning. This transitional situation causes a number of dilemmas. 
Organizations will have to find a solution if they are to function effectively in the future as information-
based organizations.

Organizations are realising that current developments require decentralisation. At the same time they are 
beset by the fear of losing control of the organization. IT should in principle be capable of coordinating 
decentralised activities. Given the shortcomings in the quality of the present information systems noted and 
the lack of insight as to how such coordination can be achieved in and by means of IT, this is still 
something for the future.
The use of IT as a coordinating instrument is one of the most important problems which has to be solved in a joint effort by organizations and research institutes. As Malone and Rockart have stated: "The primary changes in the revolution under way today are being driven not by changes in production but by changes in coordination." (Malone and Rockart, 1991:38).

Through the potential of information technology all kinds of close cooperative ties between organizations arise so that the boundaries between organizations become blurred. The organization itself, sub-contractors, transporters/distributors and customers become encapsulated and come to form a common system as it were.

**Two types of information-organizations**

Until recently information systems were mainly encountered in the literature as supplementary coordinating mechanisms. Alongside the usual method of coordination information systems were recommended and applied in practice to improve, accelerate or to cut costs in implementing organizational processes. Nowadays, the call is for information systems to be used for fundamentally redesigning processes, production chains and organizational structures instead of for IT to be fitted into the organization. Information systems are becoming a direct instrument in coordinating and controlling organizational activities and are coming to replace the more traditional coordinating mechanisms. For this we need other structures, another type of organization, information-based organizations.

*The clones*

A growing number of organizations react to the demand for custom-made products, with a short product-life cycle, quickly delivered and of excellent quality, by the strategic choice of mass-customization. Mass-customization implies a mass-production of modules (for instance components of a product or a service), which are combined to a unique product on request of a specific customer. When an organization decides to mass-customize, the consequences for it and the use of IT are huge. The transition implies totally different workprocesses in which IT heavily supports all elements of the chain. Information systems will collect and transfer the specific demands of the customer, they will combine the components to unique products, they will trace the product until delivery and thereafter for the after-sales etc. This transition is not possible without a fundamental business process redesign, with an integrated IT-infrastructure.

The type of information-organization which emerges with mass-customization we call the clone-organization. Decentralized units with mainly the same organizational form (the 'clones') are totally controlled by the central organization. This coordination and control is based on integrated information-systems. The decentralized units are managed by a different type of manager, compared to the traditional one. The 'new' manager is strongly oriented towards motivation and support of personnel. In this type of organization, there is (practically) no staff and no middle management. The clone-organization is a combination of on the one hand extreme flexibility and on the other extreme standardization and control by IT.
A 'Clones'

Examples of the clones-organization are Benetton, McDonalds, Mrs. Fields Bakery and Formule 1 hotels.

The 'Nodes'

When an organization does not choose for mass-customization, but still wants to meet the demand for custom-made and rapidly changing products, another type of organization emerges. This type of organization is in fact a real 'virtual' organization, because it exists of a changing number of autonomous 'nodes'. The smallest node of this type of information-organization may be (small) organizations, units within organizations or even individual persons or the knowledge of such persons. The independent units (nodes) operate in constantly changing combinations, depending on the specific wishes of the client. The need for local and decentralised knowledge of the customer and the relevant skills, leads to the development of the nodes-organization. The units/nodes can concentrate on their own specific knowledge area and link this knowledge with the know-how of other nodes, when and if the situation requires. Together the nodes form networks, but they are also linked by information-networks. Many organizations or individuals have access to their partners' internal information systems through electronic mail networks. For example, Apple gives its partners - including software developers, consultants, dealers and subsystem suppliers - access to its internal e-mail system (Myers, 1996). An example of information systems which are geared to supporting interactions within problem-oriented networks or teams is the software that promotes decision-making among groups. This is designated by the term 'groupware'. Just like the clone-organization the coordination is effected by IT. However, in the network organization the coordination is defined as cooperation instead of control. Examples of the nodes-organization are abundant in all fields and branches. Classic examples are the inter-organizations one finds in Silicon Valley.

B 'Nodes'

Conclusion

In this article we have described two ways in which an organization can react to the new challenges and the two different organizational forms which will emerge as a result. Both types have as common characteristic the use of IT as a coordination-mechanism, but differ vastly in the way this coordination is effected.

References


**About the Authors**

**Wendy Jansen** is associate professor in Information Systems at the Royal Military Academy in the Netherlands. She has a Ph.D. degree in Economic Science at the University of Amsterdam on the subject of Designing Organizations. Her research interests include the impact of Information Technology on the structuring of organizations.

**Hans P.M. Jägers** is dean and professor in Management Sciences at the Royal Military Academy in the Netherlands. He has a Ph.D. degree in Economic Science at the University of Amsterdam on the subject of
Designing Organizations. His research interests concentrate on the link between Strategy, Information Technology and Organization Design.