

Management gaming used as a tool to increase business acumen within the tourism industry.

Abstract

The aim of using management gaming in courses that are designed to improve an individual or group's business acumen within production of services, commerce and economics, is to bring the subject of business economics to life by linking theoretical knowledge to practical training in a virtual environment and at the same time provide participants with a more interactive learning experience.

By participating in a business game, students as well as participants from the business world, are trained to use their analytical abilities while their attitude for the subject of Business economics is changed. The content of the exercises in the business game raises the motivation of participants to run their own (game-)company in line with conscious economic goals, regardless of whether they are students, business executives, mid-level managers or non-financial leaders.

The business game's structure provides the opportunity for cooperating organisations/schools to arrange league competitions in economics, which should further stimulate participants to assimilate the subject of Business economics, while reinforcing traditional teaching.

HotCalc is a computer-based simulation program in a game format that is inspired by two similar programs developed at Cornell University, USA, (1993)¹. The program presented in this paper has scholarly foundations and is based on tried and tested experience and can be described as a business economics laboratory. It has the form of a business game where the environment is derived from the tourism industry and specifically an area that most people are familiar with; the hotel and restaurant sector.

HotCalc Business Simulator reflects the market's reactions to the decisions of six companies as they compete for customers/guests in a closely defined market over a limited period of two fictitious years. The participants assume the roles of six company managements with one, two or a maximum of three participants in each team. The task of each of the teams is to run their business over a period of two fictitious years in the form of a limited company with the aim of achieving a goal in accordance with previously formulated objectives. In the business game the two years are divided into eight quarters. Both years end with annual accounts, which means that the number of economics laboratories in a round of the game amounts to ten.

The game is designed for the licenced game leader/course director/teacher to set the language and degree of difficulty, as well the game round's market conditions. The six restaurants in the game are then subduced to run their business in exactly the same way during the first quarter of Year1. As a consequence, after the first quarter, all companies have exactly the same number of guests due to identical menus, the same number of staff with exactly the same training and corresponding wages, the same guest entertainment, an equal investment in marketing and other sales promotions. This results in identical income statements and balance sheets.

The participating teams will now, from the second quarter of Year1, each in their own way and aided by the contents of the multimedial lectures included in the program, continue to run their virtual companies during the remaining quarters/seasons. Their goal is to secure the business with earnings that are as satisfactory as possible within the given market conditions by making tactical and strategic decisions concerning the operational business.

The business game starts in a restaurant environment. During the course of the game the participants will also have the opportunity to start a hotel business in a subsidiary and thereby create a group relationship. An example of how a round of the game might be implemented is outlined in the following pages.

1. Game scenario

The participants are about to take over the management of “The Eatery”, a restaurant in central Deighton. Its history dates back to the 1960s when the business was run as a staff canteen under the name “Cantina”. For the last 15 months the operation has been run as a limited company and, along with its five main competitors in central Deighton, it is part of the same franchise chain called “the Chain”. From having been a well-attended staff canteen with no competition worth mentioning, to today’s competitive restaurant with a weak earnings trend, “the Eatery’s” history is testimony to conditions for the restaurant sector during a period of fluctuating economic circumstances.

“The Eatery” is a member of “the Chain”, which concludes supplier agreements for its members at central level. “The Chain” charges a franchise fee for this that is currently 2 % of its franchisees’ turnover. However, the final choice of raw materials for composing the menu, purchasing and weekly planning is determined by the franchisee alone and can encompass both those raw materials that are purchased in advance by “the Chain” (approx. 75 % of the total requirement), and raw materials that can be purchased by local suppliers. “The Chain” is not just the franchiser, it is also landlord and supplies premises for “The Eatery’s” operation according to a recently concluded rental contract covering several years.

The work in “the Eatery” is carried out by a restaurant manager, chef(s), a garde manger and dining room staff. In addition to immediate production staff in the kitchen and dining room, there is also administrative staff. Profitability is weak and presently leaves no room to increase staffing, meaning that earnings must be improved if the business is to expand and more staff is to be employed. Duties in the kitchen and dining-room are allocated between the employees in relation to their expertise, working hours and their job description. Besides scheduled hours for regular staff, additional staff is brought in when necessary. Besides revenues from sales of food and beverages in the dining-room “The Eatery” receives a badly needed contribution to its business from some contract catering jobs.

There is an unexploited market potential in people who live and work outside the town centre that can be approached through active marketing and profiling of the business. This constitutes a significant potential to expand and improve results, among other things through revenue management, moving from preparing a lot of food at the restaurant to using pre-prepared food to a greater extent and by changing the current kitchen layout to provide better use of staff and more efficient raw material logistics in the kitchen.

Some years ago there were five hotels in Deighton located along the same main street as the six franchise restaurants. The hotels went bankrupt and were closed down. The banks in the town had mortgages on the properties and now own them. In the coming year the banks will offer the six main restaurants tenancy rights for the hotel buildings. A possible resumption of the hotel business in the town will probably have a positive effect on the restaurant market.

Competition between the local restaurants in the town centre primarily comprises the five restaurants that are part of the same franchise chain as “the Eatery”, but there are also other restaurants in the town that appeal to Deighton’s restaurant-goers. Hitherto the six main restaurants in the town centre have been operated in strict accordance with the franchise idea that all six restaurants should appear as a coherent chain with completely identical profiles, a concept that has not turned out well in terms of results. Through various decisions prior to each new season, the restaurateurs are assumed henceforth to endeavour to create a more distinctive image for their respective restaurants, with the clear aim of achieving a profitability that exceeds the industry average by a good margin.

2. Scope of a HotCalc game round

As previously mentioned, one game round comprises two virtual financial years: Year1 and Year2. The game round is broken down into ten sessions. Year1 comprises four sessions representing the four quarters, or seasons, of the year and the year-end closing for the first financial year. Similarly, Year2 comprises another five sessions representing the four quarters of the year and the year-end closing for the second financial year.

Consecutive game rounds can be administered using the closing balances of a precedent game round as opening balances in a new game round making it possible to organize tournaments in business economics and administration between schools and/or companies.

The program is designed to constitute a platform for distance studies in Business Economics

3. Preparations

The game leader uses his/her module (*HotLeader*) to prepare the round. This involves dimensioning the market with respect to size and target groups, and also deciding which elements, or game components, that are to be included. The components include, amongst other things, contract catering, group accounting, DuPont analysis, cash-flow statement and budgeting. By including/excluding components and introducing them at various stages of the game, the game leader sets the level of difficulty and the scope of the game.

The students prepare for the round, either on campus or at home, by exploring the contents of the program’s user guide whilst simultaneously running the demo version (*HotDemo*) at a time and place convenient for them. The students thereby acquaint themselves with the program’s different functions and commands.

4. A game round of HotCalc

During the game the game leader acts as a coach, or a discussion partner, for the participating teams. This way various types of issues pertaining to the result for a specific team can be dealt with in a comprehensive and instructive way. This places demands on the game leader who has to be able to elucidate problems of various kinds as they arise during the game round.

When participating in a game, the teams use the player module (*HotPlayer*). Each session in the business game consists of an analysis phase and a decision phase. In the analysis phase the participants study the outcome of the previous quarter using available reports. The logbook associated with the program is used by the team throughout the entire round of the game to store their analyses. With the analyses as a foundation, and with an overall objective, the participants in the respective teams have to decide on which measures should be taken for the forthcoming quarter in order to improve their financial position and performance of the business. The logbook is used by the team to make notes on the basic data for the decisions that they make.

4.1. Session 1:

Analysis of the first quarter and decisions for the second quarter of Year1

The game leader runs the first quarter with identical prerequisites for all six teams. Profit/loss is therefore exactly the same for all the six companies and the teams begin by analysing the outcome of the first quarter. As an aid in their analysis, the teams have access to the sales report of their own company; a specification of the first quarter's sales and product costs for each individual item in the menu composition that pertained to the quarter. The sales report is thus a specification to the Contribution Margin 1 (CM1) in the statement of income.

4.1.1. Analysis

One of the participants' first assignments is to use the contents of the sales report to calculate the product cost as a percentage of the menu-price for all the raw materials/qualities of raw materials that were used during the first quarter, and then to enter their analysis of the product costs into the logbook.

The assignment is of great value when it comes to calculations of new menu options later on in the game. Another assignment is to assess the first quarter's profit/loss in relation to the number of guests, and to reflect on the size and level of the net profit/loss in relation to the volume of business. Analyses and observations are noted in the logbook.

4.1.2. Decisions

The assignment to be undertaken for the second quarter is to replace a couple of the dishes as well as a couple of the beverage options on the menu, with new dishes and/or beverages of their own choice. The objective is that when setting the price for the new menu options, the raw material costs as a percentage of the menu price should not be greater than they were for the equivalent raw material during the first quarter. The new menu items may be freely selected from six raw material alternatives for food and five raw material alternatives for beverages, i.e. based on 11 raw material alternatives. Within

each of the raw material alternatives there are three quality levels, giving the teams 33 alternatives when composing their new menus.

The participants are requested to make an entry in the logbook detailing why they elected to discard certain food and drink options and why they elected to add the current ones in composing the new menu. The answers can be found in the figures on, for example, contribution margin per menu alternative in the sales report, or in the market statistics relating to anticipated demand in the next quarter etc.

The teams have access to these reports, which also contain information on various target groups. Before they make their first decisions, the teams will have also studied the market prerequisites concerning the full virtual time span of the game.

Finally, the participants are encouraged to expand their businesses through investment in additional covers in the restaurant, changeover to more pre-prepared food and/or make investments to reduce capital binding. At this point, the teams are asked to formulate an investment appraisal showing prospective return on the investment for the two years that the business game is in progress.

The teams save their decisions in a file which is then transferred to the game leader by means of some sort of electronic media such as a common folder on a computer network, an Internet based virtual classroom, a USB memory stick or email attachments.

The game leader reads the *decision-files* into his/her module (*HotLeader*) and then runs the quarter by letting the software process the data and calculate the market's reactions to the teams' decisions. The result is saved in a *result-file* which is then distributed to the participants.

4.2. Session 2:

Analysis of the second quarter and decisions for the third quarter of Year1

The participating teams open the file containing the result of the last quarter and assay the outcome.

4.2.1. Analysis

Those teams having purchased competitor information as one of the decisions for the quarter can now analyse their result by comparing themselves with their competitors using a number of market-oriented key figures. To aid them in understanding the key figures, the participants are provided with a specification of the contents and calculation formulae in the program's help function, which also contains specifications of the program's different functions and reports.

If desired, the game can be set to require participants to answer questions regarding, for example, key figures from the previous quarter before the participants are permitted to access their key figures and competitor information. In order to answer these questions, the participants have to look up basic data and calculate the required key figures. The basic data can be found among the various quarterly reports, e.g. sales statistics, statement of income, market prices for raw materials, market shares, market overview, as well as units sold (food and beverages).

The participants are requested to compare the calculations they carried out when setting the prices (*estimation*) with the actual outcome (*costing*) for the menu options that they changed for the previous quarter. In connection with this, the participants are required to enter their ideas on the reasons for the differences between cost and estimate into their logbooks. They are also required to calculate the total raw material cost, expressed as a percentage of the revenues for food and beverages respectively, for their own company, as well as to reflect on successes, alternatively setbacks, during the quarter. The analysis is entered into the logbook.

4.2.2. Laboratory work

The program is essentially a business economics laboratory and the game leader is encouraged to allow participants to use it as such. After undertaking their first analysis, the teams may be invited to review their decisions in order to ascertain what their profit/loss might have been had they made other decisions. Before making decisions for the subsequent quarter, the teams may therefore be incited to submit revised decisions for the previous quarter, keeping in mind that the other teams are invited to do the same. The game leader subsequently re-runs the quarter, now with a new profit/loss figure that is to be analysed on the basis of the revised decisions. In this way each participant is able to improve his/her profit/loss and simultaneously learn from any mistakes. The participants enter into the logbook their reflections on the profit/loss figure, before and after the decisions were changed.

4.2.3. Decisions

For the third quarter, the teams are asked to formulate their business concept, and enter it into their logbook. From the start of this quarter the teams also have the opportunity to tender for one or several contract catering jobs. In distinction to the product calculation that the participants use to set the menu prices, they use cost price calculations to decide the level of their catering tender/tenders. Approved tenders lead to market benefits with respect to the ordinary restaurant operation.

From the beginning of the third quarter the teams also have access to the balance sheet for their company. The balance sheet can either be studied as an accounting report or as a bar chart. The income statement can be studied in the same way. The teams are required to enter into their logbook at least four aspects of what they consider to be good and/or bad in their closing balance sheet for the quarter.

In order to manage their cash flow, the participants have the opportunity to place surplus liquidity from the business into interest bearing securities by means of special deposits in the bank. When additional liquid funds are needed, the teams can apply for short or long-term bank loans. The interest that the bank offers for different loans can vary depending on the solvency level of the individual teams. New share issues are another source of liquidity reinforcement. In order for this to be successful, the team must have reached a decision during a previous quarter on paying dividends from previous years' distributable earnings.

The teams save their decisions and transfer the files to the game leader who then runs the quarter and distributes the new file containing the result of the third quarter to the participants.

4.3. Session 3

Analysis of the third quarter and decisions for the fourth quarter of Year1

The teams open the file containing the result of the third quarter and examine the outcome.

4.3.1. Analysis

In the analysis phase, particular importance is placed on studying the connection between the statement of income and the balance sheet for the quarter. Many questions arise when the teams analyse the reasons for their success, or adversity, during the third quarter. Issues reflected upon are for example: Did we win any contract catering jobs? Was the profit/loss what we expected? How high was the contribution margin and was it sufficient to cover fixed costs as well as provide room for a reasonable yield on working capital? What might the reason be that liquid funds have changed between the preceding and current quarters? A new report is presented in the program which assists the participants with the analysis - Financial key figures. The analysis is entered into the logbook.

4.3.2. Laboratory work

The participants subsequently undertake the same sort of laboratory work as is described under section 4.2.2.

4.3.3. Decisions

In preparation for the final quarter of the first year the teams strive to make decisions which will improve their result by composing a suitable menu for the autumn, determining business classification by means of decisions on any additional expansion or refurbishment, customer entertainment, staffing, wages, staff training, marketing, financing etc.

The additional decisions that are to be made for the fourth quarter include tendering for the leasehold rights to one of five hotels, all different in size and structure, in the city centre. Any hotel operation that may be acquired will be placed in a subsidiary company to the restaurant business, thus forming a group relationship. The background for this scenario is that the previous leaseholders went into liquidation some years ago and the hotels were closed down. The banks in the city own the five hotel properties and are now asking for tenders from the six restaurant companies. Among other things, the tender must include information on how much rent the tenderers are prepared to pay. When comparing tenders the bank not only considers the rent offered but also the solvency of the tenderers in terms of their restaurant business.

The game leader compiles the teams' decisions, runs the quarter and distributes the new file containing the result of the third quarter to the participants.

4.4. Session 4

Analysis of the fourth quarter and decisions for the year-end closing for Year1

The teams open the file containing the result of the fourth quarter and evaluate the outcome.

4.4.1. Analysis

Expectations run high as the teams open the result of the fourth quarter. Have we acquired any of the five hotels and, if so, has the financial performance of the hotel operation been satisfactory? At least one of the six teams will be left without a hotel. Later on in the game that team has the opportunity to approach one of the teams that managed to obtain a lease for a negotiation on the acquisition and transfer of shares in the subsidiary.

After analysing the outcome of their restaurant businesses as well as any possible hotel operations, the teams enter their thoughts into the logbook and plan the year-end closing for the first fiscal year, Year1. From the beginning of the fourth quarter, the teams who are running a hotel business in a subsidiary have the opportunity to study the whole group's profit/loss and financial position in their group accounts.

4.4.2. Laboratory work

The participants subsequently undertake the same sort of laboratory work as is described under section 4.2.2.

4.4.3. Decisions

For the closing procedures, the participants analyse the possibility of reducing taxes by making appropriations (transfers to/from untaxed reserves). The teams running a group also make decisions on any group contributions.

The game leader compiles the teams' decisions, runs the year-end closing and distributes the new file containing the result of the first financial year to the participants.

4.5. Session 5

The year-end closing for Year1 and budgeting for Year 2

The teams open the file containing the result of the first financial year and evaluate the outcome.

4.5.1. Analysis

Earlier during the year the teams have solely had access to reports concerning their own business, along with the competitor information that the teams may have purchased. The competitor information is a comparative analysis of the participating teams' key figures with regard to market-orientation and financial situation. The teams now have an additional report at their disposal, a *cash-flow statement*. The report delineates the reasons why liquid funds have changed in certain ways between two periods. It answers the questions where the money came from and where it went.

Since the annual accounts for limited companies are public documents, the participants are now also able to view their competitors' annual accounts. After analysing their own and their competitors' financial statements for Year1, the participants enter their objectives for the new year, Year2, into the logbook. These goals are to be expressed in terms of profitability, for example Return on Equity, Return on Total capital or Return on Working capital. In addition, the means by which the team intends to reach the desired level of profitability are to be stated, such as average bill (for food and beverages

respectively), average raw material cost in percent of revenues, personnel cost in percent of revenues, average bookings at the hotel, average revenue per available room (REVPAR) and similar key figures.

4.5.2. Laboratory work (Budget)

HotCalc is linked to Microsoft Excel. Using a simple command, the teams transfer basic data from their restaurant's accounting system to a budget module in Excel. In the budget module the teams assess which variable values that lead to the goal that has been set for Year2 according to the notes they have made in their logbook. The budget module allows simulations in various regards and when the simulations result in a satisfactory budget for Year2, it is confirmed and saved for a quarterly budgetary comparison and a final, concluding comparison at the end of Year2. When the budget has been established, the teams import the budget values into their restaurant's accounting system in HotCalc. In addition to a profit/loss budget, a balance budget is also drawn up for estimated financial position at the end of Year2, as is a cash-flow budget for the new year.

4.5.3. Decisions

Taking their set budgetary goals into consideration, the teams now decide on which measures are to be taken for the first quarter of Year2 in order to achieve the budgeted result.

The game leader compiles the teams' decisions, including the budget for Year2, and runs the quarter.

4.6. Session 6 – 10:

Analysis of quarters 1-4 of Year2 and year-end closing for Year2

During Year2 the teams continue to compete for available customers for their restaurant and hotel businesses. In the income statement report for each quarter the results are reported in comparison with budget. Any negotiations between the teams resulting in transfer of ownership of a hotel company leads to extraordinary revenues, or costs, appearing in the seller's accounts. At the same time, positive or negative goodwill values appear in the buyer's group accounts depending on differences between agreed price and net worth of the transferred hotel shares.

The objective of the continued game is to run the business during Year2 toward budgeted goals by making quarterly decisions on the operation, analysing them, and using laboratory work to look for new ways towards closer congruence between budgeted values and the actual outcome of operations.

4.6.1. Analysis

When the last quarter of Year2 has been completed, and any appropriations and/or group contributions have been made for the year-end closing for the last year, the annual accounts for all teams are made available. The teams export data from their respective restaurant's accounting system to the budget module in Excel. In the budget module, the teams compare budgeted revenues and costs to actual results of operations with respect to

quantities as well as values. This provides the opportunity for a concluding variance analysis of budgetary deviations in volume and price.

4.6.2. Report

A final report on deviations between results and budget, as well as comments pertaining to financial years 1 and 2, takes place at a simulated annual general meeting to which all participants are invited. The teams' analyses are presented in a written report which is distributed to the attendants of the general meeting and presented to the whole group in an optional manner using for example, PowerPoint, overheads, screen dumps or similar. The participants pay attention to each team's presentation, make comments and ask questions on the contents of the written as well as oral report.

5. Result and discussion

Trials of the business game have resulted in increasingly better achievements by students in final exams. The initiator of the HotCalc software has registered a boost in the students' analytical ability along with a considerably greater understanding of the connections within the field of business economics, and correlations to other disciplines in their education². During the trial period it has been possible to make exam assignments increasingly advanced. This is a discernible result that is derived from the fact that students, through the use of the economics laboratory, are able to acquire knowledge about the sort of connections within the different fields of business economics that they previously were not able to understand solely by absorbing theoretical knowledge through conventional teaching methods.

Since many of the students have work-experience from the tourism and service industry, they feel quite at home with the business game being set in a hotel and restaurant environment. Consequently, they are able to see apparent connections between the course and their future professional lives. This contributes to increasing their motivation to enter more deeply into the subject of Business Economics and to further improving in other subjects in the course. The satisfaction that comes from being able to increase the level of understanding and knowledge of the ways in which different sections of business economics fit together, is reflected in the students' evaluation of courses in Business Economics where the business simulator has been used³. The evaluations reveal the fact that the laboratory work is very much appreciated.

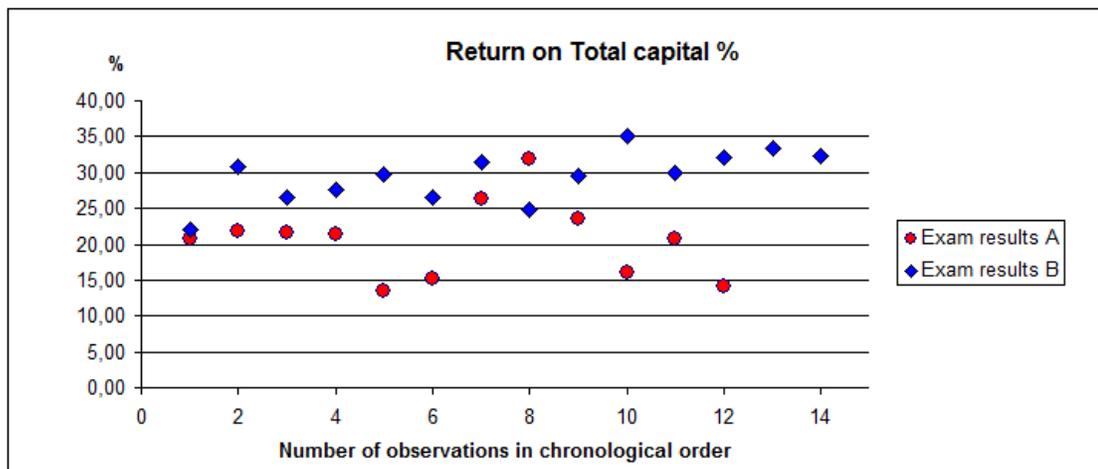
Laboratory work in economics using the business game has been tested at a number of academic communities in Scandinavia for over ten years. During this period the business game has evolved in line with the students' demands and expectations. New functions have been introduced, others have been modified, and it has been extended in order to fulfil and exceed the demands put on a platform for distance courses. The final result is a program that is presently used by a large number of colleges and universities in Scandinavia. To facilitate an exchange with colleges and universities in other countries, the program has been expanded to include the Euro, which constitutes the base currency in HotCalc. From the base currency, the program can be reset to an optional currency such as USD (\$) or GBP (£) by simply entering that currency's conversion rate to EUR (€). The program contains so-called dynamic language handling, which means that it is possible to switch back and forth between languages at any point during a game. Presently the program features the four Scandinavian languages as well as English.

During the next few years the language element will be expanded to also include German, French, Spanish and Italian.

References

¹ Chase, Robert M. 1993. The CRASE – The Cornell Restaurant Administration Simulation Exercise and The CHASE – The Cornell Hotel Administration Simulation Exercise. Cornell University, Ithaca NY., USA.

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The graph shows the outcome from 26 business laboratories during a test period. Each point represents the average profitability for the six teams in the game.

◆ Exam results A: The participants were informed before the game that the profitability would affect examination grades.

● Exam results B: The profitability in game rounds not resulting in improved examination result.

³ Evaluations made during the last year and representing approximately 200 out of the more than 1,000 students/participants that have taken part in economic laboratory work through HotCalc indicate that students/participants give the software a 9.0 rating on a 10-grade scale.

Additionally, an unknown number of participants have taken part in the business game through the more than 40 licensed HotCalc users at various academic communities in Scandinavia. The total number of students/participants that have sharpened their ability to steer a company toward economic goals and better business results can be estimated to over 4,000.