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Business Games: Review of Applications in the Supply Chain and Proposal for An Implementation Framework

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Abstract: Business games offer a range of opportunities for educational institutions and organizations in various sectors. Supply chain management is one of the areas significantly impacted by technological advancements, making it essential to constantly qualify the professionals involved. This article aimed to map the bibliographic production related to business games with applications in supply chain management. To achieve this, a review was conducted on the Scopus and Web of Science databases, without date restrictions. The initial survey resulted in articles published in journals presenting applications of games in supply chain management. Subsequently, the identification of variables covered in the games was carried out, allowing for discussions about a methodology for their construction and implementation. Variables related to cost are present in all games, especially those involving logistical costs, as well as variables linked to environmental management and humanitarian issues.

Key words: business games, education, supply chain, logistics

JEL codes: C7, I2, M1

1. Introduction

Supply chain management positions itself as one of the elements that provide organizations with the opportunity to achieve sustainable competitive advantage. This issue is related to its concept, which refers to the integrated management of core business processes involving physical, financial, and information flows — spanning from original producers of raw materials to end consumers in the provision of goods, services, and information. The objective is to add value (time, place, information, and quality) for all customers (first- and second-tier customers, e.g., wholesalers and retailers, respectively) and for other legitimate and relevant stakeholder groups within the chain (shareholders, employees, managers, community, government) (Corrêa, H. L., 2014).

Achieving sustainable competitive advantage through supply chain management is directly linked to balancing internal interferences — associated with the participation of multiple organizations in the distribution

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process — and the external environment (economic, social, technological, political, and demographic factors). In this context, computer models are critical for attaining this equilibrium. The primary benefit of computer models lies in their ability to replicate (to some extent) real-world operations in virtual environments. This enables the identification of potential solutions (feasibility testing in a virtual setting) and mitigates the risk of costly errors prior to real-world implementation. Computer simulation emerges as a key decision-support tool for both supply chain design and the evaluation of supply chain policies (Thierry, C., Bel, G., & Thomas, A., 2008; Hart, S., Halak, B., & Sassone, V., 2022).

Recently, there has been a growing trend toward using business games to raise awareness in specific areas and domains (such as education, healthcare, and urban planning). Business games enable players to understand learning objectives by providing engaging practices and motivating experiences (Hart, S., Halak, B., & Sassone, V., 2022). Other potential applications of business games are related to humanitarian logistics. In this case, the game serves as a tool to analyze decision-making processes — specifically as a means to evaluate the effects of decisions made in humanitarian operations — and to train teams to work collaboratively (Bertazzo, T. R., Leiras, A., Yoshizaki, H. T. Y., & Sauaia, A. C. A., 2018).

These games can be understood as a specific case of serious games, which can be defined as games that provide both entertainment and learning, enabling users to engage with complex problems, dilemmas, and challenges while enjoying the fun derived from gameplay (Burghardt, M., Ferdinand, P., Pfeiffer, A., Reverberi, D., & Romagnoli, G., 2021).

Business games (or enterprise games) simulate decision-making exercises to provide systematic training for participants. They can be used in management laboratories to create environments for managerial education and research, serving as a way to enhance the teaching-learning process (Sauaia, A. C. A., 2008).

In the educational environment, Rosas and Sauaia (2006) argue that business games are typically designed to expose students to a business case, providing preliminary information to help them understand the context in which they will operate. Student engagement in these business game applications fosters their maturation in understanding core disciplinary concepts and prepares them to become future decision-makers.

Business games, therefore, integrate elements such as rules, objectives, challenges, and performance metrics within interactive environments. Through this approach, players learn by deriving meaning from the experience provided by the game — a process referred to as experiential learning (Kolb, D. A., 2014; van den Berg, M., Voordijk, H., Adriaanse, A., & Hartmann, T., 2017).

Another relevant point is that business games allow people to experience situations that would be virtually impossible in the real world due to cost, time, or safety constraints. The experimental environment provided by business games enables the full development of the learning process (van den Berg, M., Voordijk, H., Adriaanse, A., & Hartmann, T., 2017; Hussein, B. A., 2015).

Kriz & Manahl (September 2016) also attempted to classify the types of simulation game applications (used to deliver pedagogical competencies) into two categories, based on the games' focus:

- Games that generate knowledge, which is universal and context independent.
- Games that address practical knowledge and specific pedagogical challenges.

In particular, the second category includes computer simulations and behavior-oriented dramatizations. Within this category, games can be divided into:

- Games that provide training and simulation for experiential teaching and learning, focusing on individual learning.

- Games that support the evaluation and testing of courses of action, focusing on collective learning.
- Games used for organizational rules, structures, and human resources.

Barbosa, Lopes, Leão, Soares, & Carvalho (October 2018) observe that games can be classified as Serious Game Sandbox or Adaptive Serious Games, based on their architecture and gameplay mechanics.

- **Serious Game Sandbox**: In this type of game, players have the freedom to chart their own paths to reach the game's climax.
- **Serious Games Adaptativos**: These games adapt to the player's intellect and aim to deliver pedagogical competencies in a personalized manner.

The previously presented context productively suggests several benefits achievable through business games, namely: knowledge acquisition, motivation, engagement, increased didactic material verisimilitude, development of student autonomy, and training in a simulated, safe environment that permits learning from decision-making failures.

Given these considerations, the article's objective focuses on mapping the variables inherent to business games, enabling relevant discussions about their development.

The article is structured as follows:

- The next section describes the methodological process.
- The following section presents the literature review on business games and supply chain management.
- The subsequent section details the results presentation and analysis.
- The penultimate section introduces a proposed framework for implementing business games.
- The final section provides concluding remarks.

2. Methodology

The article was developed based on the following parameters:

- Keywords in English: serious games, business games, and supply chain.
- Search databases: Scopus and Web of Science.
- Timeframe: unspecified (to maximize article retrieval).
- Document type: scientific articles only.
- Language: English.

The article analysis flow was structured according to Figure 1 presented below.

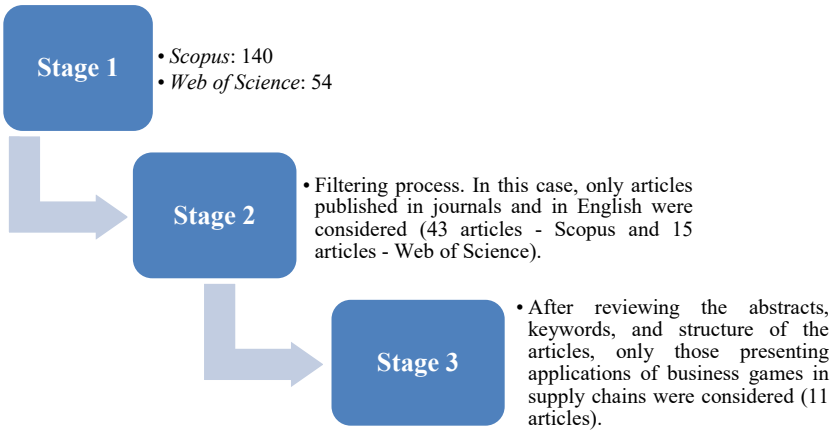

Figure 1 Article Analysis Flow

The methodological process was structured in three stages: the first stage included 194 documents (research conducted in the Scopus and Web of Science databases based on the initially specified parameters), the second stage 58 articles (considering only articles published in journals), and the third stage 11 articles (after reviewing the abstracts, keywords, and structure of the 58 articles). In this case, 11 articles with applications of business games in supply chains were selected for analysis.

3. Theoretical Foundation

The theoretical foundation addressed the following topics: supply chain management: concepts and evolution, and business games.

3.1 Supply Chain Management: Concepts and Evolution

Corrêa (2014) defines Supply Chain Management (SCM) as the planning and management of all activities involved in procurement, conversion, and all logistics management activities. Additionally, it includes coordination and collaboration with partners, which may be suppliers, intermediaries, third-party service providers, and customers.

The integration vision in supply chain management is also embedded in the concept presented by Corrêa (2014), where supply chain management constitutes the integrated administration of core business processes involving physical, financial, and information flows — spanning from original producers of raw materials to end consumers in the provision of goods, services, and information, with the objective of adding value for:

- All customers (first- and second-tier customers, e.g., wholesalers and retailers, respectively).
- Other legitimate stakeholders relevant to the chain (shareholders, employees, managers, community, government).

The concepts related to supply chain management lead to several key conclusions:

- Supply chain management depends on the coordination and collaboration of all companies involved in the process of supplying diverse materials, production, and product distribution from origin to destination.
- The desired outcome of efficient and effective supply chain management should provide consumers with time and place utility.
- Supply chain management requires a holistic and integrated view of its processes.

3.2 Business Games: Definition and Key Concepts

Business games should be viewed as tools to provide executives and decision-makers with experience in a simulated/virtual environment, where managers can analyze the outcomes of their potential decisions in specific scenarios (Faria, A. J., 1998).

- Based on the above definition, business games must fulfill three objectives:
- Training (developing decision-making skills),
- Education (transmitting specific knowledge), or
- Research (using the game's simulated scenario as an analysis/evaluation laboratory for variables) (Tanabe, M., 1977).

Simulation-based business games incorporate hypothesis testing, probing, and reflection about the simulated

world to promote learning and awareness. The game's proposed scenario enables users to develop tasks or challenges aimed at learning specific concepts. Players can conduct repeated experiments and understand the effects of their decisions, thereby enhancing their motivation and learning for real-world contexts (Hart, S., Halak, B., & Sassone, V., 2022; Hou, H. T., 2015; Hamari, J., Shernoff, D. J., Rowe, E., et al., 2016).

The concepts presented above reveal key characteristics of business games:

- Simulated environment.
- Decision-making skill development.
- Knowledge-sharing facilitation.
- Analysis/evaluation of variables in specific concepts.

Another relevant aspect regarding business games concerns the survey conducted by Ornellas and Campos (2008), Cuesta & Nakano (2017):

1) Inventory & Bullwhip Effect

Beer Game: Simulates inventory flow through the supply chain and demonstrates the bullwhip effect (amplified demand variability upstream).

2) Facility Planning

BR LOG: Long- and short-term decisions on distribution center/factory locations and sizing.

Logistics Game (LOGA): Periodic decisions on capacity sizing, supply, production, distribution, pricing, and advertising.

3) Distribution Optimization

CAPS Logistics: Product allocation (quantity, recipients), route/vehicle/driver selection.

Food Force: Emergency item distribution in crisis scenarios.

4) Collaboration & Communication

CODEPRO: Enhances SCM communication/cooperation skills.

Trust and Tracing: Builds trust among supply chain partners; tracks honest vs. fraudulent players.

5) Production & Demand Planning

Forecast Game: Production quantity forecasting.

Mortgage Service Game: Make-to-order SCM principles (no inventory, capacity adjustments only).

6) Sustainability & Risk

The Green Beer Game: Balances profitability with CO_2 emission control in transport.

Shortfall: Teaches environmental decision-making in SCM.

7) Comprehensive SCM Simulators

Supply Chain Game: Revenue maximization via pricing/order fulfillment.

SUCH Simulator: Covers raw material procurement, production rate, demand estimation, warehouse space, transport mode selection, and promotions.

SBELP: Simulates global electronics supply chains (King Fahd University).

8) Specialized Training Tools

"Poker Chips" Game: Push vs. pull inventory policies.

Global Supply Chain Game: Real-time global distribution with 24/7 dynamic event handling (contrasts turn-based games).

ILMG: Player-defined roles (firm/market) with logistics sub-plans (advertising, production, insurance).

9) Humanitarian Logistics

Humanitarian Crisis Game: Board game for crisis response (security, supply distribution, infrastructure).

4. Results and Discussion

The following sections present and analyze the results of this article.

The variables identified in the business games originate from the 11 articles selected for results presentation and analysis. The articles are listed below:

- Abasian, F., Rönnqvist, M., Marier, P., & Fjeld, D. (2020). Game — the transportation game. *INFORMS Transactions on Education*, 21(1), 52-63.
- Beltrão, K. I., & Barçante, L. C. (2016). Teaching principles and fundamentals of business excellence to undergraduate students through a game. Total Quality Management & Business Excellence, 27(5-6), 681-698.
- Bertazzo, T. R., Leiras, A., Yoshizaki, H. T. Y., & Sauaia, A. C. A. (2018). Mecanismos de coordenação em gestão de operações humanitárias: modelo conceitual de simulador e proposta de jogo de logística humanitária. *Gestão & Produção*, 25(2), 219-232.
- Cuesta, V., & Nakano, M. (2017). Chain of command: A sustainable supply chain management serious game. *International Journal of Automation Technology*, 11(4), 552-562.
- Hart, S., Halak, B., & Sassone, V. (2022). CIST: A serious game for hardware supply chain. *Computers & Security*, 122, 102912.
- Katsaliaki, K., Mustafee, N., & Kumar, S. (2014). A game-based approach towards facilitating decision making for perishable products: An example of blood supply chain. *Expert Systems with Applications*, 41(9), 4043-4059.
- Putri, A. N., Hariadi, M., & Rachmadi, R. F. (2023). Supply chain management serious game using blockchain smart contract. *IEEE Access*, 11, 131089-131113.
- Rahim, Z. B. A., Timperio, G., De Souza, R., & William, L. (2020). Enhancing decision making capabilities in humanitarian logistics by integrating serious gaming and computer modelling.
- Takahashi, H., & Nakano, M. (2019). System dynamics to design an educational game for improving interpersonal skills to manage conflict. *Journal of Advanced Mechanical Design*, *Systems, and Manufacturing*, 13(2), JAMDSM0040-JAMDSM0040.
- Sato, M., & Mizuyama, H. (2022). Global Environmental Issues: Food and Agriculture Education to Address Food Loss and Waste, Aiming at a Sustainable Supply Chain Problems Related to Food Loss (SY (T6) 7). *Journal of Nutritional Science and Vitaminology*, 68(Supplement), S95-S97.
- Van den Berg, M., Voordijk, H., Adriaanse, A., & Hartmann, T. (2017). Experiencing supply chain optimizations: A serious gaming approach. *Journal of construction engineering and management*, 143(11), 04017082.

Table 1 presents the description of variables identified in business games across the 11 selected articles.

Table 1 enabled the identification of the main variables of the business games present in the 11 articles used as the basis for presenting and analyzing the results. Below are the analyses of the results presented in the table prepared for this topic.

The analysis based on the results presented above provides some relevant findings, as outlined below.

Table 1 Description and Mapping of Variables in Business Games

Artigo	Variável presente no Jogo de Negócio
[19]	Wood (raw material) procurement cost and transportation cost, hierarchical planning, and supply chain collaboration.
[20]	Variables of JOGAI: supply chain actors (mining companies, goldsmiths, jewelry stores, audit committee, exporter, and government); leadership, strategic planning (customer, competitors, and suppliers), customer focus, society, knowledge and information, workforce, processes, business results (return on investment and market share).
[4]	A actors (Local Humanitarian Agent; Coordinating Humanitarian Agent; Transportation Service Providers; Warehousing Service Providers; Suppliers; Donors and Beneficiaries), logistics stages, decisions (procurement, transportation, warehousing and demand) and performance indicators (total logistics cost, service coverage and service capacity). The main actors in this chain, responsible for decision making and considered in the proposed Humanitarian Logistics Game are the Local Humanitarian Agent (LHA) and the Coordinating Humanitarian Agent (CHA). These are responsible for interacting with other actors, securing resources from donors, collecting information about demand and about suppliers and service providers, and making necessary decisions. In the model, humanitarian actors can operate in an individual or decentralized manner and establish vertical partnerships with logistics service providers (represented by Group 1). In this situation only Local Humanitarian Agents operate, with no participation from Coordinating Humanitarian Agents. Or, as a second option, humanitarian actors can operate collaboratively or centrally and establish vertical partnerships with logistics service providers and horizontal partnerships between Local Humanitarian Agents and Coordinating Humanitarian Agent (represented by Group 2). In this second scenario, the Coordinating Humanitarian Agent is responsible for decision making in supply chain management. The performance indicators considered are: total logistics cost, service coverage and service capacity.
[18]	Variables of chain command: environmental, social and economic dimension; increase production efficiency; inventory control; risk (internal and external); cooperation; flexibility and control (vertical integration, excess production capacity, contractual obligations to suppliers).
[3]	Supply flow; trade-off between inventory size and service level; pre-positioning supply location problem; modeling technique used (discrete event simulation, dynamic system and agent-based simulation); perspective of area experts; multicriteria decision approach (humanitarian logistics game added to ThinkLog); risk, coverage, congestion and warehouse maintenance cost in ThinkLog.
[21]	Variables of The Blood Supply Chain Game: distributor perspective, three policies (allocate stock on demand, allocate stock on demand with adjusted collections, and allocate stock collectively with adjusted collections); profitability of the National Blood Service (NBS) is used as a value measure, since any revenue exceeding costs will be invested; transport cost; inventory holding cost and competitive priorities.
[22]	The game addresses a blockchain-based smart contract scenario for supply chain management. In this case, it simulates an agricultural production chain. Initially, the farmer is an attribute provider who manages corn production from planting, fruiting, harvesting, the farmer's name, harvest location, stock quantity, harvest condition, expiration date, and prices. The Village Unit Cooperative is the attribute provider that purchases the harvest from the farmer and receives activity records for each transaction. The farmers' products are sold to consumers. The Village Unit Cooperative is a commercial entity in rural areas that fulfills daily needs related to agricultural activities. The distributor is the attribute provider that delivers products from the Village Unit Cooperative to consumers.
[23]	A business game aimed at understanding aspects related to humanitarian logistics. The test was conducted based on a real case study (Indonesia). The results of this study highlight the importance of serious games as risk-free environments where participants can develop strategies to enhance disaster preparedness, alongside widely used research methodologies such as computational modeling. The game incorporates some relevant variables: supply chain discovery (introduction to inventory management in the supply chain); order policy and risk management (risk management and risk mitigation strategies).
[24]	In the game CANDY OG — supplier component revenue, penalty paid for defects, inventory cost, manufacturer's finished product revenue, penalty received for supplier defects, component cost, penalty paid for pending orders, penalty paid for defects, inventory holding cost, and total inventory cost.
[25]	The players include one retailer and three consumers, while the facilitator assumes the role of wholesaler. Each day represents one round, with a total of five rounds (five days) per game. Seven vegetables were selected for consumption in the game: cabbage, cucumber, onion, tomato, carrot, spinach, and lettuce. The objective of the player representing the supermarket is to maximize profits, while the consumer players aim to purchase vegetables with a limited amount of money (3,000 yen), cook for their families, and consume the highest possible amount of vitamin C. The vitamin C score was calculated in a way that made it advantageous to consume it from a variety of different vegetables.
[9]	Variables of the Tower of Infinity game: project scope, time and cost; waste indicator and external storage rate, coordinate purchases, production and delivery, delivery deadlines and assembly rates, production time.

In general, business games establish the actors (supply chain participants) but feature specific variables that serve their intended purposes. Thus, not all elements pertinent to a supply chain will be considered, for example.

Nevertheless, cost-related variables are present in all games, especially those involving logistical costs.

Business games aim to develop decision-making process skills. This aspect is evident in the need to make decisions based on information/indicators. Additionally, aspects such as coordination and collaboration are important elements in most of the games studied here.

It was also possible to identify a recurring frequency of variables linked to environmental management and humanitarian issues — topics that have been increasingly appearing in business and supply chain discussions, perhaps indicating a trend that is also being incorporated into business games. Another trend that the identified variables may reveal is the concern with managing services associated with the supply chain.

5. Proposal for a Business Game Design and Implementation Framework

Table 1 enabled the identification of some structural and highly relevant variables for the development and application of business games. Figure 2 presents the necessary steps for the development and execution of business games.

Figure 2 Business Game Development and Implementation Framework.

5.1 Final Considerations

This article sought to explore a teaching methodology focused on student protagonism — business simulators — in the context of supply chain management.

The objective was to map the most frequently encountered variables in business games of this field through an integrative literature review, also allowing those interested in game development to delve deeper not only into the variables present in the games but also into their phases.

The Transportation Game (Abasian, F., Rönnqvist, M., Marier, P., & Fjeld, D., 2020), for example, presents 3 phases — the first strategic and the other two tactical:

- Selection of supply areas and product mix.
- Decision on collaboration level in raw material exchange.
- Transportation decisions.

The phases present in other surveyed simulators can be found in the references of Table 1 above.

To conclude, it's worth remembering the great potential of using games in business management as teaching tools, especially in areas involving quantitative reasoning and variable manipulation like Logistics and Supply Chain Management. Perhaps this explains why so many trade-offs between the mapped variables have been explored in the surveyed simulators.

References

Abasian, F., Rönnqvist, M., Marier, P., & Fjeld, D. (2020). "Game — The transportation game", *INFORMS Transactions on Education 21* (1): 52-63.

Barbosa, T., Lopes, S., Leão, C. P., Soares, F., & Carvalho, V. (October 2018). "Serious game for teaching statistics in higher education: Storyboard design", in: *International Conference on ArtsIT, Interactivity and Game Creation*, Cham: Springer International Publishing, pp. 169-175.

Beltrão, K. I., & Barçante, L. C. (2016). "Teaching principles and fundamentals of business excellence to undergraduate students through a game", *Total Quality Management & Business Excellence 27* (5-6): 681-698.

Bertazzo, T. R., Leiras, A., Yoshizaki, H. T. Y., & Sauaia, A. C. A. (2018). "Mecanismos de coordenação em gestão de operações humanitárias: modelo conceitual de simulador e proposta de jogo de logística humanitária", *Gestão & Produção*, 25(2), 219-232.

Burghardt, M., Ferdinand, P., Pfeiffer, A., Reverberi, D., & Romagnoli, G. (2021). "Integration of new technologies and alternative methods in laboratory-based scenarios", in: *Cross Reality and Data Science in Engineering: Proceedings of the 17th International Conference on Remote Engineering and Virtual Instrumentation*, Springer International Publishing, pp. 488-507.

Corrêa, H. L. (2014). *Administração de cadeias de suprimento e logística*, Editora Atlas SA.

Cuesta, V., & Nakano, M. (2017). "Chain of command: A sustainable supply chain management serious game", *International Journal of Automation Technology 11* (4): 552-562.

Faria, A. J. (1998). "Business simulation games: Current usage levels — An update", *Simulation & Gaming 29* (3): 295-308.

Hart, S., Halak, B., & Sassone, V. (2022). "CIST: A serious game for hardware supply chain", *Computers & Security*, 122, 102912.

Hamari, J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016). "Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning", *Computers in Human Behavior 54*: 170-179.

Hou, H. T. (2015). "Integrating cluster and sequential analysis to explore learners' flow and behavioral patterns in a simulation game with situated-learning context for science courses: A video-based process exploration", *Computers in Human Behavior 48*: 424-435.

Hussein, B. A. (2015). "A blended learning approach to teaching project management: A model for active participation and involvement", *Insights from Norway. Education Sciences 5* (2): 104-125.

Katsaliaki, K., Mustafee, N., & Kumar, S. (2014). "A game-based approach towards facilitating decision making for perishable products: An example of blood supply chain", *Expert Systems with Applications 41* (9): 4043-4059.

Kriz, W. C., & Manahl, W. (September 2016). "Gaming simulation as a science of design approach", in: *International Simulation and Gaming Association Conference*, Cham: Springer International Publishing, pp. 380-393.

Kolb, D. A. (2014). *Experiential Learning: Experience as the Source of Learning and Development*, FT Press.

Ornellas, A. O., & de Campos, R. (2008). "Jogos de empresas: criando e implementando um modelo para a simulação de operações logísticas", *Revista Produção Online 8* (2).

Putri, A. N., Hariadi, M., & Rachmadi, R. F. (2023). "Supply chain management serious game using blockchain smart contract", *IEEE Access 11*: 131089-131113.

Rahim, Z. B. A., Timperio, G., De Souza, R., & William, L. (2020). "Enhancing decision making capabilities in humanitarian logistics by integrating serious gaming and computer modelling", *Adv. Sci. Technol. Eng. Syst. J. 5* (3): 402-410, doi: 10.25046/aj050351.

Rosas, A. R., & Sauaia, A. C. A. (2006). "Jogos de empresas na educação superior no Brasil: perspectivas para 2010", *Enfoque: reflexão contábil 25* (3): 72-85.

Sato, M., & Mizuyama, H. (2022). "Global environmental issues: Food and agriculture education to address food loss and waste, aiming at a sustainable supply chain problems related to food loss (SY (T6) 7)", *Journal of Nutritional Science and Vitaminology 68* (Supplement): S95-S97.

Sauaia, A. C. A. (2008). *Laboratório de gestão: simulador organizacional, jogo de empresas e pesquisa aplicada*, Editora Manole.

Takahashi, H., & Nakano, M. (2019). "System dynamics to design an educational game for improving interpersonal skills to manage conflict", *Journal of Advanced Mechanical Design, Systems, and Manufacturing 13* (2): JAMDSM0040-JAMDSM0040.

Tanabe, M. (1977). "Jogos de Empresas", São Paulo, FEA-USP, doctoral dissertation, dissertação de Mestrado.

Thierry, C., Bel, G., & Thomas, A. (2008). "Supply chain management simulation: An overview", *Simulation for Supply Chain Management*, pp. 1-36.

van den Berg, M., Voordijk, H., Adriaanse, A., & Hartmann, T. (2017). "Experiencing supply chain optimizations: A serious gaming approach", *Journal of Construction Engineering and Management 143* (11): 04017082.