

# Business Management Simulations

## – a detailed industry analysis as well as recommendations for the future

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### **Abstract**

*Being exposed to serious games showed that some simulations widely vary in quality and learning outcome. In order to get to the bottom of best practices a detailed review of business management simulation literature was conducted. Additionally, an industry analysis was performed, by interviewing 17 simulation companies, testing a range of full and demo games, and conducting secondary research. The findings from both research efforts were then collated and cross-referenced against each other in order to determine three things: firstly, the practices and features used by simulation companies that have not yet been the subject of academic research; secondly, the most effective features, elements and inclusions within simulations that best assist in the achievement of learning outcomes and enhancement the user experience; and finally, ‘best practices’ in teaching a business management course in a university or company with the assistance of a simulation. Identified gaps in the current research were found to include the effectiveness of avatars, transparent pricing and the benefits of competing the simulation against other teams as opposed to the computer. In relation to the second and third objectives of the research, the findings were used to compile a business plan, with detailed recommendations for companies looking to develop a new simulation, and for instructors implementing and coordinating the use of a simulation in a business management context.*

**Keywords:** Business Management Simulation Game, Technology Enhanced Learning, Serious Gaming, Best Practice

### **1. Problem Description & Objective**

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Since the 1950's business management simulations have offered an approach to learning that radically challenges traditional methods [1]. Business management simulations, as a subset of serious games, use entertainment principles and creativity to promote complex problem solving skills [2][3]. Unlike traditional learning, students can implement and see the potential effects of their decisions and strategies. To use a metaphor, simulations take students out of the bus driven by their teacher and place them behind the wheel of their own vehicle [4]. They reverse the traditional teacher-centred approach, placing the focus on the learner and providing them greater flexibility and control [5]. In this way, simulations help to bridge the gap between theory learnt in the classroom, and its practical application in ‘real world’ scenarios.

The paper follows the call for more research identifying best practices and misalignments between theory and practice and aims to contribute to the realignment of the knowledge and understanding of the business simulations industry and the relevant literature. It endeavours to help bridge the gap between practice and theory in this area, just as business simulation games aim to do in the classroom. This allows suggestions to be made as to which areas should be further researched and which practical recommendations can be given to simulation companies.



## 2. Literature Review

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This paper reviewed any journals with relevant papers to Serious Gaming, Experiential Learning, Business Simulations and Business Management Simulations. The sources include the Journal “Simulation and Gaming” and papers from ABSEL, ISAGA, JASAG, DiGRA, EUROSIS, which have proven to have conducted extensive research in those areas [6].

### 2.1 Benefits

A plethora of research has been conducted documenting the various benefits of business management simulations. The benefits can be categorised into three main areas; knowledge transfer, skill acquisition and attitudinal/behavioural change [7].

**Knowledge transfer** is achieved through situated cognition (learning in a specific and relevant context) and scaffolding (specialised instructional, more individual support), which provide an environment for knowledge transfer which traditional education cannot [8][9][10][11]. The environment allows the learner to apply his knowledge in the simulated world and self-monitor [3], because of the meaningful, instant, individual and constant feedback on all actions [11][12][13][14][15]. Game-based learning has a positive effect on short and long term memory. It increases the comprehension of concepts, terminology, principles, inter-relations and improves execution in real life business [14][16][17][18][19][20].

**Skill acquisition** is especially beneficial for corporate training. Trainees can explore, fail and try over and over again, without any real consequences [8][10][11][14][21]. The simulated and familiar risk-free environment acts as a motivator for creativity, innovation and improvement on tactile, spatial and visual skills [22][23][24]. Participation in game-based learning in groups allows participants to improve their teamwork, collaboration, negotiation and communication skills towards peers and customers and drive each other’s productivity [3][11][25][26]. Most importantly for companies, employees engaging in game-based learning are provided the opportunity to refine their soft skills such as time management, stress handling, strategic thinking [16][25]; as well as hard skills like quantitative skills and their computer literacy, in the case of a computer based simulation [23].

**Attitudinal/behavioural change** is relevant for governments, NGO’s and companies. People’s attitudes and abilities change towards faster recognition, different perception and more critical analysis of the problem and eventually a different problem solving approach [3][24][27]. Participants’ exposure to decision making controlled environments result in effective decision making, as well as faster implementation of concepts, pace of change and adaptation, due to an increase in concentration and focus. Positive changes also become evident in participants’ shared decision making skills and collaboration with business partners [3][19][25].

### 2.2 Drawbacks

Apart from all their benefits, simulations can be very time consuming for instructors to set up and for employees, who get distracted from their work [5][28]. The use of simulations for the first time is always subject to approval from senior executives or senior lecturers, who believe in traditional learning methods, and therefore simulations are only slowly permeating the relevant industries [14][29]. Similarly, costly development of simulations does not help the diffusion of serious games on a wide scale [11][23][30]. A further challenge is the difficulty of development of an accurate representation of the real world, which requires a lot of technical knowledge and area expertise [24][31]. Additionally, finding the balance between learning and fun elements, like linking in-game rewards to intended outcomes in order to keep participants engaged, is a real challenge [11][23][32]. Other drawbacks include players performing well in the business management game purely because they are lucky, as well as other players performing poorly because of their lack of interest and concentration [5][23]. These factors have to be taken into account when developing new business management simulations.

### 2.3 Simulation journey – From development to the classroom

The following section provides a review of academic theory surrounding the key elements in the development and implementation of simulations.



### 2.3.1 Development and setup

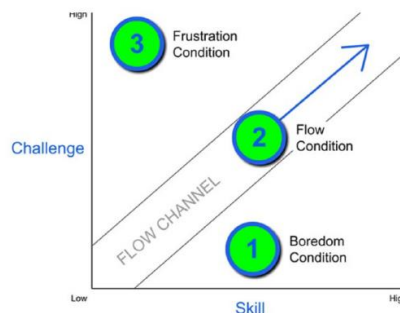
When developing a simulation, the initial set-up stage is critical. One of the major trade-offs developers struggle with during this phase is achieving a balance between cost and design [6][9][33]. Another crucial element which developers need to be aware of, in the set-up stage, is ensuring that they have relevant and correct content to form the base of the simulation [34]. Once an objective is formulated and the relevant content for the game decided, the next challenge is to translate these into a ‘storyline’ that continues throughout the simulation. Studies show that users engage more deeply when they can follow a storyline, as it provides more context and purpose to their experience [11][13].

### 2.3.2 Design – Adjustability

The next step in the development of a successful simulation is optimising the learning environment to suit the needs and different levels of ability of the relevant users [9][13][35]. Educators should be given the possibility to adjust the difficulty level themselves to match the participants’ skill [10][30].

### 2.3.3 Design – Engagement

According to academic literature, optimal engagement is achieved when users enter the “Flow” state [36]. As will become evident, the “Flow” is achieved when a user’s level of skill matches the level of the game’s complexity. If this match is not achieved, players can become frustrated or bored (see Figure 1 [37]). Engagement is key, as players improve they require more challenging tasks and shortcuts within the game. This allows for a quicker gameplay and avoids the risk of players becoming bored and unmotivated [38]. Moreover, players often have different motives for engaging with the game. Generally speaking, there are four reasons players immerse themselves into a game; (1) they are fascinated with the environment and enjoy exploring a “new world”, (2) they enjoy engaging with other players on the platform, (3) they enjoy developing their in-game character and (4) they enjoy working through challenges, and gaining in-game experience [39].



**Figure 1:** The Flow Stage

In relation to game avatars, gaming research has produced ambiguous findings, which have not yet been applied to management simulations. On the one hand, users like to relate to a character. They like to love, hate and identify themselves with an in-game representative and moving a character is a continuous process which keeps players engaged [38][40]. On the other hand, research has shown that character customisation does not have an engagement effect [41].

Players immersing themselves in the simulation due to in-game challenges is the most interesting motivational factor and this can be leveraged in a couple of ways. The first is a performance tracker such as a progress bar or experience points; a level indicator or thematic level progression visualisation [42]. As players participate, build relationships and make decisions within the game, they receive points and rewards, keeping them engaged [43]. Rewards can also be given in the form of achievement badges or in-game accessories such as leader boards, all of which have been shown to have a positive effect on player’s engagement [9][11][21][44][45].

In order to keep engagement levels high, feedback should be constant and in real time. Additionally, it must explain the reason for the failure or success, and the theory behind it, in order to allow the player to learn [3][15]. Inconsistent and uninformative feedback should be avoided, as should simply showing the player the ‘correct’ procedure only for it to be memorised [9]. Feedback can be given in the form of pop-up messages, avatars speaking or as the previously mentioned experience points [46][47].

### 2.3.4 Course/Training - Embedding the simulation

In order to choose the appropriate game for his audience, the instructor must be clear on the specific learning outcomes he wishes to achieve from the game [48][49]. Studies show that, the more an instructor can narrow down the content, the more beneficial the game [52].

Business management simulations are best taught by having the participants complete the game in teams, as doing so improves social interaction and communication skills [3][35]. Studies show that teams of two or three members show the lowest signs of group dissension [53]. It is important for the instructor to actively promote team building and make the contribution of all group members visible. This assists in the avoidance of free riding, increases accountability and improves team cohesion [54].

The inclusion of an initial class with instructions is crucial [55][56]. Making this introduction engaging is important in order to capture the interest of participants early. Studies show that rather than traditional verbal explanations, video tutorials are an effective way of conveying the instructions of such games [56][57]. Additionally, students should be given a manual, as it is important for students to have a sound understanding of the games rules and structure before starting. Mayer [58] suggests testing the player's knowledge of the manual and the games rules in the form of a quiz or assignment before allowing students to begin the game. Additionally, studies have shown that allowing students to complete a practice round with extended time to analyse and complete decisions assists overall performance as well as player's experience [59][60].

The students' assessment should be based on multiple criteria, such as return on investment, cash flow, credit rating, etc., across a broad spectrum. The assessment criteria used should also be the same for all teams in order to standardise evaluation and compare results [15][35][61]. Mayer [58] recommend players to be assessed through other tasks related to the game, rather than solely on performance, such as the development of a strategic plan or recommendations for their company.

Additionally, there is strong support for the proposition that active reflection by players on actions, decisions, performance and team dynamics is more important to the students learning than the results of the game [58][61][62]. Debriefing sessions are an effective way to facilitate such reflection, ensure the learning outcomes have been achieved and assess each player's development fairly [6][63]. Written debriefings, especially based on a holistic theory-based understanding of the industry, have been shown to be more effective than oral debriefings [28][64].

## 3. Methodology

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This paper consolidates the abundance of academic literature on business management simulations, and identifies gaps in the research [34]. By including specific game examples which clearly depict the areas which businesses put a focus on, but have not yet been addressed in academic research, the paper seeks to fill these academic gaps. Through extensive industry research, which is based on interviews, secondary research and the analysis of simulations from 17 companies, cross-referenced with the literature review the paper is able to provide practical business development recommendations.

Commonalities between games were identified and matched with findings from academic research. Best practices were chosen if they were identified to reinforce academically proven benefits or to mitigate drawbacks. The resulting practical findings, in form of a business plan, can be used as a comprehensive guideline for the setup of a simulation company.

## 4. Findings

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### 4.1 Market analysis

#### 4.1.1 Market size

Estimates for the serious games industry range from USD 2 to 10 billion revenue for 2015, depending on how much of the simulation, learning and virtual world industry is included in the calculation [65]. The learning games market is estimated to grow from USD 3.9 billion in 2012 to USD 8.9 billion in 2017, with the simulation-based learning element of this market growing from USD 2.3 billion in 2012 to USD 6.6 billion in 2017 [66]. The simulation game market, which consisted of 31.6% educational and 7.2% enterprise games between 1952 and 2009 [1], has its highest growth potential in these two segments. Increased user engagement in companies, higher



mobile-based usage of learning games, and higher return on investment, place high hopes on an increase in the use of serious games in higher education and corporations in the [4][67].

#### 4.1.2 Market maturity

The US is the pioneer in business simulations. With 54% of serious games worldwide being used in North America in 2014, they remain significantly ahead of all other countries [67]. A survey has shown that 97.5% of 381 Association of Collegiate Schools of Business were using at least one simulation in 1998 [68]. This makes a strong case that the American market is saturated [23]. Therefore, the major potential for simulation providers lies in the European, Australian and Asian markets. Within Europe, the UK, Scandinavia, France and Germany are the frontrunners [24]. Serious games is an innovative sector, however it is still in a formative stage of development and is a very fragmented market [69]. For example, a problem which companies currently face in the industry is the perception of serious games. Universities and corporations still have trouble switching from traditional learning methods to simulations. This is often due to the prevailing image of simulations as games being perceived as not professional, fun and not adequate for the workplace [5][14]. Changing this perception is the gateway to the simulation industries global growth.

#### 4.1.3 Competitor analysis

In order to conduct a comprehensive competitor analysis, 17 simulation companies have been interviewed in person, via skype, telephone or email (see more in Full Paper - Interviews). The findings show that despite the heavily fragmented market and the difficulty of differentiating oneself in this industry, every company claims to have their unique selling point (USP) (see details in Full Paper – Competitor size). A US study has shown that the most used simulations in higher education are Capsim's Capstone, Glo-bus' Business Strategy Game and Stratx Simulations' Markstrat [68]. Allgood [59] confirmed this statement, pointing out that Capsim and the Business Strategy Game have the lion's share of the US university market. Another study identified the Center for Creative Leadership, Strategic Management Group, BTS and Celemi as the top grossing business simulation companies, which are mostly corporate client focused [68]. In such a fragmented market, new players keep rising by focusing themselves on less saturated countries or another USP to reach clients' very specific needs. For example, Cesim has translated their simulations into 19 languages to reach many unsaturated markets [71], and PriSim has heavily focused on close customer relationships with only 20 corporate clients [72]. Another smaller simulation, Fastrack, allows teams of students, with the help of Deloitte consultants, to simulate the development of business ideas and is only in use in a few universities [73]. The interviews conducted as a part of this paper show that even though some simulations focus on one of the segments, they still offer their products to the other segment as well (see Table 1).

**Table 1:** Company Overview

Company	Clients (University/Corporate)	Unique Selling Point
BTS	Mostly corporate	Focus on business results
Business Policy Game	Mostly university	Flexibility
Capsim	Both	Support and strategy learning
Celemi	Mostly corporate	Network of partners
Cesim	Both	19 languages, 1 license for all simulations
Fastrack	Both	Real life exposure
Forio	Both	Platform for building simulations
Glo-Bus	Both	Realism - founder wrote textbook
IndustryMasters	Both	Flexibility - 400+ scenarios
Innovative Learning Solutions	Mostly university	Realistic and support
MediaSpark	Both	Originality
Playconomics	University	3-D interactivity



PriSim	Corporate	Close customer relationship
SimVenture	Both	Extensiveness
Smartsims	University	Offline testing facility
StratX Simulations	Both	Unique mathematical model
Tata Interactive Studios	Both	Support and seminars

#### 4.2 Business models

There are three main business models, namely business to consumer (B2C), business to business (B2B) and business to business to consumer (B2B2C). In this context consumers are instructors and simulation participants, who purchase the simulation to teach a class of students or for their own education. Businesses as end-users refers to companies that use the simulation for corporate training. B2B, as well as B2B2C, have the same three sub-models; custom-, licence- and trainer-based. The custom-based model is also known as consultative selling. The development company gets a specific request for a game and tailors it to the client. The client either uses it internally, B2B, or can distribute it to other clients, B2B2C. Usually clients are large corporations with very specific processes or niche industries. The license-based model are off-the-shelf products which are often more general, in order to appeal to a wider range of companies. The license allows the company to use it internally, B2B, or to distribute it, B2B2C. Licenses are most commonly bought by smaller companies or consultancies and trainers who can use them for customer training. The training-based business model is a bundle of a simulation and an instructor teaching a course using the simulation. The trainer can be provided by the simulation company (B2B), or the simulation can be used with in-house trainers to educate other clients (B2B2C). B2C is a direct business model, where the simulation company directly markets and distributes to the end-user. This is done online as large numbers of institutions can easily be reached and distribution is easily scalable. Another option of B2C distribution is a partnership with publishers, who work as promoters of the simulation [14][24][70]. The below table gives an overview of which business model's the 17 surveyed companies have adopted.

**Table 2: Business Models**

Company	B2C	B2B	B2B2C
BTS	Online and offline	License and custom	License and custom
Business Policy Game	Online	-	-
Capsim	Online	License and trainer	-
Celemi	-	Custom and trainer	Custom and trainer
Cesim	Online	License, custom and trainer	License
Fastrack	-	Custom	-
Forio	Online and platform	License, custom and trainer	-
Glo-Bus	Online and publisher	License	-
IndustryMasters	Online	License, custom and trainer	-
Innovative Learning Solutions	Online	License	License
MediaSpark	Online	License and custom	-
Playconomics	Online	-	-
PriSim	-	Custom and trainer	-
SimVenture	Online	License	-
Smartsims	Online and publisher	-	-
StratX Simulations	Online	License and trainer	-
Tata Interactive Studios	Online	License, custom and trainer	-



Traditionally, the highly fragmented industry has focused on the consultative selling approach of tailored one-on-one projects with companies. These are risk averse in the short term, but the approach can be of high risk when the projects end. In this way, it is not the most sustainable business model, especially for SME's with little brand awareness [74]. This is largely due to the fact that customised simulations are in most cases of low reusability and interoperability for future projects [16]. The fast changing environment has presented two alternatives; internet-based distribution and the trainer-based model. The trainer-based concept, which allows use of an off-the-shelf simulation in conjunction with a trainer, has the benefit of spreading development costs across many clients and still providing a highly customised training [16][74]. The internet has given rise to B2C online marketing and distribution, which has the benefit of cutting out the intermediary. Shifting the simulation onto an online platform has a number of benefits such as ease of administration and a wider reach of marketing and distribution [67]. B2C online marketing and distribution is the preferred option for SME's, due to the higher margins as intermediaries can be avoided to contact the customers [74]. The internet has given rise to another two models, which are as yet of negligible reach. Firstly, free simulations such as the Competitive Strategy Game are usually developed by university professors and are easily dispersed over the internet [75]. Secondly, Do-It-Yourself business model's, such as that adopted by simulation company Forio. The so-called Epicenter platform can be used by lecturers and developers to develop their own customised game. The company also offers service.

#### 4.3 4 P's

This section investigates the various value propositions, specifically the marketing mix, of 17 simulation companies. All interviewed companies have been included in this paper, as learnings can be drawn from each one of them. However, this section puts an emphasis on four of the most successful management simulations, namely the Glo-bus' Business Strategy Game, Capsim's Capstone, MediaSpark's GoVenture, Tata Interactive Studio's Topsim, as well as Playconomics, one of the most advanced economics simulations, which learnings for management simulations can be drawn from. This allows the identification of best practices, which are illustrated with detailed examples from these companies (see details in Full Paper - Interviews).

##### 4.3.1 Product

###### *Customers' Wants and Needs*

According to Faria and Wellington [68], teachers want simulations that are most appropriate for their course, easy to integrate and administer, with good support. McWhinnie [10], a lecturer teaching with Playconomics, states that adaptability and an integrated assessment are the most important features for her in a simulation. Faria and Wellington [68] identified that teachers often switch simulations if they are exposed to a game that is easier to use and implement, for example a web-based simulation as opposed to software. Teachers will also look to change simulations if they believe their current game lacks complexity and variety.

###### *Integrated Features*

For the purpose of describing the various features of simulations, this section splits the simulation experience into three stages; pre-simulation, simulation and post-simulation.

###### *Pre-simulation*

Most companies offer a demo version of their simulation online which can be requested on their website (see details in Full Paper – Demo Access). Whilst such demo versions are extremely useful for instructors looking for a suitable game, having to wait for internal approval in the university or firm can draw out the process. GoVenture, however is one of the few simulations which allows instructors to try the game without having to wait for approval. Other features desired by potential instructors are pre-simulation webinars, training programs, and support staff who consult with the instructor, assist in setting up the course and run a debriefing after the first round [59]. Capsim and Glo-bus are two companies that have satisfied this customer need. Capsim provides one responsible account manager for each course, and instructors using the Business Strategy Game receive support directly from the authors of the simulation and textbook [59][76]. Additionally, for easier administration and greater accessibility, most companies have moved to web-based applications (See Table 3).



**Table 3: Business Simulation Modes**

Company	Mode
BTS	Web-based and offline
Business Policy Game	Software
Capsim	Software or web-based
Celemi	Offline (can be web-based)
Cesim	Web-based
Fastrack	Web-based and offline
Forio	Web-based
Glo-Bus	Web-based
IndustryMasters	Web-based
Innovative Learning Solutions	Web-based
MediaSpark	Software or web-based + boardgame
Playconomics	Web-based
PriSim	Software or web-based + boardgame
SimVenture	Software moving to web-based
Smartsims	Mostly web-based
StratX Simulations	Web-based
Tata Interactive Studios	Software or web-based

### *Simulation*

Most providers offer fully customised but costly simulations, which are especially popular in the corporate world. The alternative, off-the-shelf solutions, are preferred by universities. They are cheaper and their modules and parameters can be often manipulated (see details in Full Paper – Support and adaptability). GoVenture, for example, offers the instructor a simple point and click interface of over 100 variables to tailor the game to his needs [77]. Another effective feature which many simulations have incorporated are in-game restrictions. For example, Topsim restricts players from inputting values, for example the number of products sold, that are too high or too low, to help prevent users from making serious mistakes. This also reduces the level of administrative support needed to be provided by instructors [38]. Another way to prevent players making serious mistakes in the game is the inclusion of practice rounds, the Business Strategy Game being a good example [78] and a quiz, like in GoVenture, which tests the student's understanding of the manual [77]. Most simulations are set up for use by teams of three to five players with up to 12 teams per simulated industry (see details in Full Paper – Team setup). However, some companies, for example GoVenture, allow for easy adjustment for larger numbers of teams if necessary [77], or for multiple industries to be run simultaneously, such as in Capsim [59]. For full course integration, simulations such as Capsim's Capstone and Glo-bus' Business Strategy Game provide chat rooms for player communication and customised in-game feedback from instructors, who can also join the chatroom [59][70]. Other simulations, such as Playconomics, offer a full electronically integrated textbook. In order to further enhance the instructor experience and lessen administrative tasks, integration with the university's learning management tools, such as Blackboard, can provide full course integration in the future [14].

Apart from the instructor's perspective, the user experience needs to be considered as well. Capsim, for example, offers additional labour disputes and ethics modules, which give the player a storyline to engage with [78]. Level and experience point progression, as previously mentioned, can further stimulate players. Achievement badges have been successfully implemented in GoVenture and the Business Strategy Game with 'brand leader', 'profit leader', 'bull's eye' and 'leapfrog' awards [76][79]. Playconomics achieved a new way of experiential learning by engaging the player with the continuous navigation of an avatar in a 3D interface. It has also introduced in-game accessories, and whilst these don't help the player advance in the game, they are sought after by players and motivate them to progress further and more quickly [14]. Most interestingly, Playconomics has found a way to provide cinematic material during the game, with videos of hand drawn explanations and screenshots, which is engaging yet cheap to produce [14]. Another example, Topsim's cockpit, allows players to create and collect their own shortcuts to





view their favourite graphs and statistics from any user interface. These shortcuts assist in preventing advanced players from becoming bored as it allows for quicker gameplay [78].

#### *Post-simulation*

Most simulations score teams using a balanced scorecard, where the absolute and relative score of teams can be used for assessment. Simulations by Capsim and Glo-bus, amongst others, allow for the integration of quizzes and tests, which make the assessment process even more smooth and easy to use. GoVenture offers customised quizzes, which require participants to look for the answers in their own company's end of year statements and are additionally accessible on smartphones. Another two useful features are peer evaluation tools, for example seen in the Business Strategy Game's and Capstone's module 'TeamMATE', and the Business Strategy Game's integrated strategic plan [76][78]. Both automate the assessment process and save the instructor time [59]. Glo-bus goes a step further to ensure learning outcomes are achieved by providing learning assurance reports, which specify how students have improved and performed over various learning categories during the simulation [76].

#### *4.3.2 Price*

The pricing for a simulation needs to be adjusted to the perceived value for teachers and companies, but still needs to be comparable to its traditional alternatives, otherwise it is not competitive. The established price points are textbooks for universities and an external or in-house training team for corporations. According to a survey by the National Association of College Stores [81] textbook prices are constantly rising and reached an average of USD 79 in 2013. The average amount spent on corporate training in 2013 was USD 1,208. This was less in large compared to smaller companies, due to economies of scale [82]. Total training expenditures for large, mid-sized and small companies was USD 17.6 million, USD 1.2 million and USD 300,000 in the US in 2013, respectively [83].

**Table 4: Prices & Development**

Company	University price per student	Corporate price per participant
BTS	N/D	N/D
Business Policy Game	\$100/team	\$100/team
Capsim	\$53.99	\$750
Celemi	N/D	N/D
Cesim	\$42-67	\$290-350
Fastrack	N/D	N/D
Forio	\$15-45	\$150
Glo-Bus	\$44.95	\$44.95
IndustryMasters	N/D	N/D
Innovative Learning Solutions	\$30 - 100	\$60-200
MediaSpark	\$29	\$29
Playconomics	\$25	-
PriSim	-	\$1,015
SimVenture	\$31/computer	\$777/computer
Smartsims	\$55	\$55
StratX Simulations	\$59,99	N/D
Tata Interactive Studios	\$9,100-16,400/university	Negotiable

*Note: Prices are only indicative. They vary across countries and are dependent on the features included in the simulation.*

Students are notoriously price sensitive and a difficult target segment. Although this is true, the university's decision maker is the faculty or lecturer. It is very country-specific how universities are funded and whether the faculty can purchase the simulation license or if the students have to pay for an individual license themselves [21]. Either way, simulations have adjusted their prices between USD 15 to 100 and some, like Playconomics and Innovative Learning Solutions, include a



textbook in the simulation bundle (see Table 4). This makes it easier to justify the price for the lecturer, as the simulation substitutes the purchase of a textbook.

Corporate clients, in most cases, prefer a tailored solution for their business. There are too many variables to be taken into account when customising a simulation to be able to put a price tag on this service. Generally, the price depends on the design requirements, manpower and time spent developing the game. This can range from a couple of weeks to a couple of years. The cost for developing such a project ranges from USD 30,000 for one week of tweaking an existing simulation to 500,000 for six months of full time development [43][74][84]. On the other hand, it is also possible for corporations to buy the license for an off-the-shelf product with or without trainers. These off-the-shelf licenses are often sold at the same price for universities and firms, like in the case of the Business Policy Game and GoVenture. Alternatively, the products are adjusted to the corporation with a higher price tag ranging from USD 150 to 1,015 per participant. The third business model, which is trainer-based, is usually communicated at a daily rate, but is case specific and no quotes are publicly available.

Georghiou [79] provided an interesting insight that clients are increasingly changing and demanding transparent pricing, which is not yet the norm in the industry.

#### 4.3.3 Promotion

Faria and Wellington [68] found the average lifetime value of a customer to be 9 years and that 52% of customers never switch simulations. Their findings demonstrate the importance for simulation companies to make contact and persuade first time simulation adopters. Riedel [74] additionally stresses the difficulty of addressing the right people, who can make the decision of implementing a simulation. The research showed that the marketing focus lies on three main channels; website optimisation, partnerships and word-of-mouth, which are aimed at the decision makers within universities and corporations (see details in Full Paper – Promotion).

Of the 17 companies analysed, search engine optimisation (SEO) of the website was the key online marketing tool adopted. Good SEO improves the ranking in the organic search results in search engines such as Google and Bing. This means that teachers looking for a simulation online are more likely to come across the company's website. Case studies and clear outlines of learning outcomes on the website are regarded as especially useful marketing tools and are for example adopted by GoVenture. Online advertising is another way to get exposure to the online audience, for example on platforms such as LinkedIn and Twitter in the case of Capsim [59] or Facebook and Xing for Tata Interactive [85].

Partnerships with training and e-learning companies, as well as publishers, are of high value for the largest simulation companies such as the Business Strategy Game [86]. These enable companies to expand beyond their country of origin and have more face-to-face contact with customers [69].

Face-to-face contact touches upon the third point; word-of-mouth. Word-of-mouth was highlighted by most companies as the number one off-line marketing channel.

Seasonal fluctuations in demand for simulations is a relevant consideration for companies marketing to universities, due to the academic term. Hence, the greatest emphasis on marketing needs to be in the months before the term begins. However, for companies operating globally, seasonality, due to varying starting dates for courses, has a limited impact (see details in Full Paper – Seasonality).

In the corporate sector, such seasonality is less of a concern. Of the analysed companies, only Induistrymasters noticed a higher market demand towards the end of the financial year, as companies allocate their remaining budget [87].

#### 4.3.4 Place

Faria and Wellington [68] also showed that when searching for a new simulation the majority of instructors look online (31.6%) and seek advice from publishers (28.3%), colleagues (16.9%) or at conferences (9.6%). Riedel [74] conveys that the trend is moving away from publishers and towards colleagues and friends. Conferences, although not the preferred way to look for simulations, are great for companies to build their network, increase trust with interested parties and get face-to-face exposure [88].

The findings from the interviewed companies regarding distribution channels are very similar to Faria and Wellington's [68] (see details in Full Paper). Simulations are most often found over the company's website, or in Capsim's case, over online referrals.

The interviews showed that most companies attend conferences, trade shows and events or organise their own workshops, seminars and webinars to engage with their customers. One



interesting outlier is Glo-bus, which specifically does not attend conferences, as they consider them to be an ineffective way to engage with customers. Publishers are still a sought after distribution channel, however there are only a limited number of publishers which have exclusive contracts with simulations. This kind of partnership works well for exposure across universities and inspires trust. It is, however, difficult for small and new simulation companies to negotiate such exclusive agreements due to their small market share.

## 5. Discussion

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The industry review and theoretical background provide a comprehensive insight into the business management simulation industry. By cross-referencing both, this section firstly identifies gaps in the current academic research on business simulations. Secondly, it provides a business plan of how to setup a simulation company and develop a successful game. The business plan combines the learnings and recommendations from academic theory and best practices from the industry analysis to produce a guideline for the setup of new simulation companies.

### 5.1 Theory gap

Cross-referencing the findings from the conducted interviews with those of the literature review has revealed a number of gaps in the current academic research on business management simulations. Some features and themes present in the industry have so far not been the subject of research. For example, there is currently no academic research analysing the most effective ways to educate and persuade decision makers in companies or universities of the benefits of simulations in order to convince them to purchase. This area needs to be researched in order to give a recommendation of how companies should best conduct their marketing. Additionally, most simulations, make teams compete against each other (see details in Full Paper - Team setup). However, management simulation literature has not yet tested whether this sort of personal competition is more beneficial than competing against the computer. One other area, not covered by literature, is the aspect of the pricing of simulations. The above industry analysis has shown that customers value transparency in pricing. It has also identified that many simulations offer an integrated textbook. The proposition about price transparency, as well as the actual and perceived value of integrated textbooks, remains unanswered by academics. Lastly, Motta [14] raised that lecturers would like to see simulations integrated with learning management tools. This feature seems to be logical, as instructors want simulations which are fully integrated with the course, however this still requires academic verification.

### 5.2 Business plan

This business plan covers the whole journey of a simulation, from the industry to the course. It is a fully comprehensive outline of elements to keep in mind when starting a simulation company, setting up, choosing a simulation, as well as running a simulation course. This recommendation helps three parties. Firstly, new companies in the industry, as well as firms which want to improve their own strategy. Secondly, developers, who get an idea of what is important to keep in mind when designing a simulation. Lastly, the plan helps instructors to identify the most important elements in order for their students to learn.

#### 5.2.1 Company purpose

To create a business management simulation for use in universities and corporations which overcomes the shortfalls of traditional learning in a way that is both engaging for users, and time and cost efficient for instructors.

#### 5.2.2 Problem

The traditional approach to learning is ‘teacher-centred’. To use a metaphor, this approach is like catching a bus, with the teacher being the driver. The teacher controls the speed and direction, depriving learners of the flexibility to direct their own learning to their individual needs. Additionally, in a traditional setting, with one teacher and a class of learners, there is insufficient opportunity for individual feedback.



### 5.2.3 Solution

Simulated learning provides a solution to these drawbacks of traditional teaching. They adopt a learner-centred approach in which the roles are reversed and the learner is driving their own vehicle. Differently to taking the bus, learners can reach their destination by taking whichever route they desire. With a simulation, this translates into the ability of a learner to formulate and adopt their own strategy when making decisions, as opposed to taking the route chosen by the teacher. If they get lost en-route, they have the time to stop, rethink and reformulate a plan at their own speed. They are not forced to keep travelling at the speed of the rest of the class. In the context of learning, this reduces the risk that learners will miss vital lessons or content as they can take the course at their own speed. Most importantly, if they become lost, rather than driving on aimlessly, they can go back to the starting destination, and try that route again, or even try a new route. This is the beauty of simulated learning; learners can explore, fail and try again. The simulation provides a test drive in the form of practice rounds, it has airbags in the form of restrictions to avoid serious errors, and the driver can drive as many laps as he needs to master the learning outcomes. All of these opportunities for learners are absent when taking a bus.

### 5.2.4 Target markets

The simulation industry is, with its acceptance into universities and companies, steadily growing, yet highly fragmented. However, the two segments addressed in this plan, educational institutions and corporations, represent the largest share. Considering that most of the global market is not saturated, it is recommended to enter a non-US market. In countries outside of the US, large portions of the education and corporate training markets still rely on tradition learning approaches. Hence, these markets have potential to be infiltrated by simulation companies.

### 5.2.5 Business model

There are differences between the optimal models for companies targeting higher education compared to companies. For simulation companies working with universities, Lefebvre's [70] statement "We teach business and it's universal" holds true. This means that there is little need to customise the content of the simulation for different universities as the concepts taught in business and management courses are arguably universal. Companies targeting universities should adopt a B2C business model, as simulations can easily be marketed and distributed as off-the-shelf simulations, without the need for an intermediary. Ideally, the company should aim to build a relationship with a publisher. Whilst this can be difficult, it inspires trust in consumers and provides the greatest exposure within universities.

Corporate clients are more difficult as they require custom training for their specific industry and departments. In order to keep costs down without compromising on the customer-focus, the trainer-based B2B model is ideal. It combines the cheaper production of an off-the-shelf simulation with the necessary customisation delivered by the trainer who leads the course. Having a trainer lead the simulation in a company saves time and guarantees the learning outcomes, which is an important consideration for a business, as time equals money. A B2B model is preferred to a B2B2C model in order to capture a higher margin by avoiding the intermediaries cut. However, a B2B2C model can be considered for a fast expansion, as a partner network has a greater reach. In the case of an entry into the US, a DIY platform like Forio's Epicenter is the business model which is most likely to succeed. The DIY approach gives the already educated and experienced users full control over content, game and costs.

The key to success, as addressed in the academic findings, such as the need for integration, customisation and complexity, and in the practical findings, such as price transparency and importance of support, is an "off-the-shelf products tailored to your need" approach. This can be achieved with the above mentioned recommendations.

### 5.2.6 Marketing strategy

Practice as well as academic research has shown the importance of being able to find the company online. Therefore, firms should invest in SEO and online advertising. A website that is easy to find, as well as online advertising that links to the page, are crucial. As previously mentioned, seasonality is a factor that universities need to consider. Firms marketing to universities are recommended to increase their marketing efforts in the months before the term starts in the respective country.



### 5.2.7 Distribution strategy

Practice and theory have shown that in order to educate, inspire trust and sell, there is only one reliable way - a personal network. Therefore, the best distribution channels are colleagues, trusted companies and friends. Potential customers can discover simulations at conferences, trade shows and exhibitions. These are recommended in order for firms to meet clients in person and build trust. Furthermore, partners such as publishers are reliable distribution channels, who can reach more clients faster on the firm's behalf. Partners can communicate the same trustworthiness and education in person, which makes them great distribution channels. Online distribution channels include online referrals and such referrals leverage personal connections and recommendations. In order to make the website as a selling point even more enticing for the customer, landing pages are a proven way to summarise key benefits and engage the user further.

### 5.2.8 Product

The product recommendation is best explained by the metaphor mentioned in the introduction that a simulation puts the learner in the driver seat. Simulations need to be flexible enough for the instructor to be able to tune the car into a Formula 1 race car, a smart car or any other vehicle, whichever is most appropriate for the intended learning outcomes.

The first step is a test drive. Educate the customer and change the negative perception of simulations by making a demo available for interested users to try whenever they want, without having to request access, nor start a formal inquiry. The demo and the full version should be, just like in the recent trend of Car2Go, available at all times and web-based. It simplifies integration, is less time consuming and makes the simulation much easier to use. Before the trainer puts the student into the driver seat, he should have full control over the vehicle and be able to change and tune it according to the race course. Best practices such as adjustable parameters, sufficient complexity, and a variety of modules and scenarios, enable the teacher to be in control to fine-tune the simulation to the intended learning outcomes. In the process of fine-tuning, as well as the rest of the simulation, there should be an expert and support team providing advice and breakdown cover at all times. Personal support during the setup and the whole simulation is a necessity, webinars and training programs for example help instructors to feel more at ease and under control. Additionally, a car needs to have seatbelts and airbags, just as much as simulations need to have restrictions to avoid the player making serious errors and provide a safe learning environment. To enable the drivers to improve based on feedback, a fully integrated training facility is needed. Simulations should have the option for integrated assessment in the form of a balanced scorecard, as well as tests and quizzes, which are ideally individualised and draw on key takeaways from the simulation experience. Additionally, compatibility with learning management tools, even though not yet academically verified, is recommended in order to make it easier and less time consuming for the instructor to integrate the simulation in the course. Lastly, results and feedback should be available on the go with the simulation being accessible over other devices, such as smartphones. When setting up a business management simulation, a participatory model should be used, as features should always be tested on groups to ensure the best user experience.

In terms of the participants' engagement with the content, academic research has shown that a storyline is an effective way to engages students. As seen in the economics simulation industry, cinematics also increase engagement and supplement a storyline. They are, however, expensive, and unless done in a simple manner, such as in Playconomics, their benefit does not outweigh the costs. Navigating avatars through a simulated world, such as in Playconomics, is engaging, yet is something no business management simulation has ever attempted. A way to incorporate this feature into such simulations has not been determined, however, the implementation is encouraged. While there are suggestions that players enjoy being able to identify with an avatar in games, avatar customisation has been proven not to serve learning outcomes and does not need to be included. Additionally, one major advantage of simulations is that they allow players to work together in teams to achieve common goals, therefore improving a range of social and communication skills. For this reason, as well as for feedback purposes, chat options for easier communication between teams and with the instructor should be included. Whilst this is allowing for personalised feedback, automatic feedback in the form of 'pop-ups' throughout the game should also be included. Standard features such as leader boards, experience bars, level indicators, point systems, badges and in game rewards, all increase user engagement as they provide real-time feedback and a visual representation of progress. Lastly, as seen in the literature review, shortcuts for advance players should be made an option to avoid boredom.

A simulation which is setup just like the race car with the above mentioned features will provide the optimal learning environment where participants enjoy learning.



### 5.2.9 Pricing

The perception of simulations being costly is one of the reasons why instructors do not consider games for their course. Firms need to become more transparent with their pricing and show that any additional costs compared to traditional learning methods are justified and legitimate.

Off-the-shelf products are encouraged to be priced similarly to traditional course material, which is substituted when using a simulation. In most business management courses this would be a textbook, the average cost of which is USD 79. Ideally, a textbook is electronically integrated into the simulation and decision makers will perceive it as a direct substitute to traditional learning methods.

Trainer-based simulation courses should be priced just as off-the-shelf products plus the additional expense for the trainer per day and per participant. Cost of a trainer and customised projects are highly variable however companies should aim to include a spectrum of prices or case examples online to give potential customers an estimate of costs. Taking into account the average annual amount spent on corporate training per employee of USD 1,208, prices for training per employee should be set between USD 500 and 1,500, depending on the size of the company.

Apart from custom simulations, which should be priced for an entire product, license- and trainer-based simulations should be priced per participant or per license. Charging per team should be avoided, as it can have the negative side effect of instructors putting too many participants in one team in order to avoid costs.

### 5.2.10 Implementation

This section should be of interest for both companies and instructors. It covers recommendations for how a course should be led, which is also noteworthy for developers of games in order to understand their end-user.

Before the simulation starts it needs to be adjusted to align with the needs of the specific users. If the option exists in the simulation, instructors should tailor the game by choosing the most relevant modules for users to focus on. Additionally, as previously noted, simulations work best when users participate in teams. Two to three player teams are optimal, as they show the lowest level of dissension. Team constellations can slightly vary depending on the game's objectives, however users respond most positively when they compete against teams of equal size. Additionally, to assist in providing a positive team-work experience, reduce free-riding and group tensions, an integrated peer evaluation tool within the simulation is recommended.

Before starting the simulation, it is essential for participants to read the instruction manual or be provided with a tutorial to familiarise themselves with the game's rules. Additionally, a quiz which tests users' knowledge about the manual and practice rounds are strongly encouraged to further familiarise the player with the simulation.

The key element of leading a simulation is the debriefing session once the simulation has ended where participants can reflect on the experience and what they have learnt. The debriefing should be conducted on an individual basis, ideally in a written format about the player's whole experience. The instructor should refrain from telling students about their mistakes and what they were supposed to learn. Students should be encouraged to individually reflect and be guided towards the learnings. Additionally, a learning assurance report which is tied to integrated quizzes and performance is beneficial for the assurance of the lecturer, faculty and company, that the simulation served its intended purpose. Overall, it is recommended to put more emphasis on the debriefing and the student's reflection than on the simulation performance, as performance is not directly linked to learning.

## 6. Conclusion & Next Steps

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Through a detailed review of the literature on business management simulations, this paper has analysed the main benefits and drawbacks of simulations over traditional learning approaches. An industry analysis, including an analysis of the market, competitors within the market, and finally the marketing mix of 17 companies with detailed examples from five simulations complemented the literature review.

The theoretical findings built on Fortuin and Heerink's [8] call for more academic research on features which have been implemented by simulation companies, but that have not yet been academically researched. The academic gap exists in the following areas: *how to educate the*



*customer, the necessity of teams competing against each other, pricing, simulation and textbook bundles and integration of simulations in learning management tools.*

The practical findings of this paper have been presented in the form of a business plan for companies wishing to develop and market a new simulation. The plan incorporates the practices, insights and recommendations of 17 simulation companies which have been supported by academic research. The findings have shown that best practices for simulation companies include the web-based mode of gameplay, availability of demos and adaptability of off-the-shelf simulations as well as integrated assessment. The recommendations are far reaching offering suggestions in *business model, marketing, distribution, implementation and pricing strategy*. The findings also recommend practices which have not been implemented in business management simulations, but are successful in other simulations and supported by academics, namely *3D environment, cinematics and avatars*.

The results of this paper have theoretical implications by outlining gaps between literature and practice. The practical implications can be far reaching in the setup of new companies and simulations, the teaching focus of instructors, as well as the adjustment of existing companies' strategies.

The paper has limitations regarding its sample size. The results are based on an analysis of 17 companies. This, however, is not statistically relevant in such a large and fragmented market. Additionally, the conducted interviews have limitations as there is a risk that the interviewees, who were often key personnel in simulation companies, have been biased towards their own product. Furthermore, interview questions were not posed exactly the same way across all interviews, due to the nature of the organic and flowing conversations. It is recommended in the future to interview a larger number of simulation companies, with a survey to standardise the questions and answers. A quantitative assessment of these results can make the findings more meaningful.

Even though triangulation took place with primary interviews, secondary research and the analysis of trial versions of business simulations, the analysis of demo versions, instead of the full versions, reduces the validity of the findings. Furthermore, the paper attempted to analyse the global simulation industry. Naturally though, there are large differences between various geographical markets. These should be researched, due to cultural differences such as "losing face" in Asian countries.

The paper also raised some questions which still need to be academically proven. The claimed benefits of transparency of pricing and practices have not yet been supported by academic theory. Additionally, three further propositions were raised by companies in interviews that have not yet been the subject of academic research. Firstly, the question of whether the competitive aspect of teams playing against other student teams is necessary, or if playing against computer teams suffices. Secondly, the integration of the textbook is accepted as a best practice, however there is no theory about this new concept. Lastly, the integration of the simulation with learning management tools has been mentioned, which has no academic foundation and is in need of further research.

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