Organizational Impacts of Participation in Development of Industry-Level Technology Roadmaps

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Abstract

This research investigates the organizational impacts of participation in industry technology roadmap (ITR) development; further, characteristics of the roadmapping collective make-up and processes that contribute to these impacts are evaluated. A model is developed, relating participating individual organization and collective roadmapping characteristics to the organizational impacts of creating an industry roadmap. The model includes: 1) motivations for organizations to participate in the development of an ITR, 2) industry-related motivations for developing a roadmap, 3) stakeholder-based structure and processes used to create the roadmap, 4) characteristics of the roadmap document, 5) industry clockspeed (pace of change), and 6) organizational impacts from ITR development (e.g. technology planning, pace of innovation, collaborative activities and partnering, implementation of new technologies, etc.). The model is evaluated using survey data obtained from organizational participants (N=128) in ITR development from six industries (concrete, electronics, forest products, magnesium, metal casting, and powder metallurgy). Findings suggest that organizational impacts of participating in development of an ITR positively correlate with motivation of an organization to participate in the roadmapping effort ($p<0.001$), organizational executive support for the effort ($p<0.001$), and the research and development (R&D) experiential level of an organization's representative in the ITR collective ($p<0.005$); while the aggregate motivation of participating organizations ($p<0.05$), aggregate R&D experience of the organizational participants ($p<0.1$), thoroughness and clarity of the roadmap document ($p<0.01$), and industry clockspeed ($p<0.1$), correlate with an increased impact on the aggregate organizations in each ITR collective.

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