

# A Case for Simulation: A Review of Research on the Impact of Simulation



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Simulation has received a great deal of attention in the last few years as an unusually effective method of helping people understand new ways of acquiring knowledge, improve or develop skills, and gain insight into a particular set of concepts or issues. Is this attention warranted? Is simulation truly a better way of learning? This paper will review the research on learning, describe the commonly accepted types of simulations, and give some examples of the successful use of simulation in accelerating the time to value of corporate initiatives.

## The Needs of Adult Learners

We learn differently as adults than we did as children. How do the experts view our learning needs? How can corporations best address those needs while keeping current with their rapidly changing environments? This section contains summaries of experts' findings.

1. Malcolm Knowles identified a number of characteristics of the adult learner (Knowles, 1970):
  - Adults have a life-centered orientation to learning and problem solving
  - Adults have a desire to draw on experience as a resource
  - Adults have a need to be self-directing; they enjoy planning and carrying out their own learning exercises
  - Adults need an opportunity to apply and try out learning quickly

Knowles also states that adults learn best by active (as opposed to passive) experiences. Working to solve problems facilitates their learning (Knowles, 1996).

2. Roger Schank's theory entitled "Learning by Doing," states that skills are developed and information is obtained in practical contexts (Schank, 1999).
3. Kolb, an advocate of experiential learning, states that "learning is the process whereby knowledge is created through the transformation of experience." In considering this view, learning cannot occur without some kind of "transaction between the learner and the environment" (Vincent, 1998).
4. Both Lewin and Piaget, who sparked the modern interest in simulations and role play, argued that effective learning occurred in two circumstances: when there was a sustained interaction between the learner and the environment and when there was an opportunity to reflect on the experiences in the environment through social interaction (Vincent, 1998). Lewin discovered that group discussion and role-play sessions were more effective than lecture-style information sessions (Vincent, 1998). Piaget stressed the importance of social interaction in challenging and changing existing beliefs (Vincent, 1998).

Based on the findings of these experts, simulations are the ideal learning tools for adults.

## Types of Simulations

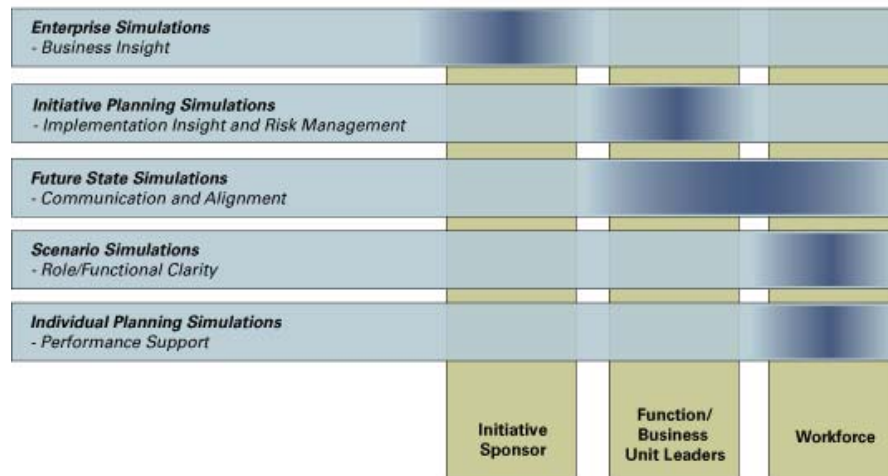
It is important to understand exactly what a simulation is and the different forms it can take. A simulation is a tool that allows one to "learn by doing" in a risk-free environment. It offers realistic scenarios, situations, role-plays, and financial models. Learners face crises, manage uncertainty, and learn by practically applying theoretical concepts to simulated situations. Playing a simulation requires complete involvement, which leads to a greater understanding and retention of the material.

Gredler identified two major classes of simulations that are used primarily in the educational and military arenas (Gredler, 1992). A *tactical-decision* simulation emphasizes the collection and interpretation of data and the development of a strategy to achieve a specific goal. In *social-process* simulations, the emphasis is on the study of human interactions and communication in the pursuit of social or political goals.

## BTS Simulations

BTS, Inc. has historically classified the simulations it develops into two basic types that link to Gredler's two classes: enterprise simulations, corresponding to Gredler's tactical-decision simulations and scenario simulations, corresponding to Gredler's social-process simulations. Based on these two basic types, BTS has developed its Simulation Continuum.

### BTS Simulation Continuum



The enterprise and initiative planning simulations in the continuum are based on a model of how a business or a specific initiative works. The model treats the business’ different functions, processes, and greater environment as a system. The simulation presents the learner with realistic business goals to achieve and the various sets of decisions that must be made to achieve the goals. Upon making decisions, the learner can see their effects on the business’ performance. The majority of this feedback is conveyed through financial reports and other quantitative business measures.

Scenario simulations, the foundation for BTS’s future state and individual planning simulations, are based on real-world situations and build specific skills and behaviors that can be applied immediately to a person’s job, role, or function. Scenario simulations are case studies where the learner interacts with characters and the storyline unfolds based on learner’s actions. It allows corporate strategy, initiative context, or best practices to be introduced, defined, reflected, tested, and refined in a risk-free and non-threatening environment.

In BTS’s simulation continuum, application depends on need. Simulation can be used to analyze and understand the whole enterprise, a specific initiative or process, the future state when the new way is installed, the required roles or functions, even specific performance tasks. It can be used to plan and test out strategies, models, and responses; to communicate, provide context, energize, have fun, and get people engaged; or to assess how the organization is doing or how individuals are performing a given set of behaviors or tasks around a new process or initiative.

### The Impact of Simulations on Learning

Almost all studies on simulations have highlighted their motivational capacity and ability to provide learners with direct experience to complex systems (Vincent, 1998). Brookfield suggests that the motivational aspect is related to students coming to “regard learning activities as having immediate relevance” that allow “learning to be recalled long after it has happened” (Vincent, 1998).

According to Brandon-Hall, a leading e-learning researcher, “the customer base is already ‘sold’ on simulation. Most medium- and large-sized businesses recognize the effect that simulation has on improving supply chain efficiency, product cycle performance, and workforce management. They are enthusiastically embracing e-learning simulation as the most effective knowledge transfer technology.” (S. Adkins, *2002 U.S. Market for e-Learning Simulation*, Brandon-Hall)

Edgar Dale, a renowned educational psychologist, purports that simulated and direct experiences generate as high as 90 percent information retention rate. In comparison, traditional teaching techniques such as lectures result in a mere 10 percent retention score (Mingail, 2000).

Simulations, role-playing, and games are experiential learning methods. They address many aspects of learning that other methods do not. They accommodate more complex and diverse approaches to learning processes and outcomes in several ways (Ruben, 1999):

- Allow for interactivity
- Promote collaboration and peer learning
- Address cognitive and affective learning issues
- Foster active learning

Gartner, a leading research firm, “expects that simulation will evolve to become the “killer application” for e-learning. (J. Lundy, K. Harris, D. Logan, *Simulation—Winning Application for e-Learning, Numerous Benefits for Enterprises*, September 18, 2002, Gartner, Inc.) Other corporate research firms, e.g., IDC, have suggested a similar rise in the use of simulation in large organizations.

“From a corporate perspective, the accelerating rate of change and the increasing uncertainty in the outcomes of change are evident across the whole business arena. For an organization to be successful, they must develop the ability to continuously learn and adapt to changes in their environment. The ability to adapt requires the organizational ability to learn. To ensure sustainable success, organizations need to create a learning environment where sharing of intelligence, construction of meaning, and social propagation of ideas and skills is a norm. Simulations and games are an essential element of such a learning environment (Wenzler, 1999).”

## Evidence of the Effectiveness of Simulations

Organizations have been using simulations for years; in fact, BTS has been creating them since 1981. More corporations are adopting their use to drive not only learning and skill development (consider the pervasiveness of the flight simulator), but also to ensure that critical corporate initiatives are getting the desired results. BTS’s clients have seen very tangible top and bottom line results from the use of simulation. Some of these cases are explored in this section.

*The Challenge: Refocusing a Fortune 500 Telecommunications Sales Function in Response to Market Forces*

The telecommunications market since 1999 has been in turmoil. Revenue growth was flat across the industry, and stocks of the Big Three long distance companies were down 85%. In the face of these market forces, a Fortune 500 telecom company undertook a strategic initiative to transform its sales force to be able to succeed in the new marketplace. Specifically, the company invested several million dollars to refocus and upgrade the capabilities of their sales force. Its goal was to increase the win rate on larger opportunities by moving further away from price selling to value selling.

The company developed a simulation to help its sales force improve their win rate by achieving three key factors with their clients.

1. Building a broad and deep relationship in their customer organizations, within the Information Technology (IT) organization, at the CXO level, and with line managers and executives.
2. Understanding their client's business and being able to develop and communicate a compelling value proposition for the company's solutions.
3. Having a strategy and plan in place to work effectively, internally and with the customer.

The overall purpose of the simulation was to drive users to think more strategically and creatively as they approached their accounts. Some of the specific issues that were addressed in the simulation:

- Assessing the potential risks and rewards of different account strategies and tactics
- Penetrating new organizations, divisions, plants, etc.
- Calling at the right time, such as when a new manager takes charge (a time of great vulnerability for incumbent suppliers and a great opportunity for "outsiders")
- Staying in touch with the accounts on a regular basis to gather information, uncover new opportunities, discover competitive threats, etc.
- Concentrating energies on the best opportunities
- Involving the customer in the solution, through needs analysis selling, visiting other customer sites, references, etc.
- Using the "coach" in the account to provide valuable account intelligence
- Overcoming obstacles in the account
- Knowing when and how to use one's manager
- Using the team of internal resources (technical services, engineering, etc.) in the sales process
- Building credibility and trust with the customer
- Partnering with the customer to satisfy *their customers'* needs.

*Results of this initiative were overwhelmingly positive. According to an independent ROI study, the company realized an annualized net benefit of over \$60 million on the project, with an ROI of over 3900%. The study found that the benefit to cost ratio was 40x.*

*Challenge: Successfully Leading a Fortune 100 Company Into the Future*

The CEO of a multi-billion dollar manufacturing company identified that his primary business initiative was to drive sustainable growth in sales and profits through a more risk-diversified organization. The company's traditional concentration of business created substantial operating risk and dependence on a small number of large contracts. The implied operating risk put pressure on shareholder expectations of future earnings.

The company identified the following specific competencies that their senior managers needed to implement this initiative:

- better understanding of executing strategy
- business acumen
- thorough knowledge of the determinants of financial performance
- improved leadership skills in aligning individual divisions to the overall company strategy

In response to the CEO's charge, the company developed a two-week event built around these competencies and the underlying strategic themes of:

- Running healthy core businesses
- Leveraging strengths into new products and services
- Opening new frontiers

A key component of the event was a simulation that allowed managers to perform their roles in a large, simulated organization. The simulation replicated the operational complexities of the company's various businesses. The focus of the simulation was to grow the simulated organization in such a way that encouraged shareholder and stakeholder confidence, and thereby grew shareholder value. The simulation was the "practice field" that allowed the participants to put new knowledge into action and to see the results of their actions, for better or worse, in a complex, "global" environment. The simulation covered six simulated years, enough time to allow a strategy to play out. Competition between the teams was real and intense, particularly after the final round of the simulation when the simulation "executives" presented their results and projections to stock analysts, one of whom was the CEO of the real company. The concept of shareholder value and the link to "the real world" was clear and strong.

*The event, particularly the simulation, had tangible top-line results. Participants cited multi-million dollar contracts that were won through the application of skills and learning gained from the simulation. Less tangible benefits came from the interaction of the participants and the clearer understanding of the company vision and strategy.*

*The Challenge: Moving from a Transactional Sales Focus to a Solution Selling Focus*

The CEO of a Fortune 100 high technology firm wanted to make the company "the relevant player" in the enterprise software industry. This strategy required significant increases in enterprise server, software, and service

revenues, a very different focus than company's past focus on desktop software. The company targeted the creation of high-value customer relationships as a key to the realization of this strategy. This change required the adoption of new account segments, a new sales team model, and a new compensation plan to reward a different kind of sales success. It also required a shift from "transactional" selling to a "solution selling" approach. The firm's sales professionals needed to take a consultative approach with customers by providing highly focused business solutions for specific customer needs. This solution selling initiative entailed selling to higher-level buyers and demonstrating the true business value of the company's products and services.

Four different simulations were created to support the sales process transformation. First built was the Business Intelligence simulation to provide the solution selling framework to enable the sales professionals to practice and hone their skills in the context of a realistic selling environment. The simulation challenged them to focus on solving business problems and talking to executives in business terms, rather than in terms of features and functions. The participants had to earn the right to talk to senior decision makers and were encouraged to use additional resources throughout their organization to develop solutions. The simulation enabled the account managers to overcome the initial barriers in the sales process by communicating value and providing economic justification for their solution.

The second simulation, for Sales Managers, focused on:

- Improving the win rate, average velocity, and value of the opportunity by leading teams in the use and application of the new sales process
- Improving forecast accuracy by performing more accurate pipeline analysis
- Conducting effective and efficient opportunity debriefs with their account managers
- Conducting effective, efficient and productive coaching sessions for their account managers

The goals of the Account Manager simulation were linked to the Sales Manager goals, but with slightly different objectives and performance metrics. In this simulation, Account Managers tried to:

- Improve the win rate, velocity, and value by consistently making good decisions and executing the Sales Process
- Maximize the revenue on opportunities by finding the pain and gaining access to power sponsors
- Demonstrate an understanding of their client's business requirements by correctly executing the evaluation plan
- Create a sense of energy around the value of the solution by developing a strong value proposition

Finally, an assessment simulation was built, in which the sales managers were assessed on their ability to diagnose problems in the sales funnel and coach their people through the sales process, helping them advance the sale and overcome common roadblocks.

*The company anticipated that, with consistency, discipline, and regularity, the new sales approach would show a 17-35% improvement over five years. The simulations were the cornerstones to prepare the company's sales force to achieve these results.*

***The Challenge: Transforming the Sales Function in a Fortune 500 Technology Company:***

In response to a 60% decline in their 1999 stock price, stagnant revenues, shorter product lifecycles, and strong competition, and to meet Wall Street's demand for accelerated revenue growth, the president of a multinational technology company undertook a strategic sales productivity transformation. The company looked to dramatically increase the productivity of each of its sales people to once again lead the industry. The president's message to his sales force was, "We're in a deep crisis. Our sales productivity is a disaster. Our strategy is wrong. We're stuck in old models. We need radical change."

To achieve this radical change, the company looked to increase the productivity of each of its sales people to make it comparable to the productivity rates of its competitors. In many cases, this would require a 10-fold improvement. The success of the initiative hinged on managers being able to develop their own localized plans to accomplish the following:

- Increase face-to-face selling time by 50% by using technology and support tools
- Implement an effective, disciplined, closed-loop sales management process
- Segment their sales force (direct sales, overlay sales organizations, and other channels) on the size of the accounts and opportunities
- Focus personal selling time of top sales representatives on larger opportunities
- Focus on high potential decision makers (CXOs) in those accounts
- Increase sales velocity (time to close and hours to close)
- Reduce turnover on account assignments
- Improve account coverage (frequency and quality) on all accounts

The president charged his team to develop and implement a simulation-based solution specifically designed to double sales force productivity over three years. The simulation, modeled on the company's new coaching process, was used to assess and drive sales people to new levels of performance and gave sales people an opportunity to efficiently and effectively plan account and market strategies that would lead to more and bigger wins.

These examples all illustrate the power of simulation to learn for a variety of purposes, be it accelerating the benefits of a corporate initiative or individual skill development. Over many years, research has validated this approach as one that shows high acquisition and retention of knowledge, and where appropriate, significant impact on business results.

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### **About BTS:**

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