# Creation of better template models of strategic planning and leadership control aided by business simulation games based on real-life case studies and analysis tools

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*The business simulation games, which expose the players/managers to a broad range of learning objectives, on many occasions fail to provide a template model that can govern the desirable actions. Hence, these games are not always effectively linked to the repetitive cycles of arriving at decisions or confronting results in the long-term interest of business. The current research paper foresees an incremental improvement that can be allowed to occur during the product life-cycle of a business simulation game and how such a process can lead to an appropriate methodology with enabling framework of application and validation as a form of typology.*

## Introduction

To simulate real-world systems to arrive at a better planning on the drawing board is the aim of business simulation games. It is true both for scenario-based or numeric-based business simulation games. Today, a much diversified product-range of business simulation games has been conceived by Association for Business Simulation and Experiential Learning (ABSEL), Japanese Association of Simulation and Gaming (JASAG), North American Simulation and Gaming Association (NASAGA), International Simulation and Gaming Association (ISAGA), and more note worthily, European Social Simulation Association (ESSA), which runs a popular blog as a part of its special interest group on Social Simulation and Serious Games (SSSG).

The games expose someone to a broad range of learning objectives such as strategic thinking, decision making, problem solving, risk analysis, production, financial, resource and market analysis, operations, group thinking and teamwork and leadership.

## Aims of the Research:

The business simulation games available in many forms of humanly controlled actions that are interrelated and have a bearing upon the stakeholders and upon the environment, but such game actions are not always effectively linked to repetitive cycles of arriving at decisions or confronting a result. Thus, the research paper foresees on an incremental improvement that can be allowed to occur as the product life-cycle progresses in a business simulation game and how such a process can lead to ways of theorising through appropriate methodology, application and validation as a form of typology.

## Discourse (includes literature review)

The research sources from Tsuchiya and Tsuchiya (1999), Wolfe and Crookal (1982), Greenlaw *et al* (1962) identified difficulties to characterise the nature of business simulation gaming as a sequential decision-making exercise structure around a model of a business operation, in which participants assume the role of managing the simulated operation.

Greenlaw *et al* trace the business simulation games to an outgrowth of earlier developments in disciplines such as military war gaming, operations research, and educational role-playing.

The research aims to discover the underlying patterns in various simulated experiential environment that contains enough verisimilitude, or illusion of reality, to include real world-like responses by those participating in the exercise as Keys and Wolfe aver. The discovery of the patterns in experiential simulations can be progressed to the next level aided by Gredler's identified categories such as data management simulations, diagnostic simulations, crisis management simulations, and social-process simulations.

The endeavour is to interpret different types of symbols and classify according to types of the business simulation games and identify the underlying core approaches towards 'problem solving' of various business simulation games available on the platform of standalone desktops, game consoles, internet simulation, etc. The research aims to examine a host of educational and training games sourcing from the catalogue of ESSA:e-games, internet games, video games, simulations on policy and planning exercises and day-in-the-life, debriefing, analytic discussion, post-experience analysis, modeling, virtual reality, game theory, role-play, role-playing, active learning, experiential learning, learning from experience, augmented reality, playthings, structured exercises, education games, alternative purpose games, edutainment, digital game-based learning, immersive learning, brain games, social impact games, games for change, synthetic learning environments, synthetic task environments, etc.

It is an endearing exercise to the design, implementation, and evaluation of games and simulations to improve learning results that can be seen to aiding the business simulation games and subsequent business decision process. The objectives of business simulation games are to create effective solutions considering multiple perspectives, provide a slew of tools for effective project management, improve efficiency and reduce waste and create a better control over processes through documentation.

To measure the return on investment (ROI) on any proposed project and to have an estimate of cost and time overrun through proper assessment of various project and opportunity costs a proper product development cycle can be sourced from business simulation games.

Senge and Lannon-Kim (1991) in their discourse of managerial micro-worlds articulate how the corporate head honchos learn about their long-term, systemic consequences of their actions through business simulation games' crated virtual worlds, which enable them to think systemically if they can uncover the subtle interactions that thwart their efforts.

The current endeavour goes beyond Naylor's (1971) pioneer work of providing the contents, structure, and operating of management games where business decisions concern price, output, advertising, marketing, raw material acquisition, changes in plant capacity, and wage rate. Hence, it is a plausible idea to refer to the neo-Naylor revisionists such as Horn and Cleaves(1980), Dickinson and Faria (1995), Larsen and Lomi (1999), who build set of mathematical models establishing the connection between the operating results and operating decisions of the individual enterprises, as well as the external environment (the market and suppliers).

The is always worth to reengage with the neo-Naylor's identified basis of (a) a set of behavioural equations, for example the demand and cost functions, and a set of accounting formulas that have been embedded into the system, and (b) the individual decisions of each organisation, operating results are engendered by the system as reports of profit and loss statements, abbreviated accounts, balance sheets, cost and production reports, sales reports, etc.– at the end of each operating period.

The companies must make effort to see if the identified environment can be changed by the system administrator of the game by altering the parameters of the operating characteristics of the business simulation game and record the changes to understand the patterns of variations.

In each business simulation case, the organisations will find it incumbent upon them to respond according to the magnitude and the nature of the change imposed by the external environment, such a phenomenon can provide a better insight into reading the patterns of change. The findings can be collated in order to note points of disagreement with Naylor, in case in case such things occur, as the latter mentions that a few complicated and realistic games permit multiple products, plants, and marketing areas, stochastic production periods, stochastic demand, labour negotiations, and the sale of common stock Lainema (2003).

The business simulation games, conventionally conceived as a sub-genre of the social simulations that aim to reproduce real-life settings in order to obtain a better understanding of the social world (Gilbert & Troitzsch, 2005), can be ranged from macro to micro-scale models. In the current research it is considered to be a representative of a social system or a constituent of multiple actors.

The micro-model of business simulation games, often considered as form of agent-based models, need a particular engagement with regard to a specific context. The serious games, on the other hand, focus on imparting players/managers certain information or skills while retaining the 'fun element' in the game (Djaouti et al., 2011). These applications may need a different level of engagement as compared to the earlier ones.

As these business simulation games use metaphors to put their messages across, and not always necessarily simulate (real-life) situations but transport these simulations to fictitious realms in which the same general principles hold the control, the perceived differences between real-life simulated games and fictitious realms are created on the basis of same underlying principles.

The distinction between simulations and serious games -- the latter provide abstractions and include game mechanics to entice players and let them learn or practice – always needs to be underlined. Predictably the learning goals can evolve as the players/managers to become aware of how social situations may play out when certain actions are carried out and how certain serious games pursue to 'gamify' social simulations, such as negotiation training systems (Swartout 2010) or role-play that enable to simulate and experiment with social situations otherwise difficult to reproduce in real life, thus allowing them to study human behaviour little more intricately (van Ments 1999).

It is always a good idea to define and clarify a stream of issues emerging from business simulation games. Would it warrant action? If so, how? Does the matter call for immediate attention, or can be deferred to a future time? Can the business simulation game be chosen to be

viewed through Pareto Principle (80/20 Rule)? If so, how it could pave the way for assessing and prioritizing choices in all sorts of situations?

As many possible courses of action may emerge competing for attention in a business simulation game the subsequent upgrading of the system can be based on the problem-solver estimating of the benefit obtained by each action, then selection of a slew of the most effective actions that can deliver a total benefit reasonably close to the maximal possible one. The application of Pareto analysis in a business simulation game does enable a creative engagement of reflection on the causes of problems because it facilitates stimulate thinking and organize the thoughts accordingly.

At the initial development stage of business simulation game, the causes of problems can be limited by their exclusion of possible key problems, which may appear insignificant initially, but that threaten to acquire masses with time-consumption leading to paralyze the entire system.

The business game simulation must also consider all the sub-disciplines of business analysis known as requirements engineering focusing on ensuring the changes made to an organisation that are aligned to its strategic goals. These changes include changes to strategies, structures, policies, business rules, processes, and information systems.

As a part of sub-disciplines the organisation analysis (business simulation game needs to be modeled on this) the focus must be on apprehending the requirements of the organisation as a whole, its strategic direction, and identifying initiatives. This will allow an organisation to meet its strategic goals: building and sustaining a business architecture, undertaking feasibility studies, exploring, identifying and defining new business opportunities, configuring the business case studies, undertaking the initial risk assessment.

Better designing of business game simulation also needs to be mapped on to planning the requirements development process and requirement elicitation (focus group, brainstorming, document and interface analysis, reverse engineering, user task analysis, process mapping, job shadowing, design thinking, etc.).

If the major forms of requirements analysis and documentation can be built into the business simulation games such as architecture analysis, business process analysis, object-oriented analysis, structured analysis and data warehouse analysis, storage and databases analysis it would lead to perform correctness of a proposed solution, and support the implementation of a solution, and assess possible shortcomings in the implementation in a particular business scenario.

The documentation as a part of requirement analysis that needs to bear on a business simulation game may take multiple forms such as textual (business cases that summarize specific information), matrix (listing the table of requirements with priorities), diagrams (depicting how data flows from one structure to the other in a business scenario), wireframe (how elements are needed to populate a portal), etc.

**Ethical Consideration**

The business gaming system address the ethical questions such as how to prepare the managers/players to avoid the gaming system that also teaches to manipulate the system. Gaming the system allows to bend rules or to manipulate the system for a desired outcome that

is not in the larger interest of society. The vested interest in abusing the gaming system can be termed as an error is the essence of gaming the system, not at all desirable in the larger interest of the society, in which a gap in protocol invites for errant practices leading to unintended results. However, the business simulation games can create a reporting system in which the players exposed to choices of gaming the system can have the counter choices to convert them to work in the larger interest of business and society.

Evidently it is not always a good idea to rely on simulating all real-life situations for business simulation games as there can always be new revelations and perspectives as the complexities of the businesses emerge in future. The gamified simulation in the management of natural resources with relation to the behaviour of stakeholders, when faced with new fishing regulations, can always be underscored as an area of serious consideration.

**Methodology**

If the pursuit of proper investigation into business conditions is built into business simulation games, it would engender data enabling contextualize the problem areas and finding solution. The business simulation games must always consider different perspectives varying across business areas as each domain enforces its conditions of customers, regulators, suppliers, financials, etc.

The business simulation game can innovatively combine the above with a host of analytical tools as following:

**Heptalysis** (Kathleen B. Hass et al 2008): In-depth analysis of early stage businesses on a clutch of categories such as Market opportunity, Product/Service solution, Execution plan, Financials, Human Capital, Potential return, Margin of safety);

**CATWOE** (Ramirez, Rafael et al (eds.) 2008): Goads the thinking process leading to achievement), de Bono's Six Thinking Hats (brainstorming process to create and analyse ideas and options;

**VPEC-T** (Russell, Jesse and Cohn, Ronald 2012): Employed in situation when analysing the expectations of multiple stakeholders differ in their views of a system, though all believe the enforcement of such a system on a common ground of interest, but have varying priorities and responsibilities;

**SCRS** (www.business-analysis.co.nz/ Business Analysis (BA) in New Zealand): A bottom-down approach business analysis should percolate from the high-level business strategy to the solution, through the current state and the requirements;

**MoSCoW** (Weese, Susan and Wagner, Terri, 2011): Prioritize needs by allocating an appropriate priority, estimating it against the validity of the need itself and its priority against other needs;

**MOST** (Cadle, James et al, 2010): The project is aligned to its mission, objectives, strategies, tactics);

**Failure mode and effects analysis** (Stamatis, D. H., 2013)**:** Reviewing as many components, assemblies, and subsystems as possible to identify failure modes, and their causes and effects);

Fault tree analysis (Roberts et al, 1987) (a top down, deductive failure analysis model in which an undesired state of a system is analysed deploying the Boolean logic in order to combine a series of lower-level events in order to comprehend how systems can fail, to identify the optimal ways to reduce risk or to figure out the event rates of a safety accident or a particular system level (functional) failure; and

**Ishikawa's fishbone diagrams** (Munro, Roderick A, 2003): Useful for product design and quality defect prevention as this cause-and-effect diagrams identify potential factors causing the overall effect. Each cause or reason for imperfection, thus identified as a source of variation, enable to group the causes into major categories to identify as distinctly identified sources of variation).

**Research limitations and direction for further research:**

It would be huge value-addition to business simulation games to have known the technique enabling to identify the 'lead or top portion causes' that call forth to be addressed to resolve the majority of problems in a business scenario. The preponderance of these 'top portion causes' once identified in the business simulation games, the analysis tools such as Ishikawa diagram or Fish-bone Analysis can be used to identify the root causes of the problems.

The Pareto's "80/20" rule, under the assumption that, in all business situations some 20 percent of causes determine 80 percent of problems, employs this ratio as a rule of thumb. However, this is not nor should it be considered immutable law of nature, but certainly this can have a bearing the way business simulation games segregate its 'causes' and 'effects' and the ways the analysis can be linked to risk management allowing companies to focus on those risks that have the most devastating impact on their project.

The business simulation games must aim to enhance the development and application of business simulations and experiential methodologies, encourage a wider use of simulations and experiential methodologies, particularly with regard to effective business education, augment techniques used for the assessment of education and the development of learning theory and to facilitate communication on a global scale among specialists designing and using business simulations and experiential methodologies.

However, it is extremely difficult to imagine a world where in which each player is assumed to know the equilibrium strategies of the other players, and no player has anything to gain by changing only their own strategy, as Nash equilibrium (Shapley, Lloyd S. and Yao, Shuntian, 1996) provides solution concept of a non-cooperative game involving two or more players. If each player has chosen a strategy and no player can benefit by changing strategies while the other players keep their unchanged, then the current set of strategy choices and the corresponding payoffs constitutes a Nash equilibrium.

**Conclusion**

An ideal business game simulation must consider involving strategy analysis of the internal capabilities of an organisation and how the business can respond to any real/perceived changes in the external environment. The result of the internal and external environmental analysis needs to be sourced heavily from the real-life examples, aggregated and effectively

summarized, and appropriately consolidated to analyse the business situation that the enterprise confronts and subsequently decides possible courses of action.

To investigate the business conditions, which must be a pursuit of a business simulation game, the input information into the simulation game must be set out to source from a choice of organisations that effectively deliberated on addressing their issues, problems, or gaps using methods such as activity sampling, document analysis, business logs, etc.

Finally, it can be concluded that the business simulation games merely based on real-life examples put a limitation on such an undertaking, hence, the developers of the game must anticipate the future or the way product life-cycle would evolve in near future, thus here forth must incorporate these cases into business simulation games.

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