MISSION POSSIBLE – USING SIMULATION GAMES FOR MANAGEMENT TRAINING IN A TRANSITION ECONOMY

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ABSTRACT

One of the most popular empirical teaching methods is business simulation games. This is because simulation games verify knowledge not through knowing the definition, but through understanding problems, concepts and phenomena. Such a new phenomenon for the Polish managers is the market-driven economy since 1989. Using a typical description method (Dukes 1974), the authors of this paper wanted to share their experiences from several years of using management simulation games for training managers and entrepreneurs in a dramatically changing environment. The authors would like to explain the purpose of this game, the target audience, what the game is about and the context of use.

KEY WORDS: total enterprise simulation, central planned economy, market-driven economy, transition economy.

INTRODUCTION

According to Tomasz Pisarek and Wojciech Pitura (2009), knowledge of economics is the main success factor in business simulation games. A transition economy needs a change of minds of managers, who face a very new situation. Moving from a *centrally planned economy* to a *market-driven economy* requires a new way of thinking and many new types of difficult decisions. The best solution for achieving these objectives by training managers and entrepreneurs is applying the approach of *learning by doing.*

Unfortunately, this is difficult to carry out for a number of reasons:

- it would mean very high costs of experimenting on the "living" company;
- it would take too much time;
- it would imply too big of a risk (measured in costs) in case of failure.

The solution of those dilemmas was to use well-adopted management simulation games.

For instance, reading the *Blue Ocean Strategy* (by Chan Kim and Renée Mauborgne; 2005) is not enough to make any crucial decisions regarding the creation of a company strategy. But the simulation game *BOSS*, created by the team from INSEAD (Kim, Mauborgne, Triolet; 2008), allows managers to relatively quickly grasp the new methodology proposed by Kim and implement it successfully.

Nowadays the use of management simulation games in management training is very common. The number of more or less sophisticated games is permanently increasing. In addition, the distinctions between them are not very meaningful anymore. The most important remain to be the objectives of using such tools of training and their effectiveness – to what extent the goals are achieved. We decided to do that based on total management, using the *MANAGER* game (Bielecki, Koczuba; 1990) as an element of the management training in order to learn the functioning mechanism of an enterprise in a changing political, economic and social environment – a transition economy. It is also meant to form the participant's own opinion on the effectiveness of a decision-making process that abides by the new legal and economic rules.

MANAGER is designed in such a way that its results depend on the correctness of the decision-making methodology. Simultaneously, the participants have the possibility to deduce, based on historical data, the dependencies contained in the model (for example the shape of the demand curve depending on the price) and consequently adjust the accuracy of the made decisions. In *MANAGER* the actual economic, social and legal environment in Poland is recreated. One of the advantages of this game is that training can be combined with teaching using case analyses. New scenarios that are used in the game can be created based on earlier elaborated scenarios, but improved with the experiences from successive game sessions.

THE LEARNING GOALS

The list of learning goals that can be achieved through simulation games is quite long. A chosen set of learning goals focuses on changing the mindset of the participants. The most important learning goals for this particular game are to improve meta-cognitive skills (Sternberg 1998) and to create competence in managerial decision-making. After the game is successfully played, the participants should be able to perform the following actions:

- recognize the important problems for the company in transition;
- define those problems and represent them;
- create a strategy of change for their company;
- allocate resources according to the formulated strategy;
- monitor progress and solve problems;
- evaluate their own actions and problem solving process.

Thanks to this particular set of learning goals and the experiences of the participants during the game, their competence and confidence in managerial decision-making should be strongly enhanced.

The unique feature of the *MANAGER* game is the option of so-called *commercialization*. This is a moment in the game where patricians have the opportunity to convert their state owned company to a fully private firm in the transition process. It is not a compulsory decision. However, they can do this only after fulfilling given economic criteria and reaching a given level of them. They have to consider such a decision carefully (this is the most important decision), because it is not certain that such a decision will have economic sense. They have to analyze this dilemma on each step of the game after fulfilling those criteria.

Another unique feature is that, based on special control parameters, the arbiter is able to create a scale of economics from a pure central planned to a fully market driven one. This option extends the possibility of using the game for different purposes.

THE TARGET GROUP

There are two groups of potential participants that will fit this game well. The first group consists of, obviously, managers of state owned companies and managers or potential managers who used to work for state owned companies and are now working in the private sector. The second group consists of entrepreneurs who want to set up a new business or change (enlarge) an existing one.

Both managers and entrepreneurs are usually postgraduate students of MBA studies or part-time courses in management, finances, business informatics etc. Ever since the transition started, it is a very popular way to increase the level of education and future career prospects among the working population, especially for the already experienced and mature part of this society.

THE CASE AND SCENARIO

The MANAGER game scenario is based on a real-life case of quite a large Polish production company (TV sets), which was located near Warsaw. The game designers carefully analyzed the actual organization and created a case, which would serve the purpose of showing the complex problem of a company in transition from a *central planned* to *market-driven economy*. They also chose to include the original state of the organization before the management of the company started to reorganize it to fit the new market situation. The key issues incorporated into the game scenario are:

- ownership structure (state owned company);
- market and sales conditions;
- employment and wages structure;
- trade union conditions.

The company described in the case has around 4,100 employees and it is a typical state owned company with very strong trade unions and high production costs. One of the key issues here is the employment structure of the company under the *central planned economy*, where the purchase and sales department is just another administration unit with just a few very poorly paid employees. Whereas the production department employs more than 85% of the entire staff of the company and the salaries there are quite high. This was a typical situation for all the big companies back then. Moreover, very strict "hiring and firing" conditions are included in the case in the form of a general agreement between management and trade unions, which shows what kind of limitations managers were facing in such companies.

Elements that have been simplified for the purpose of the game:

- production scheme;
- materials purchase;
- accounting system;
- investment conditions.

Based on the case, a mathematical model is created for the game, which is designed for 3 to 5 teams and with a maximum of 33 basic decisions for each team per period. The decisions are grouped in the following sections:

- strategic investments:
  - extensive development of an enterprise (i.e. increasing the number of work places and the number of employees),
  - intensive development – decisions concerning modernization investments and the use of potential research and development resources;
- material purchase and production schedule:
  - prices of products;
- scale of employment;
- changes of salaries;
- R&D;
- market offer and marketing mix divided by two markets (home and export):
  - amounts to be spent on promotion and advertising in both markets;
- finances and credits:
  - amounts to be spent on environmental protection,
  - distribution of net profit.

An introductory case in the form of a manual for the participants describes this company as an existing company and the players have access to the company financial reports and decisions of the former management

team from the previous year. The game is organized in decision rounds of six months and the scenario does not have any fixed time horizon.

A company privatization model is also included in the game, so that after every full fiscal year the teams can decide about turning their company into a joint-stock company. The privatization mechanism works as an icebreaker in the game. The arbitrators encourage the participants to analyze the advantages and disadvantages of the privatization process in order to bring them closer to the optimal solution.

THE GAME

The form of the game is typical for a *total enterprise simulation* (see Keys J.B. and Biggs W.D.; 1990). The participants receive the game manual around 2-3 weeks before the game, together with a course syllabus and a recommended reading list.

The training starts with an introductory lecture, which gives the participants insight into the most important aspects of the case and scenario. It also gives the opportunity to ask questions and start a discussion, which strongly contributes to the process of "stepping into the magic circle" (Klebbers 2006). Subsequently, the participants are organized in teams of 3-5 people and each of the teams constitutes a Board of Directors of the state owned company. Their first task is to discuss the case and to create some form of overall strategy, which they are going to implement. After this part, the first decision round is played. As previously mentioned, the game does not have any fixed time horizon and the number of decision rounds is always adjusted to the group dynamics. A typical game consists of between 8 to 12 decision rounds and this is more than sufficient for the majority of participants to grasp the ideas behind the game. Of course the arbitrators are free to cut or extend the number of decision rounds, depending on the needs and purpose of the simulation usage.

The players make their decisions by filling out a standard form with data fields representing each decision. Then the decisions are introduced into the simulator in the arbitrator's computer and when all groups have submitted their decisions the round is closed and the results are calculated and printed out in the form of company reports and market results.

After every full fiscal year (every 2 decision rounds), the arbitrators print out more detailed information about every company on the market, which gives an opportunity to compare the results of each company. At this point, the arbitrators give their analysis of the situation and also present knowledge and methodology during debriefing.

THE SIMULATION PROCESS

The algorithm of the game runs as presented below:

1. The participants read the game instructions, i.e. the solutions and rules of the simulated enterprise and its environment.
2. The participants get the information about the economic and financial results for the previous year as well as the information about the present state of the enterprise.
3. The participants prepare programs of operational and strategic development of the enterprise (to be used in the analysis of the results obtained after a given number of simulation runs).
4. The participants make decisions for the nearest six months concerning the above-mentioned areas, by filling out a decision form.
5. The participants introduce the data into the computer.
6. The computer simulates:
   - the production process - establishing the volume of production;
   - the market - establishing the volume of sales in the domestic market and export;
   - the supply market - establishing the extent of carried out orders of materials.
7. The participants receive the simulation results, i.e. the economic and financial results of the enterprise activity, calculated by the computer (including balance sheet). They analyze the results and compare them with previously made plans.
8. The results of the analysis are the basis for making a decision for the next six months. The participants fill out the decision form for the next half a year.
9. After a certain number of simulation runs, during the concluding session, the participants compare their results with their initial plans and analyze the deviations. The extent and depth of this analysis depends on the goals set at the beginning of the game.

THE WINNING CRITERIA

The game has six equally weighted criteria of team performance measurement:

- company value – measured by achieved level of capital;
- average salary – (in relation to average salary in the market);
- achieved production capacity;
- achieved level of production with quality certificate – measured in percentage of total production abilities;
- increase of labor productivity– measured by the number of working hours needed per one final product;
- decrease of material usage – measured by kilograms of material used for the production of one product.

The idea behind this set of criteria is to cover all aspects of the case and scenario and to build up a support system for the most important learning goals through a carefully chosen set of criteria.

Building long-term company value is quite an important element of the good practice of management in the market economy. In this simulation, building up capital value of the company can only be created by reaching net profits and this concept is quite different from the *central planned economy*, where goals oscillate

around an optimal production plan.

The average salary creates a counterweight to the first criteria and its profit maximization paradigm. Secondly, it is a burden of the past with its strong ties to the trade unions, as well as a wealth creation part of the game. Thanks to the character of this criterion, it also strongly supports the classic trade-off problem and its understanding in the new context of a market economy.

The production capacity criterion contributes to the proper understanding of economics of scale and the dependency between a highly capital consuming company and the cost per unit. It also supports more active strategies, rather than passive - non investing - strategies. However, it does not exclude disinvestment and high-margin strategies.

The level of production with quality certificates shows how high quality products give opportunities and create higher added value to the company. One of the rules of the game (copied from the existing case) is that only quality certified products can be exported and sold abroad with a much higher margin.

Productivity and material usage stress the importance of cost control and how important productivity is to the cost per unit value and the possibility of being competitive on the market.

Of course arbitrators can change the set of criteria or assign different weights to the existing ones, if the situation requires emphasizing different aspects of the game. This particular setup of criteria was chosen in order to facilitate the learning of the most important elements for a company in transition and enhance a change of mind.

THE SOLUTION

The case of the company in transition requires a certain set of decisions and solutions that have to be implemented during the game, in order to achieve the winning combination of the "success or failure" criteria. The game focuses on changes in the company itself, rather than changes in the market.

First of all, only by changing the employment structure, as well as the salaries, investment in quality and cost reduction, can the game performance be fully successful. Second of all, a diversification of the market offer and an adjustment of the marketing-mix to the newly created market strategy give the best results. Team performance strongly depends on the changes they implement and also, to some extent, on the changes other competing teams are making. If they fail to find the right solution to arising problems, their company starts to cause even more problems, which starts to pull it down even more. This mechanism is very important, because it also clearly shows the consequences of the lack of or wrong decisions.

Another important thing is that the participants are forced (financially motivated) to invest in the protection of the environment, which is completely new to managers of a *central planned economy*.

Through debriefing sessions and benchmarking with the team performance of others, the participants are able to make the right choices more easily.

THE PARTICIPANTS

Game *MANAGER* was presented to the public in 1990 for the first time. Since then, yearly around 250-500 mangers and entrepreneurs, mostly from MBA programs and in company trainings, have successfully played this simulation game. So in almost 20 years of using this game for educational purposes, over 5000 managers and entrepreneurs participated in courses where this simulation was used. Today they are conscious CEO's of Polish firms, companies, enterprises etc. Training based on that simulation game helps them understand the rules of an economy in transition as well as those of a market-driven economy. And this was our mission.

EVALUATION

The participants evaluate the game and the course in which the simulation is used in two ways. Firstly, they are asked to assess the course based on their own actions at the end of the training. Secondly, after some time, the participants are asked to fill out an evaluation questionnaire and judge it more from a distance.

The first evaluations focus more on the mechanics of the game itself and the way it is played by the participants and the arbitrators/trainers. Thanks to this kind of feedback many errors have been corrected in the game until it has become stable and foolproof.

The second evaluation method refers to the way the course is conducted and the improvement of the teaching methodology using simulations games. The form in which this game is played today is different from the way the *MANAGER* game was played 20 years ago and it constantly evolves on the basis of growing simulation and gaming knowledge and feedback gained through evaluation tools.

Business game/simulation based courses are quite attractive to the student/trainee, because of the involvement and change from the "ordinary" classroom courses, which is why they get high scores in the evaluation questionnaires. There are two dimensions that are exceptionally important from the point of view of the realization of the learning goals:

- ✓ extending knowledge and understanding:
  - ✓ average score of 8.7 among MBA's and managers (on a scale from 1 to 10);
  - ✓ average score of 4.8 among students (on a scale from 1 to 5);
- ✓ the ability to implement the gained knowledge/skills in practice:
  - ✓ average score of 9.2 among MBA's and managers (on a scale from 1 to 10);
  - ✓ average score of 4.7 among students (on a scale from 1 to 5);

Participants are also encouraged to share their criticism concerning the course and if there is an element of the game that is criticized by more people, then it is changed.

FUTURE PROSPECTS – NEW MISSIONS

MANAGER in its original form served as an educational tool for quite a long time, but economic transition is becoming less and less important as the

economic development of Poland is in full progress. Now there are new challenges and *MANAGER* may have interesting development prospects.

Changes to the game have a few dimensions. The first one, which is relatively simple, is a geographical relocation of the game. Post-socialist economies do share many common elements and the *MANAGER* simulation can serve as an educational tool in economies that are less advanced in economic transition, like Belarus or the Ukraine. The planned development consists in adapting the simulation to the needs of managers elsewhere, by changing the language, currency and macroeconomic scenario. Especially since Polish companies are becoming more interested in getting involved in those markets.

We are also considering two new challenges, which will be our new missions. The first one is to adapt *MANAGER* for development trainings of *entrepreneurship*, which is one of the most important elements of the attitude of managers (Bielecki; 2001, 2008), and secondly for dealing with *knowledge management*, especially in *virtual organizations* (Bielecki; 2000, 2009). The virtual organization is a widely discussed organizational model, and is considered by some to be the organizational template of the nearest future. Yet so far, many companies have problems with adopting it. Malcolm Warner (2004) looks at some of the reasons for this, and suggests that knowledge management issues lie at the root of the problem. According to him, knowledge is the lifeblood of virtual organizations; without knowledge virtual space cannot exist. He continues by saying that companies that wish to operate virtually must become adept at knowledge management. The best way to learn how to deal correctly with those problems is to properly construct management simulation games.

All future changes will be developed based on our experiences from the successful *mission* (*MANAGER*) and using the newest *ICT* solutions.

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