

SUMMARY OF DOCTORAL'S DISSERTATION

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Title Development of Sustainable Supply Chain Management Games			
Abstract <p>This research is intended to develop a Sustainable Supply Chain Management (SSCM) game capable of integrating the 3 main dimensions of sustainability and risk. Researchers have developed several games in Supply Chain Management (SCM), however, seldom do these games incorporate and integrate more than 1 dimension of sustainability, before this research there were a total 0 SSCM games publicly validated and published in journals. To address this issue, this thesis develops two SSCM games, Chain of Command (CoC) and Looper. CoC is partially successful at integrating the three dimensions of sustainability and risk, nevertheless, the level of complexity present in the representation of SCM in the game diminished its educational, enjoyment value, and resulted in a complex and difficult to understand game. Looper is then developed to address the previously mentioned problems.</p> <p>The purpose of this research is reducing the complexity of SCM to properly integrate the 3 dimensions of sustainability and risk to create a SSCM game that increases the awareness of SSCM in beginners. This is achieved through the following originality: (1) Eliminating market fluctuation and communication among stakeholders in SCM (2) Simplifying the time delay in the SC by decreasing the amount of stock locations.</p> <p>This dissertation consists of 8 Chapters. Chapter 1 describes the purpose, goals, and structure of this research. The chapter begins with a research background on serious games and the establishing the fact that there are no SSCM games. The literature review reveals that games in conventional studies focus only on one or at most two dimensions of sustainability. Chapter 2 describes the quantitative and qualitative methods used during the</p>			

research. Chapter 3 provides insight into the game design process, the complexity reduction method, systems engineering technical processes, the stealth serious games model, and the serious game cube. Chapter 4 regards the development and testing of the Origami SG a single dimension SC game focusing on economics, developed to gain insight into serious game design and test systems engineering technical processes in the design of serious games. Chapter 5 introduces the reader to SSCM and SSCM games. In addition to displaying the development of CoC and Looper. Chapter 6 contains detailed descriptions of the verification and validation, this includes test setups, data gathering and results for CoC and Looper. Test results show that Looper is more educational and enjoyable to play than CoC and succeeds where CoC failed. Chapter 7 contains a discussion on the validation results from CoC and Looper, along with observations and insights obtained from the games testing. Important findings for Looper include players investing in green technology as a retroactive approach to government regulations, short leads times and SC robustness is valued over the environment and corporate social responsibility is an activity players are not willing to engage in if there is no incentive to do so. Chapter 8 contains the conclusion of the study for CoC and Looper related to our research goal and the academic contribution. It additionally provides the direction for future research: (1) Use looper as a research tool to assess the behavior of players towards SSCM initiatives, (2) Develop a SSCM game that teaches solutions to current SSCM problems, (3) Develop a SSCM game for SSCM professionals.

Key Word (5 words)

Games, interactive learning, supply chain management, sustainable supply chain management, serious games development