Inertia and innovation in industrial networks : the case of bar code vs. micro-chip technology

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Abstract

The "successful" diffusion of new technology can be considered as a process conditioned not only by the advantages the new technology brings relative to existing alternative solutions, but by multiple other factors. Indeed, these other factors can often far outweigh the influence of relative technological advantage.

Such factors include – to name but a few - consideration of the nature and number of actors influenced positively or negatively by the new technology, past investment or future required investment of different kinds - time, equipment, training etc. - by interested parties and expectations regarding return on investment, the nature of relationships and interdependency between players in an industry and down the manufacturing channel …

The dynamics of this process are examined in more depth here, taking as an example bar code technology – the "old" technology – and the "new" technology represented by the development of micro-chips for tracing and tracking, and general associated information processing purposes.

The evolution of both technologies is traced and an assessment made of the forces at play. The diffusion of innovations can thus be analysed in the light of the complex interplay of the dynamics of networks of actors across industries, rather than in a simple assessment of critical mass and/or competitive edge. Certain of these actors can be seen to play critical roles in the diffusion process, as do specific groupings of actors within the network as a whole.