

A System Dynamics Perspective Of Corporate Entrepreneurship

The Dynamics of Software Project Scheduling
A System Dynamics Perspective
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A System Dynamics Perspective
Theories of Organizational Change--a System Dynamics Perspective
An Integrative System Dynamics Perspective of Software Project Management
Arguments for an Alternative Research Paradigm
Business Dynamics: Systems Thinking and Modeling for a Complex World with CD-ROM
McGraw-Hill Education

Globalization has made both operations and supply chains more complex than ever before. Inputs are sourced from many locations all over the world to serve different needs and market segments throughout the planet, making it a global challenge that necessitates a global strategic response. *Managing Operations Throughout Global Supply Chains* is a crucial academic resource that discusses concepts, methodologies, and applications of emerging techniques for operations and supply chain management processes that promote cost efficiency. While highlighting topics such as global operations, resource planning, and business

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forecasting, this publication explores how organizations manage the procurement of all necessary resources at every stage of the production cycle from the original source to the final consumers. This book is ideally designed for researchers, academicians, practitioners, professional organizations, policymakers, and government officials.

Though the reduction of suicide-related deaths has been a national priority for over a decade (U.S. Department of Health and Human Services, 2001) and over \$22 million per year (National Institutes of Health, 2015) have been invested to prevent suicide, rates of suicide have not declined (CDC, 2012). In fact, for some groups of adolescents, these rates seem to be on the rise (Wasserman, Cheng, & Jiang, 2005). The ineffectiveness in reducing deaths by suicide despite increased funding and coordinated efforts suggests the need for a new perspective on examining why and how adolescents begin to desire and attempt suicide and how to stop new attempts from occurring. Using an individual-level system dynamics model (Forrester, 1994; Sterman, 2000), this study answers the following research questions: 1. Is there a feedback relationship governing the experience of suicide attempts for adolescents into adulthood? 2. What types of interventions can be used to decrease suicidality across the lifespan? The goal of this study was to understand whether Thomas Joiners interpersonal theory of

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suicide (IPTS) (Joiner, 2005; Van Orden et al., 2010), when mathematically defined as a system dynamics model, could accurately simulate and predict suicide attempts across time. The model was specified with nationally representative data from the National Longitudinal Survey for Adolescent and Adult Health (Add Health) and tested for applicability in understanding differences in suicide attempts by gender and racial subgroups. Modifications to the structure of the model were made leading to a modified theory, the developmental systems model of the interpersonal theory of suicide. Results from experiments on the developmental systems model of IPTS suggest that reducing the duration of depression or increasing the time it takes to build capability to attempt suicide for adolescents can minimize attempts across adolescence and adulthood. Implications for research, policy, and practice are outlined, with an emphasis on future directions for suicide research.

Water and energy are two of the most important resources for societal prosperity and economic development. It is clear that water and energy are intrinsically linked together and depend on one another in modern society. To date, however, efforts on water-energy nexus concentrate on quantifying the energy use in water cycle or the water use in energy production. From management perspective, water and energy are still managed separately. Little work has been done to

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investigate the impacts of the management options associated with one resource on the other and examine the integrated water and energy management options. Accordingly, the overall goal of this study is to examine the integrated management options for long-term regional water and energy resources management with consideration of their interactions through a system dynamics approach. System dynamics is based on systems thinking, which focuses on the system structure and offers a deeper insight into problems. It can link ecological, human, and social elements of water and energy systems in one modeling platform to investigate their interactions. A four-step system dynamics modeling process was used in this study, which includes problem articulation, model formulation, model testing, and scenario design and simulation. Tampa Bay region was chosen as the study area, which is located on the west central coast of Florida and estuary along the Gulf of Mexico. This study considered a 100-year time scale with monthly interval, the first 30 years of which are used for model validation and the rest of which are for simulation. In order to investigate the interrelationship between water and energy systems, two sub-models (i.e., water sub-model and energy sub-model) were developed first.

Operations Research: 1934-1941," 35, 1, 143-152; "British The goal of the Encyclopedia of Operations Research and Operational Research in World War

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II," 35, 3, 453-470; Management Science is to provide to decision makers and "U. S. Operations Research in World War II," 35, 6, 910-925; problem solvers in business, industry, government and and the 1984 article by Harold Lardner that appeared in academia a comprehensive overview of the wide range of Operations Research: "The Origin of Operational Research," ideas, methodologies, and synergistic forces that combine to 32, 2, 465-475. form the preeminent decision-aiding fields of operations re search and management science (OR/MS). To this end, we The Encyclopedia contains no entries that define the fields enlisted a distinguished international group of academics of operations research and management science. OR and MS and practitioners to contribute articles on subjects for are often equated to one another. If one defines them by the which they are renowned. methodologies they employ, the equation would probably The editors, working with the Encyclopedia's Editorial stand inspection. If one defines them by their historical Advisory Board, surveyed and divided OR/MS into specific developments and the classes of problems they encompass, topics that collectively encompass the foundations, applica the equation becomes fuzzy. The formalism OR grew out of tions, and emerging elements of this ever-changing field. We the operational problems of the British and U. s. military also wanted to establish the close associations that OR/MS

efforts in World War II.

In order to address the twenty-first-century challenges of decarbonisation, energy security and cost-effectiveness it is essential to understand whole energy systems and the interconnection and interaction between different components. An integrated language is therefore needed to assist energy policymakers and to help industrial stakeholders assess future energy systems and infrastructure and make realistic technical and economic decisions. Whole Energy System Dynamics provides an interdisciplinary approach to whole energy systems; providing insights and understanding of it in the context of challenges, opportunities and solutions at different levels and time steps. It discusses approaches across disciplinary boundaries as well as existing issues within three main themes: theory, modelling and policy, and their interlinkage with geopolitics, markets and practice. Spataru argues that there is an urgent need for a whole energy system integration. This is necessary for effective analysis, design and control of the interactions and interdependencies involved in the technical, economic, regulatory and social dimensions of the energy system. This book is essential reading for students interested in the area of energy systems, policy and modelling. It is also a valuable read for policymakers, professionals, researchers, academics, engineers and industrial stakeholders.

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Conventional wisdom says that we can learn from our errors, but errors in the business world can be prohibitively costly. To truly understand how complex business organizations function requires different tools than most managers have been given. Yet managers need methods to understand how their organization works in order to test policies, discover flaws in thinking, and find the hidden leverage points within the complex systems they manage. Through a system simulation, the dynamics of the whole system, not just the individual parts, becomes apparent. The outcome of current and future situations becomes possible to predict and with this information, managers can focus on the changes that need to be made. The distinguished contributors to Modeling for Learning Organizations include Jay W. Forrester, Peter Senge, and Arie De Geus. You will learn about leading applications such as: Shell's work on modeling the oil producers. The Management Flight Simulator, a computer-based case learning environment pioneered by John Sterman and others at MIT The landmark Claims Learning Laboratory at Hanover Insurance companies. For managers, professionals, academicians, and everyone who recognizes the profound implications of modeling, this book is an excellent resource. It offers a broad understanding of the modeling process, discusses a multitude of case studies, and provides a review of the most recent simulation software.

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System dynamics: future opportunities and a critical review; Modeling issues and decisions in system dynamics; Methods for enhancing refutability in system dynamics modeling; Time in system dynamics; Toward a pedagogy of system dynamics; The multiplier-accelerator model of business cycles interpreted from a system dynamics perspective; Parameter estimation in system dynamics modeling; Some effects of data error on econometric models; COLTS (continuous long-term simulation); Integration method: euler or other for system dynamics; Including future events in system dynamics models; Tests for building confidence in system dynamics models; Modal analysis to aid system dynamics simulation; Which policy run is best, and who says so?

Handbook of Sustainability Management.

System Dynamics is a component of Encyclopedia of Technology, Information, and Systems Management Resources in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. The world is facing a wide range of increasingly complex, dynamic problems in the public and private arenas alike. System dynamics discipline is an attempt to address such dynamic, long-term policy problems. Applications cover a very wide spectrum, including national economic problems, supply chains, project management, educational problems, energy systems,

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sustainable development, politics, psychology, medical sciences, health care, and many other areas. This theme provides a comprehensive overview of system dynamics methodology, including its conceptual / philosophical framework, as well as the technical aspects of modeling and analysis. System dynamics can address the fundamental structural causes of the long-term dynamic contemporary socio-economic problems. Its "systems" perspective challenges the barriers that separate disciplines. The interdisciplinary and systemic approach of system dynamics could be critical in dealing with the increasingly complex problems of our modern world in this new century. These two volumes are aimed at the following five major target audiences: University and College students Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision makers and NGOs.

This book approaches economic problems from a systems thinking and feedback perspective. By introducing system dynamics methods (including qualitative and quantitative techniques) and computer simulation models, the respective contributions apply feedback analysis and dynamic simulation modeling to important local, national, and global economics issues and concerns. Topics covered include: an introduction to macro modeling using a system dynamics framework; a system dynamics translation of the Phillips machine; a re-examination of classical economic theories from a feedback perspective; analyses of important social, ecological, and resource issues; the development of a biophysical economics module for

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global modelling; contributions to monetary and financial economics; analyses of macroeconomic growth, income distribution and alternative theories of well-being; and a re-examination of scenario macro modeling. The contributions also examine the philosophical differences between the economics and system dynamics communities in an effort to bridge existing gaps and compare methods. Many models and other supporting information are provided as online supplementary files. Consequently, the book appeals to students and scholars in economics, as well as to practitioners and policy analysts interested in using systems thinking and system dynamics modeling to understand and improve economic systems around the world. "Clearly, there is much space for more collaboration between the advocates of post-Keynesian economics and system dynamics! More generally, I would like to recommend this book to all scholars and practitioners interested in exploring the interface and synergies between economics, system dynamics, and feedback thinking." Comments in the Foreword by Marc Lavoie, Emeritus Professor, University of Ottawa and University of Sorbonne Paris Nord

Business Models for Sustainability breaks new ground by combining three important insights. First, achieving sustainability requires socio-technical transitions that entail new technologies, production processes, lifestyles, and consumption patterns. Second, firms play crucial roles in mediating between sustainable production and consumption. Third, radical innovations require organizational innovations and new business models. Peter Wells successfully combines these big picture ideas with rich in-depth case studies drawing on years of accumulated expertise. Highly recommended. Frank W. Geels, University of Manchester, UK and Chairman of the Sustainability Transitions Research Network With increasing awareness that innovative

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technology alone is insufficient to make sustainable lifestyles a reality, this book brings into sharp focus the need to create radical new business models. This insightful book provides a theoretically grounded but also realistic account of how the design of business models can be a critical component in the overall transition to sustainability, and one that transcends the usual focus on innovative technology. Weaving together key principles and components for business sustainability, the book highlights five very different pathways to the future for sectors ranging from microbreweries and printing through to clothing, mobility and plastics. Business has only just started the first few tentative steps towards a very different approach to creating and sustaining value, but this book concludes that enormous opportunities will emerge alongside new ways of creating and capturing value. Academics and postgraduate students in the fields of sustainable business, business organisations and industrial ecology will find this book brings a greater understanding of business strategy and structure to the discipline. While traditionally referenced and structured, this academic book is accessibly written with key principles that may also appeal to the consultant community.

Recently there has been considerable interest in qualitative methods in simulation and mathematical modeling. *Qualitative Simulation Modeling and Analysis* is the first book to thoroughly review fundamental concepts in the field of qualitative simulation. The book will appeal to readers in a variety of disciplines including researchers in simulation methodology, artificial intelligence and engineering. This book boldly attempts to bring together, for the first time, the qualitative techniques previously found only in hard-to-find journals dedicated to single disciplines. The book is written for scientists and engineers interested in improving their knowledge of simulation modeling. The "qualitative" nature of the book stresses concepts of

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invariance, uncertainty and graph-theoretic bases for modeling and analysis.

Complex systems are pervasive in many areas of science. With the increasing requirement for high levels of system performance, complex systems has become an important area of research due to its role in many industries. Advances in System Dynamics and Control provides emerging research on the applications in the field of control and analysis for complex systems, with a special emphasis on how to solve various control design and observer design problems, nonlinear systems, interconnected systems, and singular systems. Featuring coverage on a broad range of topics, such as adaptive control, artificial neural network, and synchronization, this book is an important resource for engineers, professionals, and researchers interested in applying new computational and mathematical tools for solving the complicated problems of mathematical modeling, simulation, and control.

Today's leading authority on the subject of this text is the author, MIT Standish Professor of Management and Director of the System Dynamics Group, John D. Sterman. Sterman's objective is to explain, in a true textbook format, what system dynamics is, and how it can be successfully applied to solve business and organizational problems. System dynamics is both a currently utilized approach to organizational problem solving at the professional level, and a field of study in business, engineering, and social and physical sciences.

Written by a professor with extensive teaching experience, System Dynamics and Control with Bond Graph Modeling treats system dynamics from a bond graph perspective. Using an approach that combines bond graph concepts and traditional approaches, the author presents an integrated approach to system

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dynamics and automatic controls. The textbook guides students from the process of modeling using bond graphs, through dynamic systems analysis in the time and frequency domains, to classical and state-space controller design methods. Each chapter contains worked examples, review exercises, problems that assess students' grasp of concepts, and open-ended "challenges" that bring in real-world engineering practices. It also includes innovative vodcasts and animated examples, to motivate student learners and introduce new learning technologies. Forecasting new and emerging risks associated with new technologies is a hard and provocative challenge. A wide range of new and modified materials are being made available, and many of these have unknown consequences including nanomaterials, composites, biomaterials, and biocybernetics. Additionally, the greater complexity of man-machine processes and interfaces, the introduction of collaborative robots, and the excessive dependence on computers, as in the case of unmanned vehicles in transportation, could trigger new risks. Forecasting and Managing Risk in the Health and Safety Sectors is an essential reference source that combines theoretical underpinnings with practical relevance in order to introduce training activities to manage uncertainty and risks consequent to emerging technologies. Featuring research on topics such as energy policy, green management, and intelligence cycle, this book is ideally designed for

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government officials, managers, policymakers, researchers, lecturers, advanced students, and professionals.

This new interdisciplinary work presents system dynamics as a powerful approach to enable analysts build simulation models of social systems, with a view toward enhancing decision making. Grounded in the feedback perspective of complex systems, the book provides a practical introduction to system dynamics, and covers key concepts such as stocks, flows, and feedback. Societal challenges such as predicting the impact of an emerging infectious disease, estimating population growth, and assessing the capacity of health services to cope with demographic change can all benefit from the application of computer simulation. This text explains important building blocks of the system dynamics approach, including material delays, stock management heuristics, and how to model effects between different systemic elements. Models from epidemiology, health systems, and economics are presented to illuminate important ideas, and the R programming language is used to provide an open-source and interoperable way to build system dynamics models. System Dynamics Modeling with R also describes hands-on techniques that can enhance client confidence in system dynamic models, including model testing, model analysis, and calibration. Developed from the author's course in system

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dynamics, this book is written for undergraduate and postgraduate students of management, operations research, computer science, and applied mathematics. Its focus is on the fundamental building blocks of system dynamics models, and its choice of R as a modeling language make it an ideal reference text for those wishing to integrate system dynamics modeling with related data analytic methods and techniques.

System dynamics simulation modelling technique is taught to students at undergraduate and graduate levels. The students are taught how to develop a system dynamics model of the system under study. This book is written to help students understand the concepts and fundamental elements of system dynamics simulation, and provide a step-by-step guide in conducting a system dynamics study. This book is suitable for students who are studying system dynamics simulation modelling at undergraduate and graduate levels. It offers the concepts and application of system dynamics as well as provides an approach for modelling effectively. Having read this book, the reader will be able to: Learn the concept of system dynamics simulation and its application, Understand the important steps of modelling process, and Conduct a system dynamics study successfully.

Community Based System Dynamics introduces researchers and practitioners to

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the design and application of participatory systems modeling with diverse communities. The book bridges community-based participatory research methods and rigorous computational modeling approaches to understanding communities as complex systems. It emphasizes the importance of community involvement both to understand the underlying system and to aid in implementation. Comprehensive in its scope, the volume includes topics that span the entire process of participatory systems modeling, from the initial engagement and conceptualization of community issues to model building, analysis, and project evaluation. Community Based System Dynamics is a highly valuable resource for anyone interested in helping to advance social justice using system dynamics, community involvement, and group model building, and helping to make communities a better place.

This volume includes over 30 chapters, written by experts from around the world. It examines the environmental aspects of drought such as groundwater and soil contamination, river low-flow, urban water quality, and desertification. It also examines the effects of climate change and variability on drought, and discusses the differences in groundwater, rainfall, and temperatures and their related effects. It presents analytical modeling for better understanding drought in uncertain and changing climates.

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