Chapter 46
ICT Powered Strategic Flexibility System Dynamic Model:
A Pillar for Economic Development in Micro and Small Enterprises

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ABSTRACT

Resource-Based View (RBV) of the firm in strategic management literature focuses on firm internal endowments in terms of resources, capabilities and dynamic capabilities for their development. By establishing a learning mechanism, where they are able to adapt and influence the environment, enterprises build a dynamic competence and sustainable competitive advantage. This paper posits that this dynamic competence or strategic flexibility as referred to by strategic management scholars is a phenomenon that needs to be understood by scholars and practitioners in MSEs so that effective intervention programs can be designed. The paper argues that by treating strategic flexibility as a CAS provides a methodology within which models based on known theories in strategic management are employed and tested using system dynamics. The paper also posits that System Dynamics (SD) modeling is a good modeling methodology that captures the dynamism in a CAS. The paper therefore presents a conceptual model for strategic flexibility and a system dynamic model that reveals the variables in play and their relationships. In so doing the paper exposes influence points in the CAS that act as intervention points by practitioners in strategic flexibility of firms. The paper presents ICTs as interventions at the influence points and presents a generic strategic flexibility system dynamic model that brings to play the impact of ICT.

INTRODUCTION

Resource-Based View (RBV) of the firm in strategic management literature focuses on firm internal endowments in terms of resources, capabilities and dynamic capabilities for their growth and development (Porter, 1985). De-lu, Qi-Lei and Yun (2008) further argue that for enterprises to experience growth and development they need to embrace the concept of strategic flexibility which they define as a Complex Adaptive System (CAS) that consist of both the adaptive agents (the firms and individuals) and flexible elements that include resource flexibility, capability flexibility, organization flexibility and production flexibility. They posit that by MSEs establishing a learning mechanism, where they are able to adapt and influence the environment, enterprises build a dynamic competence and sustainable competitive advantage.

Application of CAS in strategic flexibility studies would help in improving understanding of the dynamic processes involved. Fuller and Moran (2001) argue that the application of complexity in social science and management has been in the form of metaphorical descriptions that lack theoretical adequacy. Burnes (2005) similarly notes that complexity concepts in social science are used to create metaphorical language for change and development rather than computational modeling. Yet methodologically, complexity is systemic in principle where theorizing and abstracting meaning is model centered and where synthesis with dynamics rather than analysis is required (Burnes, 2005).

This synthesis with dynamics can be achieved by using System Dynamics (SD) methodology. SD is a methodology best suited to problems associated with continuous process where feedback affects the behaviour of a system hence producing dynamic change in behaviour (Azar, 2012).

Complexity in systems is defined in terms of the number of components in the system and the combination of interactions of these components over time (Azar, 2012). SD stands out as a good methodology that enables these structural complexity and dynamics to be shown clearly a characteristic that is not achievable if linear and equilibrium models are employed (Bhushan, 2012). SD therefore provides researchers with a method for systems description as well as a useful computational support for simulation (Bhushan, 2012a; Sterman, 2000).

The SD tools i.e. the Causal Loop Diagrams (CLD) and the stock and flow diagrams are powerful communication tools between the modeller and the policy makers and they offer means of experimenting with different scenarios (Sterman, 2000; Azar, 2012; Bhushan, 2012a).

The SD framework proves to be a very useful methodology in capturing and studying the structural complexities of strategic flexibility in MSEs in a holistic sense.

The system dynamic models used in this research work provide the much needed synthesis that provides understanding of the relationships between the variables that make up strategic flexibility of firms and the structural underpinnings.

The system dynamic model also presents a model to show how ICT can be harnessed to enable the strategic flexibility phenomenon accelerate towards building dynamic competence and sustainable development of enterprises. In so doing the paper addresses the systematic development of models and/or frameworks to show how ICT can be harnessed to enable strategic flexibility development of firms. ICT researchers are in cognizance of the cross-cutting nature of ICT in its ability to affect medicine, accounting, finance, manufacturing, agriculture, management and many other disciplines. However, frameworks and models to show how ICT can be harnessed by various industries/sectors are needed. This is a drawback and poses a great challenge to development scholars and practitioners (Albright, 2005; Kleine, 2009).

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