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IT Driven Modernization in Agriculture

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Abstract

The information systems (IS) literature has largely neglected the study of implementations of large scale strategic initiatives to modernize the agricultural business. This paper reports on an ongoing empirical study that follows the efforts of a multibillion-dollar organization to modernize its operations through the modernization of its supplier base. Modernization, as an external force effecting organizations, is a new and different phenomenon respect to organizational change normally considered as an internal effort. Modernization is an ongoing, evolutionary, process performed by organizations in order to survive and prosper. Yet, the rationality of the decision to modernize is likely to face the forces of entrenched traditions and practices, the feelings and the social significance of established ways of those with the power to derail the modernization project. Using institutional theory as theoretical lens to study the role of information and communication technologies (ICT) in modernization strategy, the paper suggests that managers should care beyond the reasons for change, considering the physical, social and cultural needs of the stakeholders involved. Our study extends the extant literature on agribusiness management highlighting the tensions between the initiator of the modernization effort and the suppliers with their need to adapt and respond.

Keywords: agribusiness, milk, modernization, empirical study, ICT-mediated transformation, case study.

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IT Driven Modernization in Agriculture

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Abstract

The information systems (IS) literature has largely neglected the study of implementations of large scale strategic initiatives to modernize the agricultural business. To balance this situation we have started an empirical study that follows the efforts of a multibillion-dollar dairy producer and milk bottler to modernize its operations through the modernization of a supplier base of 2260 milk producers.

Modernization, as an external force effecting organizations, is a new and different phenomenon respect to organizational change normally considered as an internal effort. In the past the modernization problem has been dealt with mainly as a strategic problem related to the bargaining power of buyers and suppliers. Back in the times when electronic data interchange (EDI) was the leading technology in supply chain modernization, a classic warning was used on this issue: “EDI on your suppliers before your client EDIs on you”. Modernization through technology was a strategic matter. Despite this fact still holding true, this is only one side of the medal. IT driven modernization processes have failed mostly because behind bargaining power considerations, their transformative implications where not well understood (Rossignoli, Carugati, Mola 2009; Klein and Krcmar, 2006). Our interest lies in taking seriously these large scale transformative processes to try to understand adoption and diffusion dynamics. Of particular interest to us is the continuous process of organizational adaptations in which an organization, the modernizer, uses information and communication technologies (ICT) as a significant and transformative tool to modernize a sector or industry populated by the receiver organizations, the modernizees. In understanding modernization as a different phenomenon from change lies the theoretical challenge of this study.

Rather than taking a functionalist focus, we are interested in how the stakeholders interact during a modernization process, and how the result of this interaction leads to a new state desired by the modernizer or derails the modernization attempt. Our guiding research questions are: How people in the modernizer organization enact modernization strategies? How do people in the modernizee organizations react to modernization strategies? How do stakeholders actions contribute to (or detract from) the modernization initiative?

Our preliminary investigations show that the agricultural industry, and the dairy sector in particular, is characterized by long held values and beliefs and cultural traits that make the sector one of the most conservative when investing in new technologies. However the final consumer of dairy products use the same level of sophistication and need for information for buying milk and cheese as they do for any other purchase. As a manager in one of the largest Italian dairy cooperatives put it:

“They [some farmers] think that a bottle of milk is a bottle of milk! Today this assumption is not true anymore. A bottle of milk is made of a bottle, milk and all the information related to the production, distribution and stocking processes adopted and printed on the label.”

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Adding an information layer to dairy products is becoming a strategic factor that can only be capitalized upon if the use of monitoring through IT is widespread in the network of milk producers and manufacturers. In this sector the rationality behind the decision to modernize is however likely to face the forces of entrenched traditions and practices, the feelings and the social significance of established ways of those with the power to derail the modernization project.

Using institutional theory (a decision taken in accordance with our preliminary findings) as theoretical lens to study the role of IT in modernization processes, we suggest that managers should care beyond the reasons for change, considering the physical, social and cultural needs of the stakeholders involved. So far we have not found support for either resistance to nor desire for technology for milk producers. We rather find that IT plays a variety of roles in this process: 1) it mediates the conversation between modernizer and modernizees (and this can go both ways); 2) IT becomes a catalyst for a different form of “clan”, this time technology based; 3) over time IT begins to embed institutional logics proper to the milk sector hence adapting to the context.

In the future phases of the project we will keep on investigating the milk sector and other sectors traditionally considered as IT conservative to provide a clear cut answer to our research question.

Keywords: *agribusiness, modernization, empirical study, ICT-mediated transformation, case study.*

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