

## Knowledge Creation and Diffusion Dynamics under Stable and Turbulent Environment for Organizational Performance Optimization

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**Abstract :** Knowledge Management (KM) is undoubtable crucial to organizational value creation, learning, and adaptation. Although the rapidly growing KM domain has been fueled with full-fledged methodologies and technologies, studies on KM evolution that bridge the organizational performance and adaptation to the organizational environment are still rarely attempted. In particular, creation (or generation) and diffusion (or share/exchange) of knowledge are of the organizational primary concerns on the problem-solving perspective, however, the optimized distribution of knowledge creation and diffusion endeavors are still unknown to knowledge workers. This research proposed an agent-based model of knowledge creation and diffusion in an organization, aiming at elucidating how the intertwining knowledge flows at microscopic level lead to optimized organizational performance at macroscopic level through evolution, and exploring what exogenous interventions by the policy maker and endogenous adjustments of the knowledge workers can better cope with different environmental conditions. With the developed model, a series of simulation experiments are conducted. Both long-term steady-state and time-dependent developmental results on organizational performance, network and structure, social interaction and learning among individuals, knowledge audit and stocktaking, and the likelihood of choosing knowledge creation and diffusion by the knowledge workers are obtained. One of the interesting findings reveals a non-monotonic phenomenon on organizational performance under turbulent environment while a monotonic phenomenon on organizational performance under a stable environment. Hence, whether the environmental condition is turbulence or stable, the most suitable exogenous KM policy and endogenous knowledge creation and diffusion choice adjustments can be identified for achieving the optimized organizational performance. Additional influential variables are further discussed and future work directions are finally elaborated. The proposed agent-based model generates evidence on how knowledge worker strategically allocates efforts on knowledge creation and diffusion, how the bottom-up interactions among individuals lead to emerged structure and optimized performance, and how environmental conditions bring in challenges to the organization system. Meanwhile, it serves as a roadmap and offers great macro and long-term insights to policy makers without interrupting the real organizational operation, sacrificing huge overhead cost, or introducing undesired panic to employees.

**Keywords :** knowledge creation, knowledge diffusion, agent-based modeling, organizational performance, decision making evolution

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