GAMES AND SIMULATION IN BUSINESS LEARNING AND TEACHING

KOŹMIŃSKI Entrepreneurship and Management

GAMES AND SIMULATION IN BUSINESS LEARNING AND TEACHING

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FOREWORD

The incredibly dynamic development of telecommunications has created, for the first time in world history, the right conditions for giving the term "globalisation" an appropriate meaning. The Internet has caused globalisation processes to escalate, capturing and pulling us in like an invisible spider web. As a result of the occurring processes, many problems are being addressed differently – problems for which it seemed that the ultimate and perfect solutions have been worked out already. New concepts, definitions, models and theories are being formulated, such as: *global economy, information society, webonomics, knowledge-based economy, virtual organization,* etc.

The most significant characteristics that distinguish *global knowledge-based webonomics,* as Andrzej K. Koźmiński wrote in his book *Management in uncertain conditions. Advanced manual* (*Zarządzanie w warunkach niepewności. Podręcznik dla zaawansowanych*), are:

- its dynamics (the velocity with which changes occur and the significantly shortened time of decision implementation);
- a high level of competition (IBM had about 2,500 competitors in the sixties, now it has to confront over 50,000 competitors);
- it is network-based (based on extensive tele-information networks);
- the individualisation of offers to the final customer.

"Dynamics" is mentioned in the first place. This is no coincidence. Dynamics is the most important characteristic of modern webonomics, which is not yet very apparent in my opinion. It is this characteristic that nowadays determines success in business in the broad sense.

Continuous changes make it necessary to develop new approaches and methodologies that enable effective management in a dynamically changing environment. Companies that are the quickest in reacting to the challenges set by *webonomics* or *wikinomics* just about automatically gain competitive advantage on the market. It is particularly important here not only to understand a new methodology, but also to be able to apply it in practice. It is therefore necessary to differentiate between learning a new management methodology by a direct user (ex. *process management*) and the understanding of the philosophy of a new approach by managers of higher ranks (CEO's), in other words the strategic

decision-makers. It the first case, it is enough to merely take a good instruction manual and "make" the potential user get acquainted with it and afterwards "make" the potential user do an adequate number of exercises. However, if we do not want the implementation of "process management" to be limited to introducing the ISO system in the company, then we must suggest to the decision-making managers to learn to understand what this new approach means exactly. In order to understand the philosophy of a new management concept, for example *agile project management*, of which the understanding is crucial for the decision-making managers, it is necessary to apply different training methods. *Agility management* means managing a company in a way that allows for a flexible and quick reaction to changing business conditions in the environment in which it operates. This cannot be taught with the "commanding" method on the basis of an instruction manual. Another example is *knowledge management*. The only way to understand the essence of this approach is by creating conditions that will allow to actually experience for yourself how this new approach (methodology) works and what benefits it brings etc. If the decision-making managers agree with the intuitively right statement for them: *Business process management in a company enables a quick adaptation to the dynamically changing socio-economic environment*, then without proper training they will not be able to apply this kind of process management in the everyday management practice of their company.

One more example: the concept of the Blue Ocean Strategy of Chan Kim and Renée Mauborgne. Just reading this great book is not enough to make an important decision with respect to elaborating a company strategy based on the BOS methodology, even if the decision is made with an absolute conviction that it is being done according to the rules of the art. The above-mentioned cases require a way of training that would make it possible to successfully implement such a "novelty". It seems that the best solution would be to apply 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 organism" of the company;
- it would take up too much time;
- it would imply a too big of a risk (measured also in costs) in the case of failure.

It is obvious that all the above-mentioned characteristics of global webonomics have resulted in a natural increase in the interest of companies in new effective ways of educating or training employees. This would enable free movement in these new economic "dimensions". The access to effective methods of quick training and educating such "novelties" has become a burning problem for the more aware managers and entrepreneurs. The rapidity with which such "novelties" are mastered

determines, among other things, the achievement of the so-called market advantage of a company. The following question arises: which methods should be used to train and educate modern managers to be successful and at the same to time achieve extremely fast results?

The concept of so-called *lifelong learning* has come up. In other words, the concept of permanent education of employees with the aim to keep up with the newest trends in given fields. There is also another concept called *just-in-time learning*, which is the skill to acquire knowledge on command when out of necessity the demand for such knowledge arises in a company.

The experiences of the author indicate that empirical teaching is particularly useful for the training of practical skills of managers. This is the case when new techniques or methodologies have to be learnt in the wide field of management, because the participants:

- learn to identify problems, to carry out a rational analysis and to make decision in conditions very similar to the actual conditions of their working environment;
- gain experience in team collaboration in difficult conditions;
- practice management as teamwork and learn that the achievement of success depends on the acceptation and support of the group;
- have team discussions, which usually are much more productive than even a very interesting lecture that, after all, will always remain merely a monologue;
- are "condemned" to involuntarily surrender to the cycle: "defrosting, change, and freezing again", which are the elements of the training model;
- undertake actions that are clearly the fundaments of a useful theory, methodology;
- receive instant feedback and analysis results.

One of the most popular empirical teaching methods is managerial (business) simulation games. This is because simulation games verify knowledge not through knowing definitions, but through understanding problems and phenomena.

However, if a training based on synthetic teaching with simulation games is to be carried out correctly, the following should be avoided:

- an excessive simplification of reality in the applied model;
- leaving the participants to themselves for longer time periods during the training without any feedback on possibly inappropriate behaviour that is observed;
- making generalisations based on one experiment only.

These types of games have to be designed in such a way that their results depend on the correctness of the decision-making methodology. Simultaneously, the participant has to 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 as a result

adjust the accuracy of the made decisions. Simulation games are applied in order to create an imitation of the actual environment, allowing the participants to learn and simultaneously observe behaviours in all kinds of situations. The more the game reflects reality, the more it fulfils its role as an instrument of training the participating staff. However, contrary to simulation models as such, in the case of games it is more important to create the possibility of designing such scenarios that will make the decision-making process to be as similar as possible to the conditions of the real world. This type of training enables perfecting the managerial workshop for the decision-maker without any risk factor, which would carry costs with it as a result of inaccurate or even erroneous decisions. This also enables the decision-makers to visualise the level of their managerial predispositions. Another advantage is that trainings based on simulation games can be combined with teaching by case analysis. 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.

When training the managerial staff, with the aim that they learn a new management concept, it is important that the participants have some kind of experience in the field that is going to be subjected to further perfection. This means that a required condition for participating in such simulation games is at least a basic understanding of the methodology concept or technique that is used in the training. During training with games the participant enhances and broadens his experiences, which helps him in making better decisions and therefore in applying the game model in a more comprehensive way. Moreover, the game gradually supplies the participant with new knowledge, which is not available during the first phase of the game. The point is that this process of getting to know reality should be as close as possible to direct learning, using the experiences that the participant has gained so far and often assuming that the participant will in the future react in a similar way as in the simulated reality.

From the experience of the author it can be concluded that the person who conducts the simulation game training has a significant influence on the success of training. A skilfully conducted debriefing by the trainer after each phase is an excellent way of speeding up the achievement of the goals that have been established before the training. The time that is spent on those meetings should not be limited in any way.

It is also worth mentioning that a simulation of the actual environment in which the managers work can be used additionally for detecting or indicating reasons behind the difficulties in adopting modern management techniques. This way, corrections can be introduced in the management training system and as a result its successfulness will increase.

The book that we recommend consists of two parts; the first part concentrates on the theoretical reflections on modern simulation games that are applied in education, and the second part consist of a collection of game descriptions. The authors hope that the book will be interesting and useful to academic employees as well as students – to all those people that find unique teaching and training methods fascinating.

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PART I

CONTEMPORARY DILEMMAS OF EDUCATIONAL BUSINESS GAMES AND SIMULATION

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ORGANIZING CHILD CENTRED CARE: DEALING WITH TIME BOMBS!

INTRODUCTION

Simulation games can be designed for a variety of objectives and they can be applied in many different situations. In this paper we present two simulation games that were designed to help solving a societal problem in The Netherlands. Such simulation games, which are designed in the social sphere, are supposed to support policy makers and decision makers in public administration.

First we describe the background of the problem, the cooperation and coordination in Public Child Care. After that we shortly describe the two simulation games that we have designed and explain how these simulations games are supposed to contribute to improving the situation in Public Child Care.

THE SITUATION

In The Netherlands childcare is a public task, which aims at securing the conditions in which children can grow up and become healthy and well-balanced adults. This public task involves, among other things, all children being looked after by means of regular physical and mental check-ups from the moment of birth (and even before birth) until the age

of nineteen. In addition to this form of care, referred to as the Child Health Care, there are organizations that focus on children who are threatened in their social, physical or intellectual development, or children who are victim of (parental) violence. The aim of the activities of these organizations is spotting children that have problems or that live in a threatening environment as early as possible and providing that the appropriate health or welfare organization(s) take(s) over and help(s) the child in question.

The way in which this care is organized seems to offer a solid and watertight system that ensures that no children are overseen. However, in the last few years some serious incidents have taken place in The Netherlands, concerning children and involving Public Child Care organizations. Two particular cases caused a great commotion among the Dutch society.

Savanna

A three-year-old girl was found dead in the trunk of her mother's car. She died of suffocation, after being seriously undernourished and molested by her mother and her friend. She had been placed out of home two years earlier, because of neglect and molestation and she had been put under the authority of the Child Care Office. But after six months she was placed back home. Despite of regular reports of neighbours to health care institutions stating that Savanna was being molested, these institutions did nothing. Soon it was obvious to everybody that mistakes have been made, but when the report was published by the Inspection for Public Child Care, everyone was shocked by the extent of failure of these institutions.

Gessica

In the summer of 2006 pieces of a body were found in different places around Rotterdam. After some time a reconstruction of the head made clear that this was the twelve-year-old Gessica. She and her father lived together in Rotterdam, but did not get along very well. They received help from several institutions for already 1½ years. Gessica was even in a reception centre for 8 months, after which she went home again and got guidance and daily help. Nobody – family, neighbours, teachers nor care workers – noticed or reported that she had disappeared until the reconstruction. Her father, who was later convicted of murder, told people that she was with her mother. The report on this case indicated that welfare workers did communicate with each other, but that there was not one person that had overall responsibility. Everybody just did his or her part and that was it. There was also no feedback whatsoever.

In the aftermath of these two serious cases other incidents were reported, having less fatal consequences, but nevertheless unveiling serious

problems in Public Child Care. Children are victims of violence and their development is threatened, while Child Care organizations do not notice this or misjudge the seriousness of the situation. At first, the professionals and workers were blamed for this. They were considered incompetent and not vigorous enough. One was even brought before the court of law, but eventually acquitted. Later on it became clear that it is the way Public Child Care is organized that makes it very hard for the workers and professionals to do their work properly. The great caseload and the limited time available are the main reasons. It was reported that on average 40% of the available time is spent on filling in reports and writing accounts for the organizations.

THE DIAGNOSIS[1]

One of the causes of the situation described above is that many different organizations are involved in Public Child Care, all having their own specialisations. A short summary of the involved organizations: Family Doctors, Child Health Care (0–19 years), Social Welfare Institution, Centre for Child and Family, Care Teams in Schools, Child Molest Office, Juvenile Social Work, Child Care Office, Child Welfare Council, Mental Welfare for Children, Child Mentally Handicapped Care and the Juvenile Detention Centre. All these institutions and organizations have a specific scope and play a particular role in the care process. The communication within and between these organizations is not optimal.

The way (most of) these organizations and institutions are organized and work can be summarised in the following way:

- a strong hierarchical structure and bureaucracy;
- an extensive layer of coordinators and managers;
- a heavy caseload for professionals;
- relatively much time spent on writing reports and accounting;
- the organizations are discipline-oriented; each is specialised in a specific discipline (such as physical and mental health, the family situation, behavioral problems, education, juridical issues).

This organizational structure and these work methods cause organizations to focus on their own activities and disciplines only. Cross-organizational and cross-disciplinary coordination and cooperation requires a lot more work, since bureaucratic barriers have to be levelled out.

[1] Our description of the current situation may seem caricatural, but this article does not allow for all kinds of nuances. It is, however, not our intention to put down the efforts of all those dedicated workers and organizations in the field of childcare.

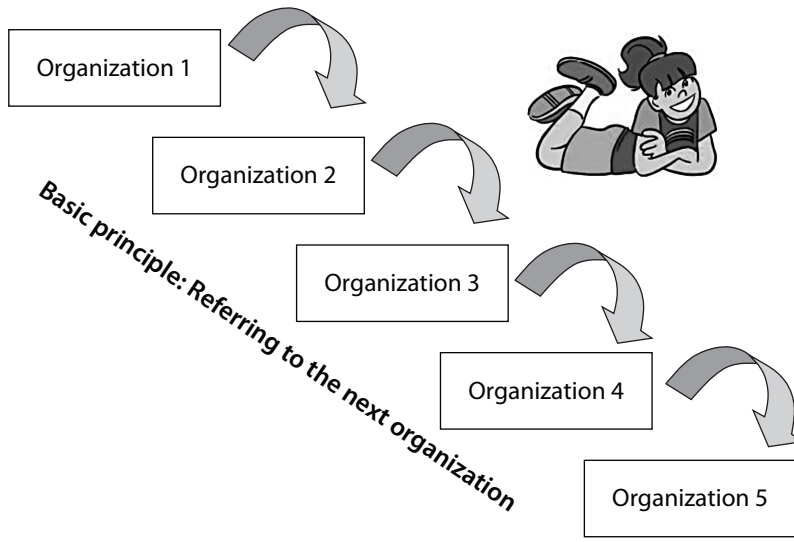


Figure 1. The principal way of helping children with multiple problems

As a consequence, the predominant way of cooperation between organizations in the case of children with multiple problems can be characterised as shown in Figure 1.

The childcare process is organized from the perspective of the organizations. The child is sent from one organization to the other. From this point of view the care process is a chain of consecutive events, and chain management is considered to be the basic principle to steer and coordinate these processes. In practice, the consequence of such an approach is that when a child is referred to the next care worker or professional, the first professional loses sight of this child, since it is supposedly in the good hands of the next professional.

The basic principle of the current cooperation between these organizations consists in referring to the next organization. The consequent issues of such cooperation are:

- **Responsibility**. Who is responsible for the child and the family? Or: who takes the responsibility? As we saw in the case of Gessica, each care worker did his or her part, according to the organization he was working for. But obviously nobody felt responsible for the whole case (i.e. the child).
- **Case management**. Who has the overview over the child; where the child comes from, who has already dealt with this child, what are other care workers doing, how may several treatments reinforce or hinder each other, and so on.
- **Sharing information and knowledge**. Each professional writes his or her own files and these files are kept by the organization he or she works for. Combining the information in the separate files is very

hard and therefore it is hard to get a complete view on the child and his or her problems.

In order to overcome these kinds of problems and to ensure that the child gets what he or she needs, new concepts of care processes are being developed and new initiatives are taken.

TOWARDS CHILD CENTRED CARE

One of the approaches for an improved care process is Child Centred Care, also referred to as wrapped care. The basic principle of this way of thinking is illustrated in Figure 2.

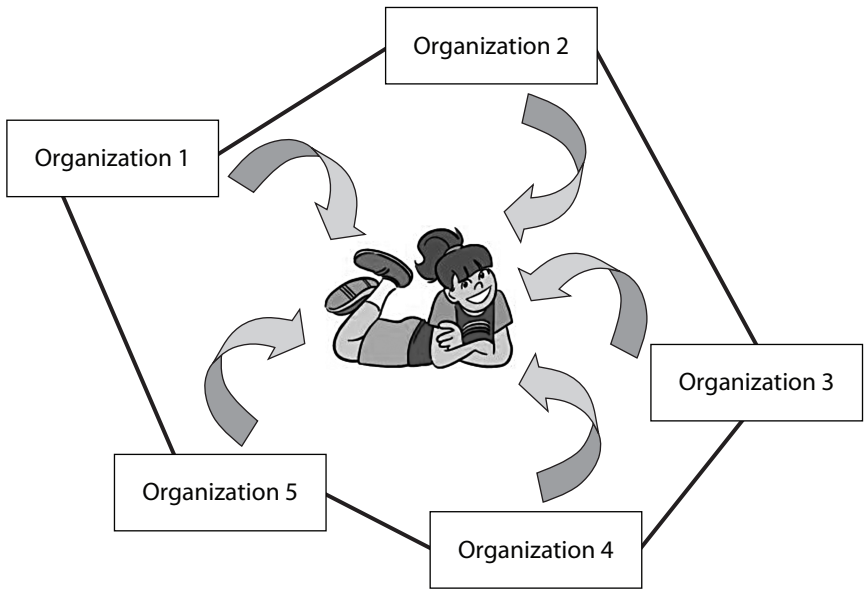


Figure 2. Child Centred Care

The child is put in a central position and whenever a specific type of care (discipline) is needed, the appropriate professional is assigned for a shorter or a longer period of time, depending on the type of problem and the progress. The basic idea is that the organizations place their professionals in teams that are formed around a child. This process requires a lot of coordination between the organizations. This coordination is steered from the bottom, the care process. In addition, case management helps to get a clear view on the child, his or her problems and progress.

The principle of Child Centred Care requires a style of working that is quite different from the current situation. It requires:

- less bureaucracy, and more responsibilities and authorities lower in the organization;

- decision makers and managers guiding and facilitating, instead of directing and controlling;
- gearing the procedures and working processes of the distinct organizations/disciplines;
- mutual trust:
  - between organizations
  - between disciplines
  - between managers and professionals;
- knowledge of each other's approach, expertise, *modus operandi*;
- respect for each others expertise, but always in the perspective of the interest of the child;
- shared client files.

Furthermore, on the level of the people who play a role in the care taking processes and their work methods, the following changes are needed:

- new roles for decision makers, managers and professionals;
- new relations between organizations;
- efficient procedures for case management and sharing responsibility;
- more time dedicated to the client instead of writing reports and accounting;
- vigorousness, decisiveness and flexibility of professionals;
- a certain degree of disobedience of the professionals (ie. to prioritize the interests of the child above the interests of the organization).

It is obvious that such a change in the way of working, attitude and procedures cannot be achieved easily. In order to stimulate this different way of thinking and working we have designed two simulation games in close cooperation with the representatives of Public Child Care.

TWO SIMULATION GAMES FOR CHILD CENTRED CARE

Since the problems of professionals and workers are different from the problems of managers and decision makers, we have designed two simulations games. The overall purpose of these games is to make the participants aware of the principles of Child Centred Care. For workers and professionals the focus is placed on getting to know each other, each other's professionalism and know-how, and to work jointly on cases. For managers and decision makers the focus is placed on how to organize and facilitate the processes in such a way that the workers and professionals can join their efforts in helping the child in the best way possible.

In the next sections we will describe and compare these two simulation games.

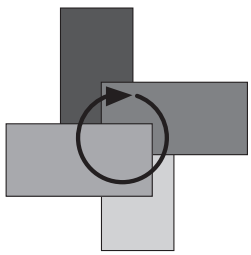
Focus on all Children (Alle Kinderen in Beeld)

Focus on all Children is a simulation game for professionals in Public Child Care. It is developed to help professionals from different disciplines to come to a joint, complete and correct assessment of the risks for children.

The following table gives a short description of the simulation game.

Table 1. Characteristics of the simulation game Focus on all Children

General theme	assessing client files and cooperation between professionals from different disciplines
Participants	professionals from different disciplines in child care and their heads of department
Objectives	the participants… practice using a structured way of assessing client files; get to know each other; exchange information about their knowledge, skills and procedures.
Number of participants	20 up to 250 (and more)
Time	half a day

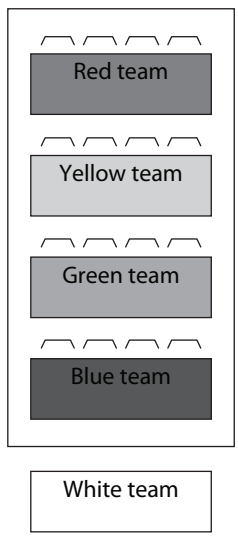


One of the main tasks of Public Child Care is to assess possible problems in the development and upbringing of children. If a problem appears, the professionals have to systematically design an integral plan of action. Assessing children is a complex task, involving several decisions taken almost simultaneously. In Focus on all Children these decisions have been taken apart in four phases in order to make the following clear:

- what the distinct phases in the assessment are;
- what decisions are being made in each of these phases;
- at what moment other/more disciplines may be or have to be involved.

The four distinguished phases and decisions are assigned/allocated to four teams in the simulation game. The teams have to assess cases taken from client files. These files are based on real files, but anonymous and adapted for the simulation game. The teams have the following tasks to perform and decisions to make:

- The red team observes signals and decides whether the child has (potential) problems: is this child okay or does it need special attention?
- For the children that need special attention the yellow team assesses whether the type of problem is known and whether a routine solution (protocol) exists for dealing with it.
- If there is not sufficient information about the child or the (type of) problem, the green team has to decide which disciplines and expertise are needed in order to achieve a complete image of the child and the problem. If the problem proves to be known, then the protocol is applied, otherwise a tailor-made plan is needed.
- In case of an unknown, complex problem the blue team will design a tailor-made plan of action.



There is also a special team: the white team. This team, which also consists of participants, observes the processes, creates an overview and gives feedback to the other teams.

The game consists of two rounds and the participants work in two of the four teams. After each round the participants reflect on their role in the entire assessment process. The simulation game is completed with a debriefing in which the lessons learned are shared and a translation towards the day-to-day situation is made. Important themes in this debriefing are the steps in the assessment process and the alignment, cooperation and the responsibilities of professionals of different disciplines.

In Time for the Child (Op Tijd voor het Kind)

In Time for the Child is a simulation game for decision makers and managers in Public Child Care. It is developed to help these managers and decision makers to get insight into how organizations can facilitate the coordination of and cooperation in child care processes.

The features of this simulation game are summarized in the table below.

Table 2. Characteristics of the simulation game In Time for the Child

General theme	cooperation and coordination between organizations, dealing with responsibilities
Participants	managers of Child Care organizations and decision makers
Objectives	the participants… learn a structured procedure for assessing children; learn how to set up case management; learn ways of coordination and cooperation; get insight into the facilitating role of managers and decision makers;
Number of participants	16 up to 75
Time	a full day

In the simulation game In Time for the Child the problem of child-care is translated into the problem of dismantling time bombs. The metaphor is obvious: children with problems who do not get the proper care will eventually turn into serious problems. The reason why we opted for a metaphor is that we want the participants to focus on the processes, procedures, cooperation and coordination without being absorbed by the character of the problems that children are often confronted with. In addition, some of the intended participants (e.g. decision makers of local governments) do not have the extended knowledge and experience of protocols and procedures needed in the care processes.

For that reason, this simulation game is about dismantling time bombs within a set time. In the game the participants are members of different departments of the Agency of Dismantling Time Bombs, each department having different skills, know-how and capabilities. The participants have achieve an effective and efficient alignment, coordination and cooperation in dismantling time bombs before they will explode.

From time to time one of the departments receives an intercepted message, which may contain information about a planned bomb attack.

Such a message consists of coded text, as shown in Figure 3 on the left side. It is the task of the bomb experts to decipher the message and to determine whether it is a real threat or just a fake message. If indeed the message turns out to be about a time bomb, the department has to take action: the bomb has to be investigated and dismantled.

If it is diagnosed to be a real threat, they have to determine the type of bomb and engage the proper experts (from several departments) to put their skills into practice in order to dismantle the bomb. This requires cooperation with other departments. Moreover, all the time the bomb (as shown in Figure 3 on the right side) has to stay in place and may not be moved. All activities have to be organized around the time bomb instead of taking the time bomb to other teams.

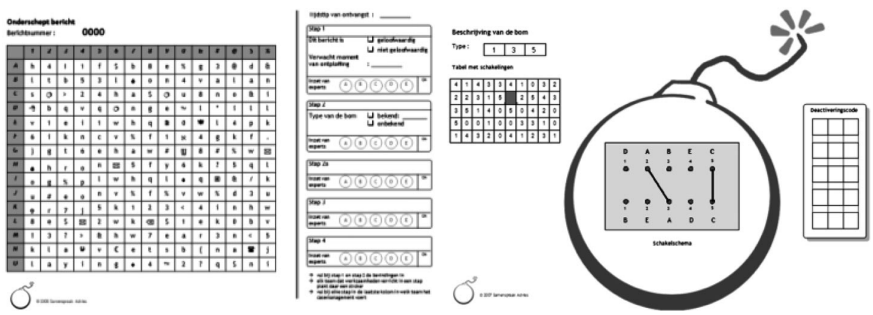


Figure 3. Example of an intercepted message and a bomb

The process of assessing messages and dismantling the bomb consists of five steps:

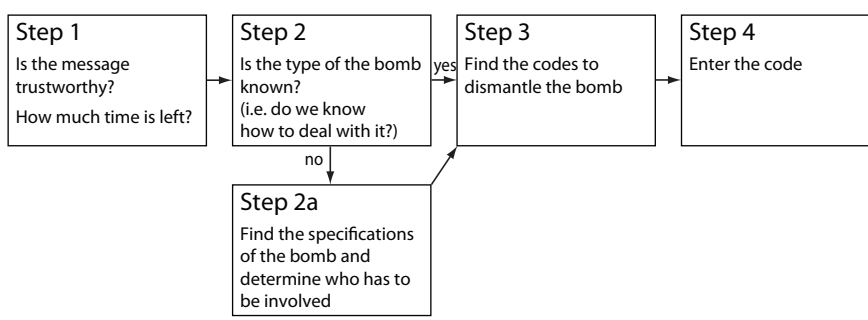


Figure 4. The process of investigating the message and dismantling the time bomb

In order to dismantle the bomb, each of the involved experts has to solve a specific puzzle, which gives a code. The codes of the individual experts are put together and they form the key to stop the ticking mechanism of the bomb in time.

The performance of the experts is supervised by the Council of Safety: this Council (also played by participants) observes the activities

related to the central themes of the simulation game: alignment of procedures, coordination of the assessment process, and the cooperation between different departments and their responsibilities. Therefore, they are asked during the feedback moments to comment on what they have observed and to give advice about how things can be improved. The game offers possibilities to implement changes in processes, structures and regulations, and to come to conclusions that can be tested directly in (simulated) practice.

During the debriefing the question is asked whether the way of working that is developed during the simulation game can be applied in the day-to-day practice, and what conditions must be fulfilled to make this successful. In the end, the game is about the question what they, as managers and decision makers, can or must do in order to create the right conditions for the workers and professionals to do their work as well as possible.

Comparison of the two simulation games

Both simulation games are meant for Public Child Care, but they aim at different participants and learning effects. The Table 3 describes these differences in short.

Table 3. Comparison between the two simulation games: Focus on All Children and In Time for the Child

Focus on all Children	In Time for the Child
professionals	managers & decision makers
real life tasks	metaphor – time bomb
relaxed pace	high pace and tension
get to know each other	get to know the system
exchange of experiences and perspectives	how to organize cooperation and coordination
static: no changes in the flow of activities	dynamic: participants may change the procedures
no change in the procedures	experimenting with new ideas
quiet debriefing	confrontational debriefing

The differences between these two simulation games are related to the different groups of participants and the different learning objectives for these groups. We opted for a recognizable scenario for the professionals and workers, in order to motivate them to talk about their own

perspective, discipline, know-how and skills. Since the professionals and workers have been "under attack" in the public opinion, we decided not to make this game too confronting: it should not point at possible shortcomings and mistakes, but instead it should give perspectives and motivation for working together with the other professionals.

In the case of the managers and decision makers, it was decided to go for a more confronting approach, in order to stress the urgency of the matter and to make them step out of the ordinary way of working that is characterized by discipline, organization centred perspectives and bureaucracy.

Thus far both games have been played only a limited number of times. The reactions of the participants are enthusiastic and they indicate that the messages have come through. Whether this will really help to improve the quality of childcare in The Netherlands and to prevent incidents as we have seen in the past years, is still to be proven. But we are convinced that these two games will contribute to some extent in achieving the desired changes, starting with creating the awareness that things can be done differently.

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MODEL EVALUATION OF THE EFFECTIVENESS OF DECISION MAKING SIMULATION GAMES AS AN EDUCATION TOOL

The study of the effectiveness of simulation games that are used as educational and training tools is a very vibrant and important element of the research as well as practice of simulation games. The research on the effectiveness of such games was somewhat forced upon the creators and instructors of the games by the participants themselves and by the decisions makers (management trainings). Since the games are a relatively young tool, their usefulness still has to be proven in the education process. Until now research into the effectiveness of using such games focused on the notion that games are a more useful didactic tool than other forms of education. The results of this research are presented in the works of J.E. Karney (2007) and Dekanter (2005). They clearly indicate the advantages of assimilating knowledge through interactive and participative educating methods. These results have become the basis for further studies on the effectiveness of games, because on account of this research we have gained the answer to the question: are games a better education tool than other forms of teaching? And the answer is very much affirmative. Whereas in a further stage of making choices, the following question arises: what game to choose and to apply for a particular type of training? And: what game will be the most effective for this type of training? Therefore, research needs to advance one step

further and also study the differences between the games themselves and even between the different ways one game can be played. However, at this point new problems arise with respect to studying simulation games as such. These problems arise mainly from:

- the multi-disciplinary research area;
- the lack of linearity of games as an education method;
- the subjectivity of the work evaluation of the instructor/arbitrator;
- the fast development of games and the vast amount and types of games.

The research methodology and the development of knowledge (Low--Hobbs 2005) cannot always keep up with the development of the technologies utilised in simulation games. The research methods and models suggested in this paper are an attempt at filling this gap.

THE INTERACTION MODEL OF DECISION MAKING SIMULATION GAMES

On the basis of the study of literature and own research, as well as many years of experience as an instructor of management games, the author wishes to suggest a research model that describes the interaction of a training based on a management simulation game.

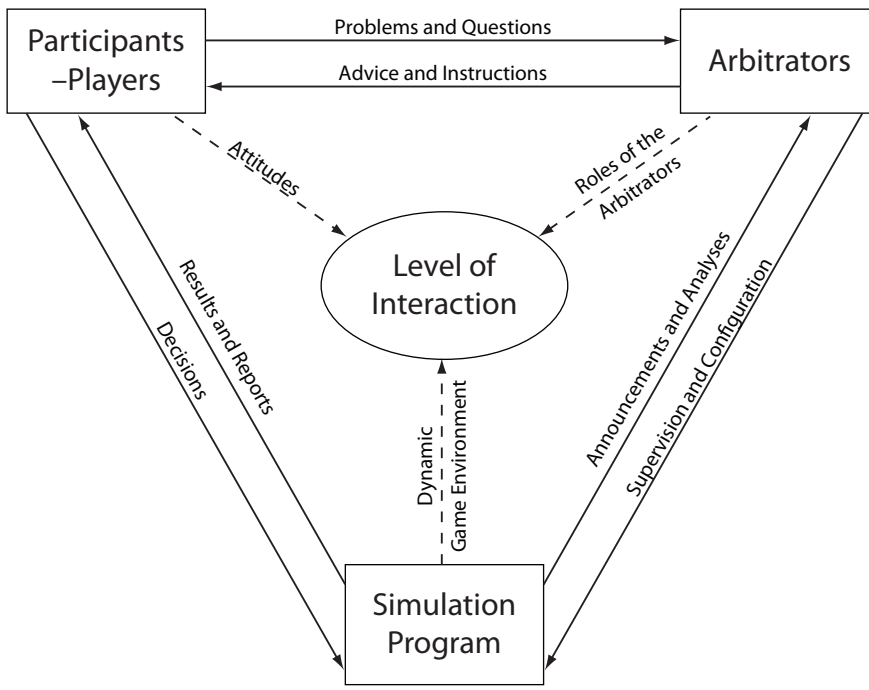

Figure 1. Model scheme showing the interaction model of a decision making simulation game

The model contains three entities: participants/players, arbitrators and the computer system.

The participants are the people that participate in the simulation as players or decision makers. They can make decisions independently or they can be organised in teams. The computer system can also simulate the actions of individual players or teams in order to create a more complex game environment. This is also used in games where the player plays against the computer. The participants take on attitudes towards the game. Typical attitudes can be divided into the following groups (Lundy 1991, Cadotte 1995): opportunists, focused on skills, absent-minded, analytical and lost. The basic research element in the group of participants is the notion of setting out goals and achieving them on a personal as well as group level.

The arbitrators form a group that guides the game and they have certain roles to fulfil (elaborated on the basis of Cadotte 1995 and others):

- the role of administrators – they supervise the computer system so that the game is carried out smoothly;
- the role of "game masters" – they create the game environment and introduce the participants to it;
- the role of trainers – training the participants and passing on knowledge;
- the role of "the devil's advocate" – setting out challenges and guiding to the right solutions;
- the role of the "third party" – playing the part of institutions, such as banks, trade unions, random incidents or law courts, and influencing the actions of the players and solving disputes.

One of the research elements for this group is creating measurable evaluation criteria for the effectiveness of the work of the arbitrators. Another important element is investigating the level of intervention that does not disrupt the simulation, i.e. does not alter the game results to such an extent that the decision makers lose control over the result.

The third entity, and at the same time simulation element, is the computer program on which the simulation is based. The author realises that treating the computer program as an entity is a controversial idea. However, there are grounds on which he has done so. As a result of technological progress, the programs on which the simulations are based have become highly specialised applications, which often have very complex mathematical models. It hardly ever happens anymore that the instructors are simultaneously the authors of the program and that they can freely modify it even during the game. Nowadays, the applied solutions are the result of the work of entire teams of people. The instructors have a very limited and strictly defined range of intervention on program level in the course of the simulation. As a result the programs have an increasing autonomy, which is why in the opinion of the author they can be treated an entity. The research elements in this case consist

in the lack of system crashes, and the stability of the system measured by the occurrence of critical errors and system or application breakdowns and by how easy the system is in usage.

The continuous arrows in the model that link the entities of the game represent the flows of information and feedback.

The interrupted arrows represent the positions and attitudes taken on by the entities in the course of the game. The roles played by each entity in the simulation form a "level of interaction" on the basis of which the game is played. Moreover, there are different forms of interaction on the levels: team – team, team – arbitrator and team – system, which go beyond the ordinary decision making, i.e. the negotiation of credits, trade unions, auctions or licence trade.

On the basis of the model described above, the criteria for training effectiveness based on simulation games are created. In the course of the research, the author noticed that it is impossible to create one common criterion that describes the effectiveness of simulation games. However, we can research and evaluate the effectiveness for each separate entity of the above-mentioned model. The difficult task that we face when considering the effectiveness issue, is assigning threshold values for particular criteria that describe each of the entities. For management simulations there are no such values and therefore the fundamental question will be: what are the threshold values for the particular criteria in the evaluation of the effectiveness of decision-making games?

In his article, professor Low-Hobbs (2005) points out that simulation games are a particular phenomenon with a fantastic methodology, but with almost no elaborated theory. From this article, the conclusion can be drawn that this lack of a theory creates opportunities as well as dangers for simulation game researchers. The knowledge gap that has formed allows a great freedom in formulating new hypotheses and this is an opportunity for researchers. However, the problem arises of verifying these hypotheses, as well as the problem of creating reliable evaluation measures. Therefore, a well motivated research methodology needs to be formulated for the above suggested model, as well as a didactic evaluation and verification method for the set hypotheses.

Based on the methods described in *Learning by doing* (Cadotte 1992) and *Cognitive learning* (Lundy et al. 1991), on which the methodology of simulation games is based, the author suggests a method for creating and verifying evaluation criteria for simulation games. He suggest to assign a basic descriptive criterion as well as an auxiliary criterion for each entity of the above mentioned model and subsequently to assign average values for each criterion through quantitative and qualitative research and to apply this value as a threshold value, therefore an evaluating one. In the final analysis, simulation games will be evaluated as effective if they achieve results that are at least equal to or higher than the threshold values for all the basic criteria.

A decision simulation game is only effective if its results for each entity are higher than or equal to the average for each basic criterion.

Obviously the above criterion has to be supported by several auxiliary criteria for each criterion.

For the participants/players the basic criterion, which in the opinion of many researchers is the best one, is achieving the goals that the participants of the simulation have set out for themselves.

Achieving intended goals by the simulation participants is a reliable criterion for measuring the effectiveness of simulation games among players.

However, setting out personal goals and actually achieving them depends on (Lundy 1991) the attitudes of the participants towards the simulation. For this reason, an additional auxiliary criterion is necessary, one that describes the goals to be achieved.

A vast majority of simulation game participants sets personal goals for themselves and wants to achieve them.

With respect to the arbitrators, the effectiveness in this group needs to be seen through the prism of the participants. This means that the basic criterion is connected to the results achieved by the simulation game participants. For this reason, the basic criterion for evaluating the effectiveness of the work of the arbitrators is achieving a result at least equal to or higher than the average of the given simulation, using the same parameter or parameters that are used to evaluate the results achieved by the players. Another criterion is the number of players/teams that have achieved a null result, i.e. the bankruptcy of a virtual company.

Simulation results that are equal to or better than the average using the evaluation parameter used for the players/teams are a reliable evaluation criterion for the effectiveness of the work of the simulation game arbitrators.

An auxiliary criterion that also evaluates the effectiveness of the work of arbitrators is the average number of players/teams that have achieved a null result, i.e. the bankruptcy of a virtual company in the simulation. This allows for an evaluation of the above mention criterion from a different perspective. An excessive amount of teams that have

achieved a null result in the course of the game could indicate that the work of the arbitrator is ineffective.

> The work of the arbitrators is effective when the number of players/teams that have achieved a null result does not exceed the average for a given type of game.

The last part is the evaluation of the effectiveness of the application that creates and operates the simulation. The basic criteria for the evaluation of such a system could be the lack of crashes and the easiness with which it can be operated. This evaluation is based on the occurrence of critical errors that result in a suspension and the restarting of the system.

> The simulation is carried out successfully if the computer system did not show any critical error in the course of the simulation.

The evaluation with respect to the easiness with which a system can be operated is also an important element of the overall evaluation of the system. An unclear or misleading interface may lead to false results because of repetitive incorrect interpretations in the communication with the program.

> The simulation is carried out successfully if in the judgment of the participants the game interface is crystal clear.

The strong side of this model is the relatively solid structure of the description of the management game regarding the interaction between the participants and the system. Another positive aspect is the possibility of applying this model to different kinds of simulation games in which a computer simulation is used as a teaching tool. However, the author does realise that the model also has a few flaws, such as the generality of the evaluation criteria, the lack of a clear definition of the terms "success" and "loss" of a team and the inflexibility of the model. Moreover, according the above description of the model, a lot of elements are dependent on the instructor himself. This creates the issue of the subjectivity of the work evaluation of the instructor/arbitrator. A part of these flaws can be explained by the necessary generality of the model, for only then can it be applied to different kinds of simulation games. However, the influence of the instructor/arbitrator should be evaluated in a more defined way.

PERCEIVING MANAGEMENT SIMULATION GAME TRAINING AS A PROCESS

Even though putting interaction into a model shows the specific links in the simulation game, it does not show the dynamics of this teaching method. Dynamics is one of the key elements of these trainings in the form of games. Moreover, this static model has a few shortcomings with respect to SGD (Simulation & Game Development). It is extremely important to obtain an as accurate as possible evaluation of the effectiveness of a training based on games. In addition, the standardisation of the description will enable the standardisation of the work of the instructors/arbitrators and this will lead to a limitation of the negative effects of subjective work evaluations of instructors/arbitrators.

For this reason, the author has decided to enhance the perception of the simulation game as a model and treat it as a process. When perceived as a process, thanks to its specificity, it is perfect for showing the dynamics of such training. Furthermore, such a process can be evaluated on its effectiveness according to the methodology used for processes in management. If we treat the simulation game as a process, then from the point of view of researching the effectiveness of business processes we can define its effectiveness as the quality of the business process according to given, measurable evaluation criteria (Gabryelczyk 2000). Whereas process quality can be defined as the general characteristics of a process, which decide whether the process is able to satisfy stated or potential needs (Griffin 1999). Through perceiving simulation games as a process, we can apply business process quality evaluation methods in order to evaluate trainings that utilise SGD, which to a certain extent leads to the evaluation of the effectiveness of such trainings.

The basic training process that is based on games can be divided into three stages:

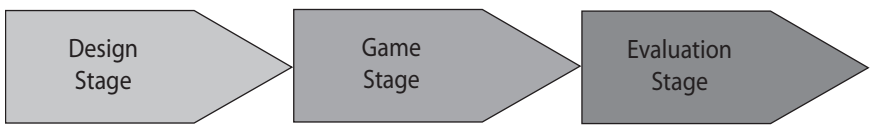

Figure 2. Decision making simulation game as a process

The Design Stage – during this stage the arbitrator/instructor chooses a simulation and creates a game scenario taking into account the needs of the given group of trainees.

The Game Stage – this is the execution of the scenario from the Design Stage.

The Evaluation Stage – during this stage the game is evaluated from the point of view of the arbitrator as well as the participants,

and from the point of view of 'backdrafting' (a term taken from the Theory of Management Decision Making, meaning the analysis of the achieved results in order to identify the mistakes and successes on the basis of key moves). In more advanced simulations the self-evaluation stage may even entail participants grading themselves.

Each of these basic stages can be divided into separate processes. On account of the specificity of these processes, each of them has an entirely different character. For the evaluation of the effectiveness of simulation games as a method of teaching/training, it is necessary to define effectiveness criteria at the level of the entire process as well as specific criteria for each "sub-process". However, before we define the criteria for evaluating these processes, we will first describe each sub-process in detail.

The Design Stage sub-process

This sub-process is a key element for carrying out the whole education process effectively. It also makes up a major part of the process as a whole. This sub-process can be divided into three parts.

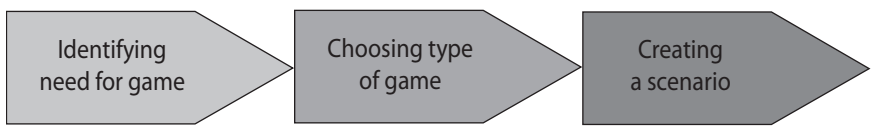

Figure 3. The sub-processes of designing the game

Identifying the need for applying the game happens in a two-way manner. The game is a kind of supplement to the education cycle and enables the verification and realisation of the knowledge already acquired. That is why trainers chose the right time in the education cycle for the decision making game, or the training participants themselves realise that such a game is necessary and will be a good supplement to the training. Both ways of identifying this need can happen in a parallel manner or totally independently. At this stage it is crucial that the training participants receive very clear and understandable information about what the decision making game entails and what it has to offer. This way the participants can judge for themselves whether such training will benefit their needs. This information should also awaken the interest of potential participants.

Choosing the type of game becomes easier when more information is available about the people involved in the game. Some of the basic information that should be considered when choosing the type of game is:

- **The type of participants** – i.e. pupils, students, managers or totally mixed groups, or specialists, such as journalists, civil servants, scientists etc. The more homogeneous the group is, the easier it is to choose a game and create a scenario. It gets very complicated if

there is a mixed group of people with different specialisations or at different stages of the education cycle. In such a situation it is necessary to find a certain compromise or to allocate people in carefully thought out teams. The choice of method depends on the experience of the instructor/instructors of the game and on the structure of the group itself.

- **Placing the game** in the education cycle. This means establishing what kind of knowledge the participants already have and what their main direction of further education is. Here the game is chosen very differently for groups that are at the beginning of their education than for groups in the middle or at the end of their education. The games that are suggested for the beginning of the cycle should awaken the interest of the participants and show them the most important areas for their knowledge development. Whereas games that are suggested for the end of the education cycle should help the participants to learn and apply the already acquired knowledge and organize it appropriately.
- **The size of the group** is very important, because a vast majority of games has a limited capacity of players. When a group is too small for a given game, then "virtual" players can be introduced. If the number of people in the group exceeds the capacity of the game, then playing more than one game simultaneously or at different times should be considered.
- **The possibility of applying technology** at a given time and place. This is particularly important when the game is carried out on "unfamiliar territory". More and more games need sophisticated IT solutions that require, for example, a permanent connection to the Internet. Often certain skills are also required from the participants and instructors in order to be able to work with given IT systems. That is why it is important to assure already in the planning phase that there are adequate technological solutions at hand, and if there aren't, to take into consideration the option of choosing another game. It is crucial to always have a backup in the case of a breakdown of an IT system.
- **The duration of the training.** Time is a significant element, because trainings usually have a limited time span. This becomes a particularly critical element in the situation of the so-called compact trainings, which are trainings where the game is carried out during one session, one weekend or during a few subsequent days. This fundamental resource has to be very carefully planned out in order to secure enough time for making decisions, for breaks and some spare time in case of delays in the group work.

Creating a scenario is directly linked to the first two planning stages. The most important element is the selection of teaching goals. The most important knowledge or skills that should be passed on to

the participants using a given scenario have to be chosen. Modern games can be divided into two groups:

- Games that focus on passing on knowledge or a particular theory – games with a defined solution that is already incorporated into the game. The scenario should focus on the best way of achieving the given result/game progress. This solution may be known to the participants already from the beginning and will in such way support the learning process significantly, but will not have a big influence on the game itself.
- Games that focus on skills/competencies – simulation games without an already defined result. Here the result/game progress depends on the players themselves, their concentration and creativity. In this case the scenario is crucial, because it will form the framework in which the game will take place. Therefore, the scenario should be surprising, create uncertainty and it should be revealed to the participants gradually in order to create a dynamic game.

Planning is a crucial element for trainings based on decision making simulation games. The planning stage should never be skipped, even if we have performed a given simulation or training for many years already.

The Game Stage sub-process

Carrying out the game is the most important part of the education process for the participants. For the instructor this is the stage of executing the game scenario that was planned during the design stage.

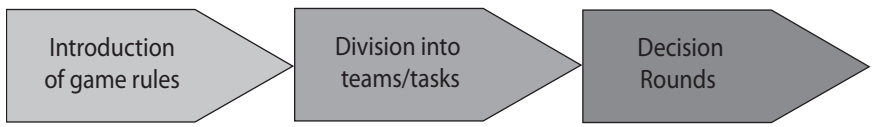

Figure 4. The sub-processes of executing the game

The sub-process of playing the actual game consists of three parts. The final part is a kind of game loop, depending on how many decision rounds have been planned in the game scenario.

The introduction to the game rules is the only theoretical part of the game. Here the most important game rules and mechanisms are explained. This is were the participant is supposed to get interested in the game world. The earlier mentioned role of the instructor/arbitrator, as the "game master", is very much required at this point. Furthermore, the introduction should be relatively short and pass on the most important information for the game participants. In the case of games that pass on knowledge, there is often an element of theory that the players

should get acquainted with. For competitive games that are based on cases of companies, the introduction should go together with an introductory analysis of the situation of the given company. If the simulation game is based on an IT system and not on an intuitive interface, the introduction should include a presentation of how the decision panel is operated.

The division into teams and/or tasks depends on the game itself, its capacity and the size of the group. According to research of the author (Wardaszko 2007), in competitive games that focus on skills based on the number of achieved points, bigger teams (4–5 people) get better results than small ones (2–3 people). In some exceptional cases the players play individually. Then of course the division does not matter, but the competing groups among the players.

The following division method models are usually applied:

- Random selection – the instructor/arbitrator randomly selects people for teams and/or tasks.
- Free selection – the participants select their own teams or choose their own tasks.

Both methods have their advantages and disadvantages, which have been described in publications on group psychology and on models for group decision making (see Oyster 2000). For a smooth course of the simulation game and taking into consideration the limited amount of time, a method should be chosen that will be functional and will not cause any conflicts among the players.

The decision rounds are the quintessence of the simulation game. This is the most stimulating part of the simulation. When looking at the course of the game as a certain process, it can be observed that to a certain extent the game itself forces to make a work model based on a certain repetitive working scheme that is derived from the simple model of Shewhart-Deming-Plan-Do-Check-Act (Myszewski 1998). Moreover, the previously created scenario sets a framework for the game, even if the game has random elements to it. Also, games based on computer simulations are limited by algorithms set within the system and by the technology on which the simulation is based. Perceiving the game as a process, the duration of each round, the breaks and the discipline of the instructor with respect to sticking to the scenario and staying impartial and neutral are all crucial elements. An example could be the amount of time that is given to the participants for making given decisions. Another conclusion that can be drawn from research (Wardaszko 2007) is that the more time is given for a decision, the better results are achieved in the game. Therefore, it can be said that if the goal is acquiring more knowledge, then the decision rounds should be longer. Whereas if the goal is to improve skills/competencies, then acting under time pressure will aid the development of skills and competencies.

The Evaluation Stage sub-process

This is the shortest part of the whole education process and it is often skipped, mostly due to lack of time. However, all didactic theoreticians jointly agree that this is the most important part regarding knowledge retention and consolidation.

Figure 4. The sub-processes of final evaluation

The summary of the game given by the arbitrator should already be included in the decision round, which will aid the decision making process of the participants. However, this is not a crucial element. It is nevertheless necessary to sum up the game at the end. Nevertheless, this should not aim at pointing out the mistakes of the participants in order to correct them, but it should encourage analysing and discussing the achieved results. In the case of games that focus on knowledge, the level of achievement of the set teaching goals should be evaluated objectively within the game framework. In the case of games that focus on competencies and skills, the analysis should include the winning strategy and the most important decision areas that lead to good results within the framework of the winning criteria defined in the game.

Backdrafting the game participants means a joint analysis of individual strategies and decisions in order to give feedback and identify the mechanisms and knowledge on which basis the game was played. The key objective of such a joint analysis is forcing the participants to, first of all, a critical analysis of their own actions and, second of all, to explain the results and dependencies to each other. This way the two most effective ways of knowledge retention are combined (Dekanter 2005). These are learning through action (75% retention) and explaining to others (even up to 90% retention). If this stage is conducted in the appropriate way, then the teaching goal will be achieved no matter what the game results of the team/participant were, i.e. no matter if the team has won or lost with respect to the criterion that evaluate the players.

Self-evaluation, in contrast to the previous stage, is an individual from of evaluation of the achieved results by the simulation game participants. In an ideal SGD process the instructor/arbitrator should perform this kind of evaluation with every participant. Thanks to their complexity and interactivity, simulation games cover a vast amount of areas related to knowledge as well as skills. This way the participant is able to relatively easily define what his strengths and weaknesses precisely are.

And this is what self-evaluation should focus on – the identification of strengths and weaknesses. SGD is a functional evaluation tool for the participants. The functionality of SGD can be seen through the increasing amount of companies that utilise such games and simulations in order to evaluate potential employees and to define the management potential and competencies of their employees.

CONCLUSION

This paper shows two different ways of perceiving the same problem. The first one is an attempt at describing the utilisation of decision making simulation games as a didactic tool. The second way consists in an objective evaluation of its effectiveness, and in the case of the second model also its quality.

The interactive model focuses on the soft aspects of SGD, attempting to describe the dependencies between the individual entities of the game as well as the elementary information flows between them. The evaluation criteria of this model are also soft and pretty general. However, they have been generalised in order to maximise the capacity of the model for different kinds of simulation games.

The flaws of the interaction model are corrected by presenting SGD as a process and by analysing the quality of the process and therefore its level of effectiveness. The effectiveness of the process according to the definition (Scholz, Vrohlings 1994) can be described with the help of the following model:

$$\begin{matrix}\text{Process}\\\text{Effectiveness}\end{matrix} = \begin{matrix}\text{Degree}\\\text{of Errors}\end{matrix} \times \begin{matrix}\text{Time}\\\text{Span Course}\end{matrix} \times \begin{matrix}\text{Process}\\\text{Cost}\end{matrix}$$

From this point of view, the effectiveness of the process, which is the decision making simulation game, will be the better the less it deviates from the original process. This will allow to eliminate key errors and SGD flaws, such as subjectivity of the work evaluation of the instructor/arbitrator, lack of repetitiveness of simulation game results and the generality of the evaluation criteria.

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METHODS FOR EVALUATING TRAINING RESULTS FROM THE PERSPECTIVE OF BENEFITS FOR THE ORGANIZATION

The obvious necessity to control the effects of performed activities in organizations is, in the case of trainings, very rarely carried out. A reason for this is the specificity of the trainings that are being carried out in modern firms. In addition, the theories that characterise the correct way of evaluating the added value gained from trainings have many flaws. This paper aims at pointing out the fundamental problems of traditional approaches to evaluating the effects of trainings. It also suggests another approach to the training project, which is adapted to the specificity of "soft" trainings.

The text is organized in the following manner. To begin with, a number of arguments will be brought up that question the necessity of evaluating training effects in financial categories. The paper will also show that training evaluation based on the goal realisation of various interest groups can be put in one evaluation model. Subsequently, based on the specificity of "soft" trainings, another approach of evaluating the added value of trainings in organizations will be suggested. This approach is based on substituting training evaluation with such a training preparation that will guarantee the achievement of all the previously set out goals by the organization.

1. THE TRADITIONAL APPROACHES TO EVALUATING TRAINING RESULTS

Generally, the opinion is that trainings, such as any other business activity, should be efficient. It is also said that trainings should meet

the expectations of the trainees as well as of the organization. These two statements form a condensed depiction of two different approaches to training management – the trend aiming at justifying the reasonableness of trainings through project efficiency indicators (i.e. ROI) and the trend that looks for a confirmation of this reasonableness in the expectations of the stakeholders. These two main ways of evaluation (Bramley 2001, pp. 23–39) are based on two classic tools of activity justification that have been elaborated by management science: effectiveness, understood as the concordance of actual results with intended results, as well as efficiency, which is the favourable cost to effect ratio. The vast amount of stakeholders that are active in any organization complicates a simple evaluation of training effectiveness. But, from a theoretical point of view, a training effectiveness evaluation can be carried out for many groups of set out goals (Bramley 2001, p. 38 and following). Another possibility is to come to some sort of agreement with respect to the goals during the preparatory phase of the training project (Trochim 1998).

When a training is evaluated based on the financial effects, similar procedures of collecting data are used and results of a similar level of exactitude are obtained as when evaluating based on the achievement of the set out goals (Woźniak 2006). As shown below, such procedures can only be carried out effectively under specific conditions. When it comes to trainings that concern social skills, these conditions are relatively scarcely met. Nowadays, a more vivid trend bases its training project evaluation on the financial indicators of the project, i.e. on the Return on Investment (ROI)[1]. It requires the calculation of direct and indirect costs of the training and a verification of the benefits that the training has brought to the organization. The benefits should be quantified by recounting them in terms of financial value. Also, some kind of natural time period of calculating these benefits in time should be implemented. Even though various authors have already formulated this model, J. Phillips is considered to be the modern guru of this way of thinking about training efficiency. He was the most consequent in trying to describe a method that would enable the transition from various indicators of organization results to financial data[2]. In many works advice has been given with respect to methods and many techniques have been

[1] Other used indicators (Phillips 2003, p. 253) are measures of profitability (such as the internal rate of return or the repayment period), the analysis of usefulness based on estimating the standard deviation of changes of productivity after the training, as well as an estimation of the economic consequences of not introducing the program. (Kostera 2000, p. 119) bases the assessment of training effects on the moment of investment return, which enables to eliminate the problems of appointing a tangible time limit for the appearance of benefits (the literature proposes – without a substantive justification – various time limits).

[2] He even calls the formulation of this fundamental element of recalculation: "the introduction of a fifth level of training effect analysis to the Kirkpatrick model".

described, which could be used in such an analysis. The formula itself of calculating the ROI is obvious (find the chain of causal relations between the training and the financial results and determine the net influence of the training). This formula was already included in the work of Kirkpatrick[3]. However, adopting this way of thinking means accepting various, often questionable, assumptions.

The first one concerns the link between changes in a part of the organization and the financial results of the entire organization. Since an organization works as a whole, separating the causal chain that links the financial results to the changes in the way a certain section (that was included in the training) of the company works, requires an insight into the way in which this result is achieved.

According to this principle (Fitz-enz 2002, pp. 80–85), the people that design a strategy for an organization and expect it to bring some kind of financial results as a consequence of certain actions, should be acquainted with this chain. Nowadays, strategies are developed using the Balanced Scorecard. With this method it seems possible to go from a change of a local indicator that describes the activity of a certain part of the organization, to a global profit indicator, assuming that the remaining indicators of the activity of the organization have not changed in any way. Such an assumption is an idealisation, because indicators of the activity of a company always change, due to changes in the organization itself as well as its environment. However, this idealisation simplifies matters even more, because it assumes that the record of impacts required by the Balanced Scorecard (BSC) is an objective description of causal relations and not of hypothetical relations, which the board formulates for persuasive purposes and not descriptive ones (Kaplan 2001; Woźniak 2005). However, the Balanced Scorecard is a tool for presenting a strategy in a motivating way and not for an objective description of reality. The Balanced Scorecard particularly entails hope for certain relations. This is partly by reason of past experience, but also due to the fact that the BSC was not questioned while it was being formulated.

A bigger awareness of the impact of the changing environment has caused a transition, even in colloquial presentations of the BSC. The BCS was not used anymore for a realistic presentation (a description of actual relations), but was more treated as a table of early warning indicators (dash board), of which some are considered to be more significant when carrying out a strategy (Woźniak 2005).

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[3] Kirkpatrick himself – when developing his theory – was not a big fan of the described point of view. He wrote quite directly: "It makes me laugh when I hear the statement that training specialists should be able to present the achieved benefits from carrying out a training program in the form of the return of the invested means in this program (ROI) (…) It is easy to understand this, when considering the amount of factors influencing the level of profits" (Kirkpatrick 2001, pp. 87–88).

However, this means the acceptation of the fact that the transition from a particular individual indicator that describes the activity of a part of the organization to financial indicators is a hypothetical deduction chain. This is justified by experience and knowledge in this activity area of the organization, and not deduction based on objective premises. This is an argument that definitely excludes the evaluation of how incidents that change the actions of individuals influence the entire financial result of the enterprise[4]. In a weaker version this means that this estimation is always carried out based on a model presumed by the estimator, therefore it can be questioned. As a result, the estimation of how changes on a local activity level in the organization influence the financial results has to done by competent judges. In addition, the evaluation of the quality of this estimation depends to a great extent on the acknowledgement of the competence of the estimators.

Besides the arguments that question the possibility of separating causal relations in a way that would enable an objective estimation of how local changes resulting from trainings can benefit the company, another type of criticism can be encountered. For everybody that witnessed the ENRON affair, it is obvious that accounting departments do not have full access to profits and not even to all costs. Accounting categories are constructions based on a series of conventions, which from time to time turn out to be incongruent with modern ingenuity when it comes to creating financing mechanisms or work organization in modern enterprises. This means, above all, that in practice nobody, not even the person estimating the ROI, bases their actions on factual benefits for the organization resulting from changes, but on some kind of indicator that in the best-case-scenario is based on income. Since bigger sales are included, it can be assumed that an increase in income from sales is beneficial to the organization[5].

The consistent questioning of the possibility of finding the part of the profit that is directly linked to training, sometimes causes the search to stop at finding one significant result of the organization that is linked to training. The achievement of a change of such a result

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[4] Bramley (2002, p. 125) writes directly about the lack of such a relation – "in fact, the work of individuals does not have a noticeable influence on the yearly trade balance of a company". A less strong statement would be that this influence does exist, but is impossible to measure. Some see this as an obvious fact, writing without any additional argumentation that "the fundamental restriction (of the analysis of the level of results) is the immeasurability of the results of an increase of professional qualifications" (Suchodolski 2004, p. 152). Tobin (2000) argues that facilitation, which through the arrangement of relations in a team saves the endangered realisation of the project, is an example of activity with an obvious positive influence on the effect of the entire project, whose share in this result cannot be expressed in percentages.

[5] More about the necessity of creating a system that generates profit (Woźniak 2005). Dust (2004) explains the difficulty of counting the ROI for training projects on sales techniques when a loss rate in sales (non profitable sales) is assumed.

indicator of the organization activity can constitute a measure for the benefits of trainings. It should be possible to recalculate those benefits into financial values as soon as those indicators are put in some kind of functional system of dependencies. This system should describe the way of generating income by the organization and take such result indicators into account. It is relatively easy to estimate the benefits of fixing "dysfunctions" of the internal processes, such as rotation or absence. It is somewhat more difficult to estimate result indicators that focus more on morale problems, such as the amount of complaints or disciplinary actions, or other indicators of incorrect behaviour. However, this difficulty is the result of ignorance with respect to the functional dependency, and not of the difficulty with respect to making the estimation. Estimating the benefits of removing dysfunctions can be done with a model that treats the consequences of dysfunctions as an unnecessary cost and bases the financial value of eliminating dysfunctions on this cost. Independently of the difficulty of indicating a sufficiently unquestionable chain of the impact of changes in a given part of the organization on the activity results of the organization as a whole, it is worthwhile formulating a pragmatic argument against evaluating all trainings in such a way (Trochim 1998; Woźniak 2007). Even if the costs of the analysis that leads to calculating the ROI for training activity would be worth increasing, this is only possible in specific conditions. Financial data have to be accessible, as well as the functional dependency between the results of the organization activity and changes on the local level where training took place. Only for a part of trainings such data is available. Therefore, a lot of trainings, independently of their purposefulness, are carried out in conditions that are insufficient for calculating the economic benefits. Evaluating trainings through the ROI makes it more difficult to carry out such trainings. This is not because they are not necessary, but because of the specificity of the conditions in which they are carried out and because of the "bad trend" of evaluating, i.e. the necessity to justify trainings with the ROI. It is this trend that requires gaining data that – according to this argument – potentially do exist, but are hard to obtain. This "difficulty" may be due to costs (acquiring these data is too expensive) (Ellis 2005), or due to broader reasons (separating the right data for evaluating trainings is too complicated).

2. CRITICISM OF HIDDEN POSTULATES OF TRADITIONAL MODELS THAT EVALUATE TRAINING EFFICIENCY

The main argument here concerns the simplification of the training category. Even when assuming that all necessary conditions for experimental

activity are met, the measurement based on such schemes must take into account that training (incentive) is an educational undertaking that consists in creating a program and executing it, where the most important factor is the interaction between the trainer and the group of trainees. From this perspective, if the main training method is not lecturing, it is not really possible to compare two trainings. The information that is obtained by studying the effects based on experimental schemes does not concern program evaluation, but the actual realisation of the program. For this reason it is difficult to generalise this information for other trainings, i.e. expect that future realisations of this training will have similar results. Therefore, even though the criticism of measurement procedures is independent of the problems of the actual ROI model, it does criticise its main merit, which is providing a numerical evaluation of the training result. A numerical evaluation is considered to be objective in the same way that science is.

Independent of whether the above argumentation is correct or not, it is worth noticing that it assumes the availability of training results. It assumes that these results are available after the training in a perfect form for the outside observer. Such a point of view results from isolating the training project and seeing it as an event that is set within a defined timeframe, i.e. bringing it down to for example two days spent in a training room.

It is worth pointing out that if training is focused on changing the interpersonal skills of the trainees (Woźniak 2006), then results cannot actually be achieved in such a timeframe. Communication between people is ruled by behavioural habits and changing such habits needs time. On account of the contextuality of communication skills, there are no uniform procedures that always allow for success if the behavioural steps that are given in the procedure are applied (Woźniak 2006; Woźniak in preparation). An examination based study of remembering the behavioural rules of only a heuristical value does not seem to be a sensible measurement of the effectives of behaviour focused on change in the organization (as opposed to gaining a certain range of declarative knowledge).

The actual value of training is created by the utilisation of its results, or even by the fact alone of carrying out the training. If the training helps creating a language to describe trade activity that occurs in the everyday lives of the trainees, then constructing an understandable situation of everyday activity will "create" economic results.

Such an argument leads to a change of the formula of evaluating trainings. A transition is necessary from an enigmatic model that only has one good solution, to a complex problem model. The problem has many "good" answers. The obtained "truths" from it entail many compromises between alternative possibilities and allow for the acceptation of a less-than-ideal "solution", taking into account a lack of means

or other circumstances (Trochim 1998). Such a way of thinking allows to break away from the expectation of a reliable and accurate evaluation of training results and to switch focus to training preparation in such a way that will increase the chances of it having an impact on reality.

3. WAYS OF PREPARING A TRAINING PROJECT THAT WILL CHANGE THE ORGANIZATION RESULTS

Introducing changes to the communication habits of people requires a series of actions in everyday work that will reinforce the planned results of the training (Woźniak 2007; Woźniak in preparation). Without post-training results that support workers in their everyday struggle with their own habits, no actual changes should be expected. However, until now, training project models that treated training as an isolated phenomenon with respect to the activity of the organization, have not built post-training support for trainees (Woźniak, in preparation).

The significance of how the conditions within the organization (organization context) influence the application of training results has been recognised by scientific research quite a long time ago already. But the theory training model, in the form of an isolated project, does not provide the necessary tools in training practice to assure a systematic support depending on organization context. There are no practical reasons for post-training coaching or other forms of multiple post-training contacts. However, post-training coaching does indeed reinforce the messages formulated during the training. The more the training is focused on achieving pure educational goals that do not constitute the essence of everyday business practice, the more the training activity becomes an isolated isle in the organization reality.

The condition for overcoming this difficulty is creating, in the process of realising the training project, a group of stakeholders in the organization that are ready to sacrifice their time and attention to reinforce training results and help participants to implement the new habits. Traditional trainings assume that this group are the participants themselves. They assume that the participants will pursue the utilisation of the knowledge that they have gained during the training. However, in practice it often happens that the participants do not fulfil this role, due to lack of time or the force of old habits. It is clear that an independent group of stakeholders that will reinforce the training results should be introduced in the training process. This group must also have a sufficiently strong position within the organization in order to have influence on the participants to overcome the lack of willingness or time.

It would be ideal if line managers would get involved in fulfilling the tasks that are required for the reinforcement and consolidation of training results. However, such involvement of line managers is hard to achieve in training practice. Their priorities lie in operational activities, i.e. in pursuing good results that are measured by a list of business indicators. Consequently, intense activity that does not directly focus on achieving these goals should not be expected from them. In order to persuade them to put effort into post-training, these activities have to be, in their opinion, directly linked to operational goals.

This means the training goals need to be refocused from formulating them in educational categories to clear goals linked to measuring the organization activity. However, it can hardly be expected for trainers that they formulate such goals in a convincing manner. Without involving the experts in such planning, however accurate the training goals will be, they will not achieve the involvement of the managerial staff. The involvement of the managerial staff should however be the fundamental element of post-training.

It is a different matter when training planning is a joint process of the managerial staff and the trainers, during which it is established what behavioural elements should be changed and how this change will influence business indicators (Spitzer 2005; Woźniak 2007). In such case it can be expected that training goals are establish in the categories of pursuing a change of business indicators. These indicators are all interlinked in the chain of impacts that leads from direct behaviours, skills and attitudes to results of business processes that are performed by workers. And even though such a presumptive chain of behaviour impact of trainees on the results of the organization should be formulated for all trainings that aim at direct improvement of organization activity by solving tangible training problems, an accurate identification of such a chain is not enough. According to traditional training models, such a chain of impacts can be included in the tasks of analysing the training needs. During this analysis it should be determined how changes in the attributes of the trainees will change the functioning of the organization. However, the essence of the proposed approach goes beyond the expert analysis of training needs.

The task of the team that prepares the training is not only to formulate the training goals that should lead to a change in organization results, but also to evaluate whether the intended results will actually lead to the desirable changes (Woźniak 2007). This means that the formulated goals have to be tested and the appropriate training tools have to be prepared so that obstacles that may be encountered during the realisation of the adopted plans are recognised and an active modification of those plans will be possible in order to overcome these obstacles.

This process of active testing of goals and ways of achieving them[6] means that realistic goals and methods of achieving them have to be formulated. In addition, possible modifications of the goals of the actual training as well as the way of achieving them have to be taken into account. Line managers should also be involved in the realisation and research of possible obstacles. Thanks to such pilot trials, training programs can be designed to cope with recognised obstacles in the implementation of the results of the tested chain of effects on the business results of a given section in the organization.

Such a process focuses the attention in the training project from pursuing an adequate evaluation of its effects to such a preparation of the project in order to guarantee the realisation of business results. If the post-training activities of the participants do not bring the desired results, despite of the well prepared training, the intervention of line managers is necessary in order to research what still needs to be done to achieve the desired results. The post-training activities that are included in the project do not only reinforce the results, but also enable the collection of data for the evaluation of what elements are possibly blocking the desired results. Such elements could be, for example, a change in the environment or an insufficient implementation of the intended plans. But it could also be a change in the behaviour of the workers, which was formulated as recommendable in the work process, despite of the change of indicator values concerning work results. If the process is carried out correctly, but the results deviate from the intended results, then it is the task of the managers to find the reason behind this situation. They should find out whether there has been a change in the conditions in which the process was implemented (in the company environment), or whether the tested way of influencing results has encountered obstacles that were not previously detected.

CONCLUSIONS

The above text discusses selected problems of evaluating the added value of trainings. It indicates that an evaluation of the results based on project effectiveness indicators, such as the ROI, leaves out the specific problems that result from the specificity of modern trainings that focus on developing interpersonal skills. Since these skills are based on habits, and it is not possible to formulate uniform behaviour procedures

[6] Kuc (2005) calls such an adaptation of goals and means to appearing difficulties "active control" (monitoring). He accentuates the proactive character present in the English term "control", which is not present in the Polish translation that only indicates ex post verification of concordance of actual results with the intended results.

that would guarantee success in every given interaction, post-training activities that consolidate training results should not be omitted.

The task of the training model is to formulate a preparatory process and the implementation of the training in such a way that the participants have a guarantee of the necessary support from the rest of the organization, on account of which correct habits will be consolidated.

The foundations for such a preparatory training model are based on two principles. These principles consist in active obstacle testing for the assumed chain of effects and the focus of training goals on business goals. This allows involving the line managerial staff in the training project in a way that guarantees the necessary support for its participants.

Detailed research is required for the design of such a model, in order to reduce additional costs of reinforcement activities (Woźniak 2007). On the one hand, the above analyses indicate that post-training coaching is an indispensable element of control and education, which should be included in every training project that aims at influencing the activity results of a company. On the other hand, a format of the training itself should be suggested. This should make it possible to replace a part of the multiple coaching sessions with independent management of training content (such as setting out goals to be achieved), or with learning in pairs (for example mutual control of the set out goals). Another aspect that should be researched is the form of coaching with the best effects, taking into account the impact of the results and the costs. A particularly important aspect that should be investigated is the extent to which a greater part of direct coaching can be substituted with problem coaching carried out through the Internet, for example with the help of virtual chats.

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KNOWLEDGE OF ECONOMICS AS THE MAIN SUCCESS FACTOR IN BUSINESS SIMULATION GAMES

INTRODUCTION

In our work at the University of IT and Management we deal with business simulation games. While grading students' achievements in subjects that involve such didactic tools, we often notice a difference between the grade proposed by us and the grades achieved by the students in other subjects, where simulation games are not used. Surprisingly, students with very good grades in other subjects were given rather poor grades in business simulation games. This observation inspired us to examine whether there is any link between the grade achieved in the subject Business Simulation Game and the average grade in other subjects.

THE METHODS USED

Chi-square test χ^2

The chi-square test is used to verify the hypothesis that two variables are independent of each other. These variables may be quantitative, qualitative or quantitative-qualitative (Strzelecka 2002).

The null hypothesis (Zeliaś 2000) states that the two variables X and Y are independent of each other and is formulated in the following way:

$$H_0: P(X = x_i, Y = y_j) = P(X = x_i)\, P(Y = y_j)$$
for each i and j.

The alternative hypothesis (H_1) states that there is a correlation between X and Y, and is formulated in the following way:

$$H_1: P(X = x_i, Y = y_j) \neq P(X = x_i)\, P(Y = y_j)$$
at a given significance level of α.

The null hypothesis is verified by a statistic calculated using the following formula:

$$\chi^2 = \sum_{j=1}^{k} \sum_{i=1}^{r} \frac{\left(n_{ij} - \hat{n}_{ij}\right)}{\hat{n}_{ij}} = \sum_{j=1}^{k} \sum_{i=1}^{r} \left(\frac{n_{ij}^2}{\hat{n}_{ij}}\right) - n$$

where:
n_{ij} – the number of observations in the sample
$\hat{n}_{ij}$ – the theoretical frequency
k – the number of columns in the cross tabulation
r – the number of rows in the cross tabulation

Theoretical frequencies are calculated using the following formula (Maksimowicz-Ajchel 2007):

$$\hat{n}_{ij} = \frac{\sum_{j=1}^{k} n_{ij} \sum_{i=1}^{r} n_{ij}}{n}$$

where:
n_{ij} – the number of observations in the sample
$\hat{n}_{ij}$ – the theoretical frequency
k – the number of columns in the cross tabulation
r – the number of rows in the cross tabulation

The value of the chi-square χ^2 statistic can be found in the chi-square distribution table for a given significance level of α and $(r - 1)(k - 1)$ degrees of freedom, i.e.:

$$\chi^2_{\alpha;(r-1)(k-1)}$$

If $\chi^2 \geqslant \chi^2_{\alpha;\,(r-1)(k-1)}$, H_0 should be rejected and the alternative hypothesis should be accepted.

If $\chi^2 < \chi^2_{\alpha;\,(r-1)(k-1)}$, there is no reason to reject H_0, which states that the two variables are independent of each other.

Φ-Yule coefficient

The χ^2 statistic verifies if two variables are interdependent. Furthermore, the strength of this association can also be measured. The χ^2 statistic cannot be used for this purpose, as it depends on the sample size (N) and reaches higher values when the sample size increase. In practice, a number of indicators based on the χ^2 statistic is used. In this research we use a Φ-Yule coefficient, which can be formulated as follows (Ostasiewicz, Rusnak, Siedlecka 2006):

$$\Phi = \sqrt{\frac{x^2}{n}}$$

This coefficient is a measure of the correlation between two variables. Its values range from 0 (no association) to 1 (maximum association between the variables).

Analysis of correlation

The analysis of correlation is a method that entails the reduction of dimensions for object assessment and visualises these object on a perception map using selected features of these objects. The advantage of the correlation analysis is the possibility of a clear graphical representation of the categories of variables (Migała-Warchoł, Cichocka 2008). The interpretation of results consists in the assessment of the position of the points that represent the categories of variables on a chart. Three aspects should be taken into account (Stanimir 2005):

- the position of a point in relation to the centre of projection
- the position of a point in relation to other points representing categories of the same variable
- the position of a point in relation to a point representing a category of another variable.

The profile of the population

The research included graduates of the Economics Faculty of the University of Information Technology and Management in Rzeszow (UITM). The research adopted a holistic approach and included students who graduated from the UITM in the period of 2002–2007, both full-time and part-time studies. The sample size was 2970 graduates. Each observation included a pair of variables: the grade in Business Simulation Game and the average grade in all other subjects.

It is worth mentioning that the University uses two business simulation games: Comstrat and Marketplace. The first one is used during the 6th semester of both the master's and bachelor's degree studies. The

Marketplace game is used during the final semester of all forms of the master's degree studies. Therefore, some graduates participated in two games, whereas others took part only in one game.

To provide a precise answer to the main question stated in this paper a number of comparative variants were adopted. The analysis was conducted for 2970 students, of which 2258 women and 712 men, 674 students living in urban areas and 603 living in rural areas, 458 students of full-time studies and 2512 students of part-time studies, 1248 students participating in the Comstrat simulation game (out of which 263 full-time students and 985 part-time students), 1722 students participating in the Marketplace simulation game (out of which 195 full-time students and 1527 part-time students).

This paper presents the results of the chi-square test and the values of the Φ-Yule coefficient calculated with Excel 2007 software, as well as the results of the correlation analysis obtained with Statistica 8.

RESULTS

In order to answer the main question of this paper the comparative variants were identified.

1st Case – all students included in the analysis (2970 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\, P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\, P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{293.274}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 293.274 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$\Phi = \mathbf{0.314}$ – moderate correlation

As it is shown in Figure 1, there is a relationship between the grade in Business Simulation Game and the average grade in all other subjects.

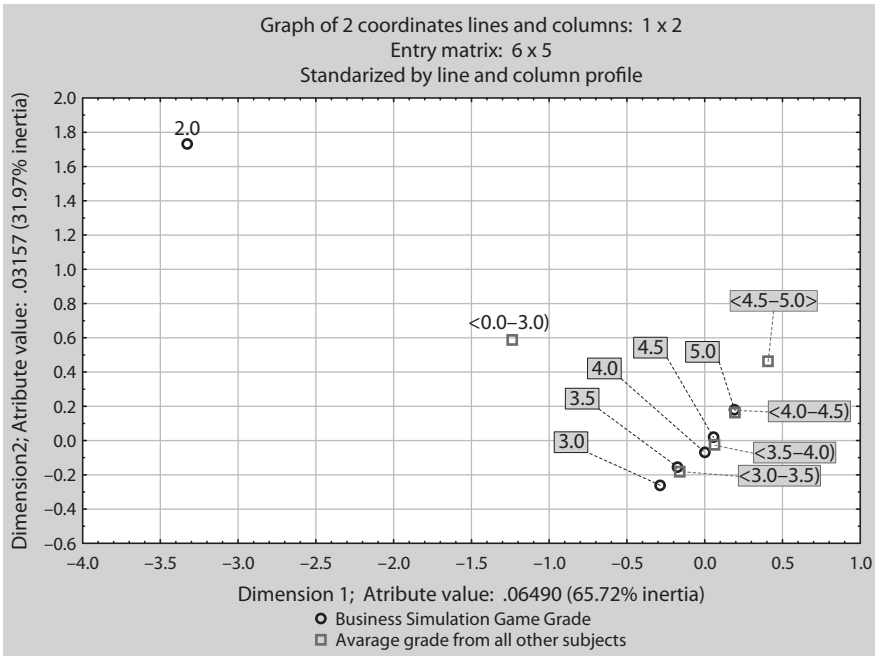

Figure 1. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (all students)

If we reject the outsiders (the grades obtained by the weakest students), we can observe that the data points are arranged monotonically, i.e. the higher the average grade, the higher the grade that is obtained in Business Simulation Game (BSG). Moreover, the data points for the average grade correspond to the data points that represent the grades in BSG. The following correlations can be identified:

Students with the average of <3.0; 3.5) obtained 3.5 in BSG in most cases.

Students with the average of <3.5; 4.0) obtained 4.0 or 4.5 in BSG in most cases.

Students with the average of <4.0; 4.5) obtained 5.0 in BSG in most cases.

2nd Case – female students (2258 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{161.017}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 161.017 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.267} \text{ – weak correlation}$$

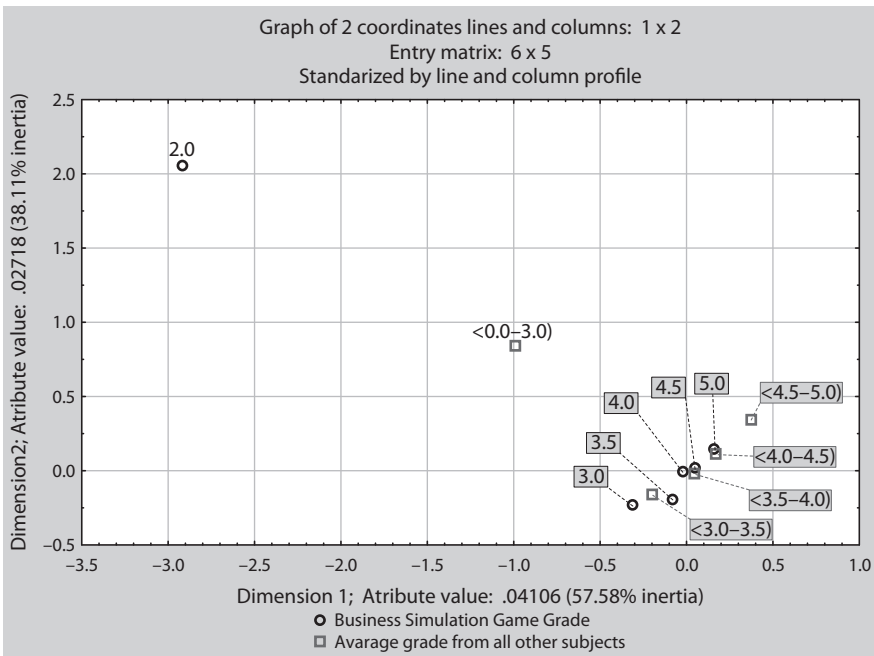

Figure 2. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (female students)

The conclusions are similar to the 1st Case:

Female students with the average of <3.0; 3.5) obtained 3.0 or 3.5 in BSG in most cases.

Female students with the average of <3.5; 4.0) obtained 4.0 or 4.5 in BSG in most cases.

Female students with the average of <4.0; 4.5) obtained 5.0 in BSG in most cases.

3rd Case – male students (712 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{153.521}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 153.521 > 31.410.0. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.464} \text{ – moderate correlation}$$

The conclusion is as follows:

Male students with the average of <3.0; 3.5) obtained higher grades in BSG than the average grade by 0.5.

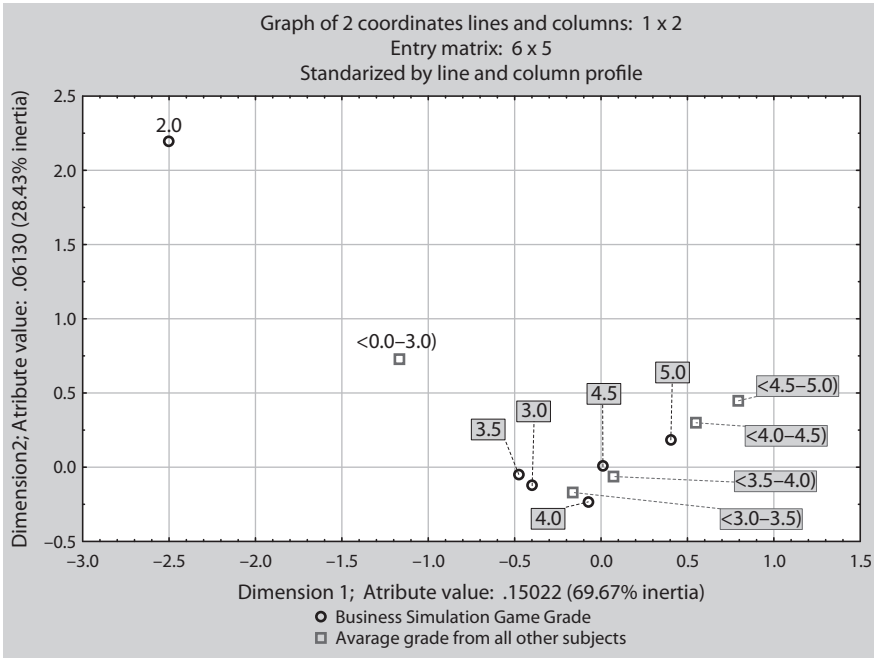

Figure 3. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (male students)

4th Case –students living in urban areas (674 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{86.569}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 86.569 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.358} \text{ – moderate correlation}$$

The conclusions are as follows:

The analysis of the grades in BSG and the average grades shows that the data points are dispersed. The grades of 4.0 and 4.5 are obtained

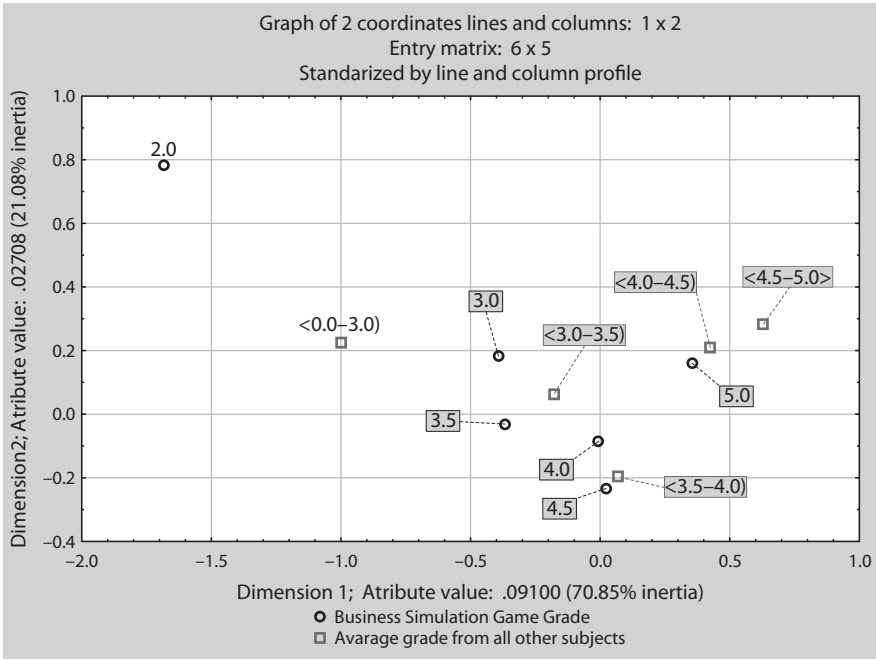

Figure 4. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (students living in urban areas)

mostly by the students whose average grade is within <3.5, 4.0), while the 5.0 grades are obtained only by the best students.

5th Case –students living in rural areas (603 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{87.259}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 87.529 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.380} \text{ – moderate correlation}$$

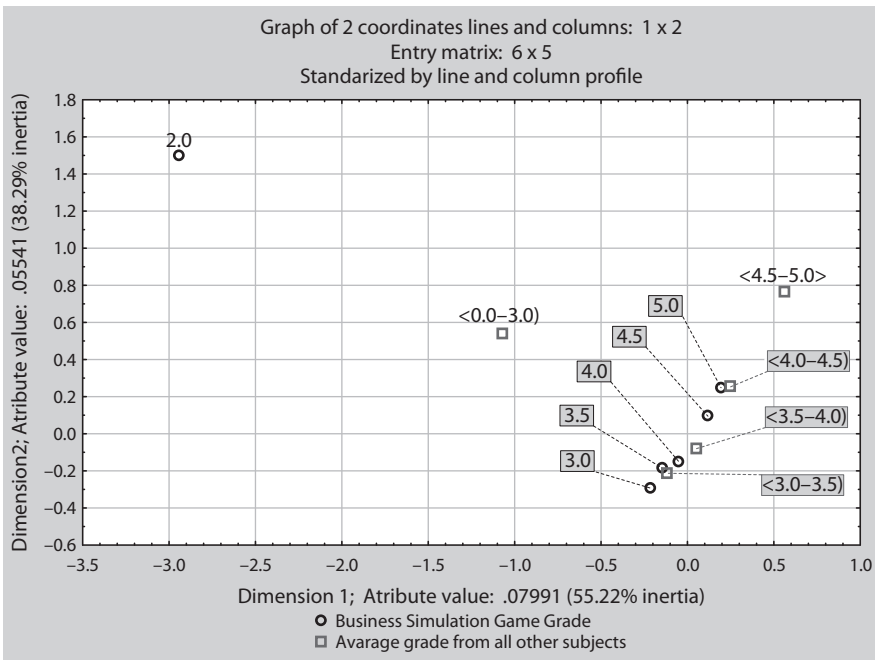

Figure 5. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (students living in rural areas)

After analysing the results we can state that there is a relationship between the grade in Business Simulation Game and the average grade in all other subjects. If we reject outliers (the grades obtained by the weakest students), we can observe that the data points are arranged monotonically, i.e. the higher the average grade, the higher the grade that is obtained in Business Simulation Game (BSG). Moreover, the data points for the average grade correspond to the data points that represent the grades in BSG. The following correlations can be identified:

Students with the average of <3.0; 3.5) obtained 3.0 or 3.5 in BSG in most cases.

Students with the average of <3.5; 4.0) obtained 4.0 or 4.5 in BSG in most cases.

Students with the average of <4.0; 4.5) obtained 5.0 in BSG in most cases.

6th Case – students of full-time studies (458 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\, P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

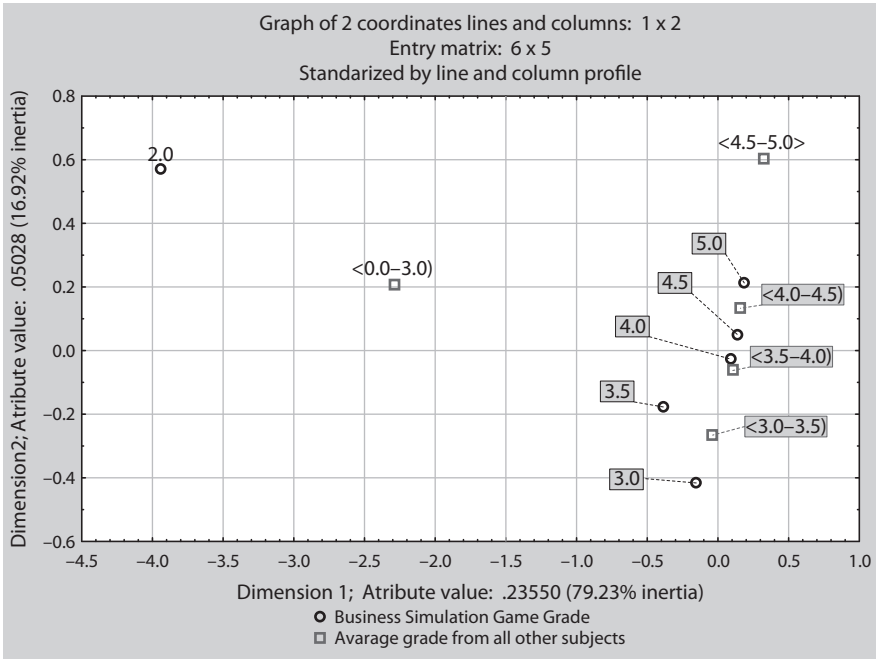

Figure 6. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (**students of full-time studies**)

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{136.137}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 136.137 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.545} \text{ – strong correlation}$$

After analysing the results we can state that there is a relationship between the grade in Business Simulation Game and the average grade in all other subjects. We can see that the data points for 3.0 and 3.5 grades correspond to the point representing the average of <3.0; 3.5), the data point for 4.0 lies close to the point representing the average of <3.5; 4.0), the data points for 4.5 and 5.0 correspond to the point representing the average of <4.0; 4.5)

7th Case – students of part-time studies (2512 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{139.223}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 139.223 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.235} \text{ – weak correlation}$$

The conclusions are as follows:

Students with the average of <3.0; 3.5) obtained 3.0 or 3.5 in BSG in most cases.

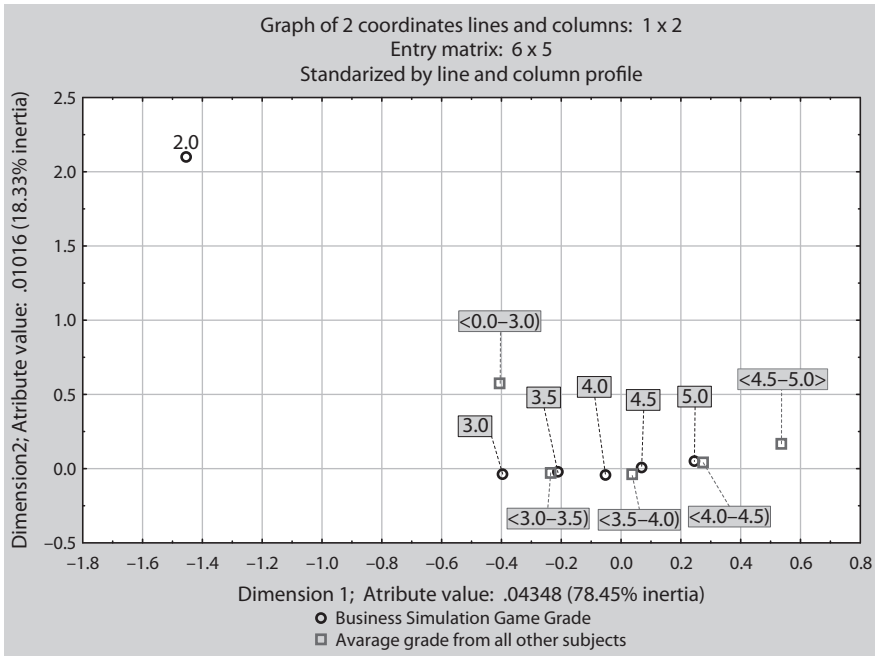

Figure 7. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (students of part-time studies)

Students with the average of <3.5; 4.0) obtained 4.0 or 4.5 in BSG in most cases.

Students with the average of <4.0; 4.5) obtained 5.0 in BSG in most cases.

8th Case – students participating in the Marketplace game (1722 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\, P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\, P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{100.007}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 100.007 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be

accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.241} \text{ – weak correlation}$$

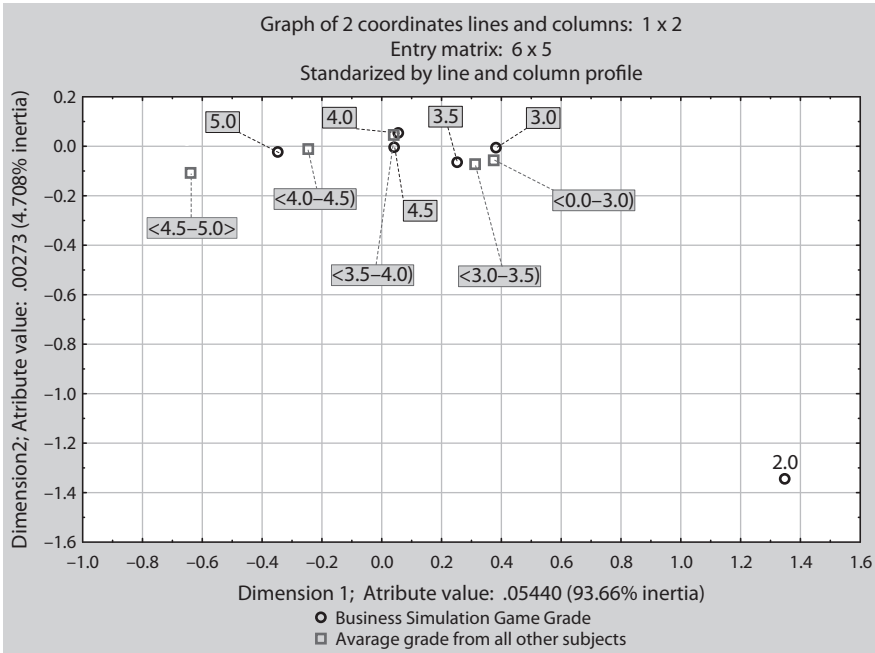

Figure 8. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (students participating in the Marketplace game)

The conclusions for the students of the final semesters are as follows:

Students with the average of <3.0; 3.5) obtained 3.0 or 3.5 in BSG in most cases.

Students with the average of <3.5; 4.0) obtained 4.0 or 4.5 in BSG in most cases.

Students with the average of <4.0; 4.5) obtained 5.0 in BSG in most cases.

9th Case – full-time students participating in the Marketplace game (195 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{26.430}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 16 degrees of freedom $(5 - 1)(6 - 1)$. The value is **26.296**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 26.430 > 26.296. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.368} \text{ – moderate correlation}$$

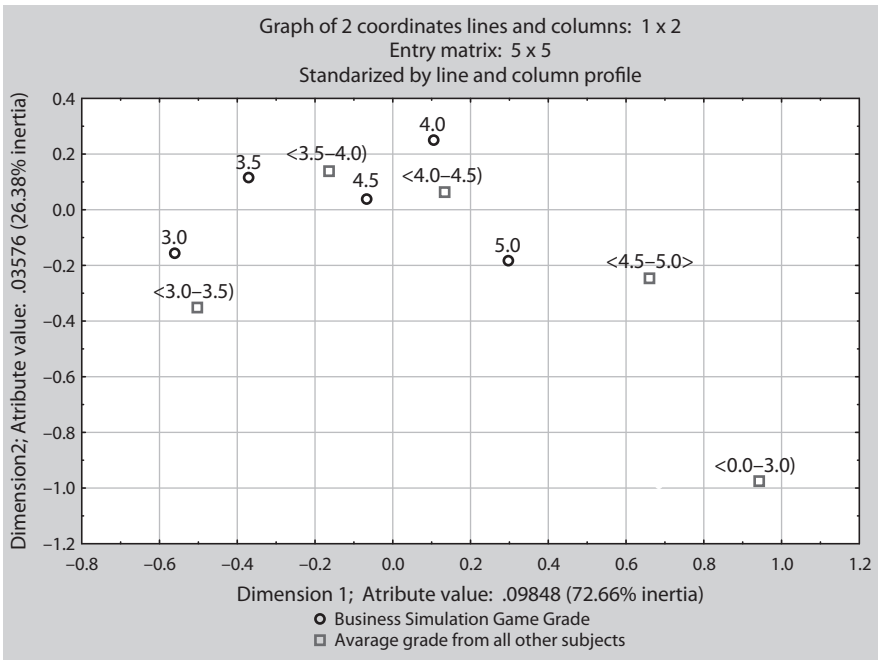

Figure 9. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (full-time students participating in the Marketplace game)

The full-time students of the final semesters show quite a high dispersion in the correlation between the grade in BSG and the average grade. We can only conclude that the students who obtained the average of <3.0, 3.5) in most cases have a 3.0 grade in BSG, whereas students with the highest average obtain the best grades in BSG.

10th Case – part-time students participating in the Marketplace game (1527 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{88.108}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 88.108 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.240} \text{ – weak correlation}$$

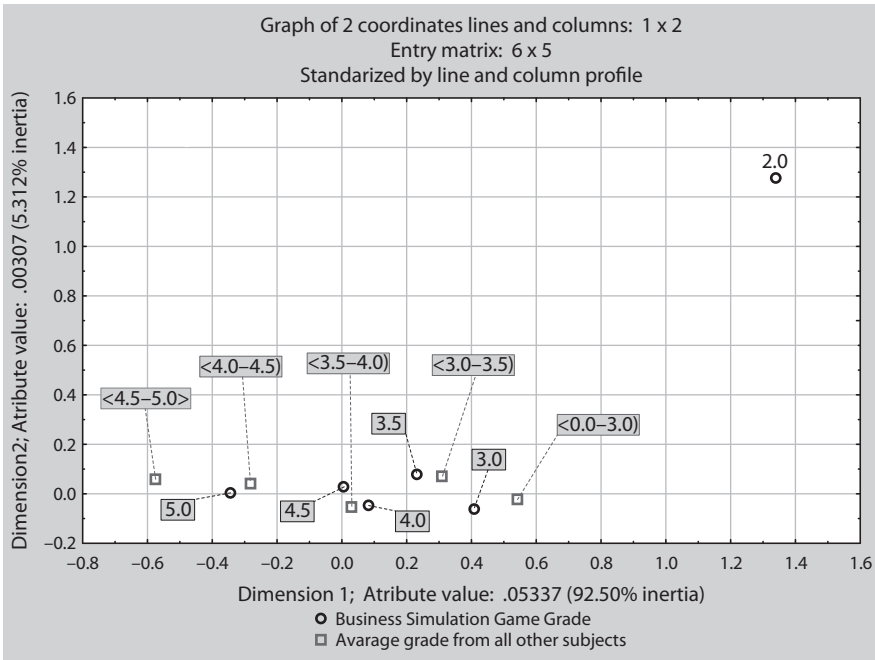

Figure 10. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (part-time students participating in the Marketplace game)

The conclusions from the Figure 10 are as follows:

Students with the average lower than 3.0 obtained 3.0 in BSG in most cases.

Students with the average of <3.0; 3.5) obtained 3.0 or 3.5 in BSG in most cases.

Students with the average of <3.5; 4.0) obtained 4.0 or 4.5 in BSG in most cases.

Students with the average of <4.0; 4.5) obtained 5.0 in BSG in most cases.

11th Case – students participating in the Comstrat game (1248 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{142.870}$$

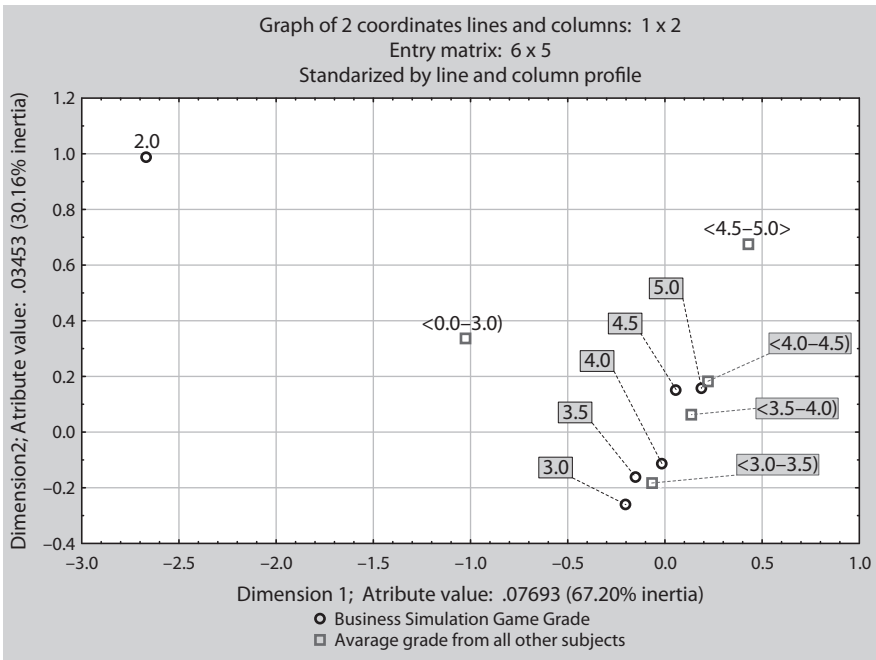

Figure 11. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (students participating in the Comstrat game)

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 142.870 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$\Phi = \mathbf{0.338}$ – moderate correlation

After analysing the data in the Figure 11 we can divide students into two groups. The students with an average of less than 3.5, obtained grades between 3.0 and 4.0 in BSG. The students with higher averages were assessed by the BSG teachers at 4.5 or 5.0.

12th Case – full-time students participating in the Comstrat game (263 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\,P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

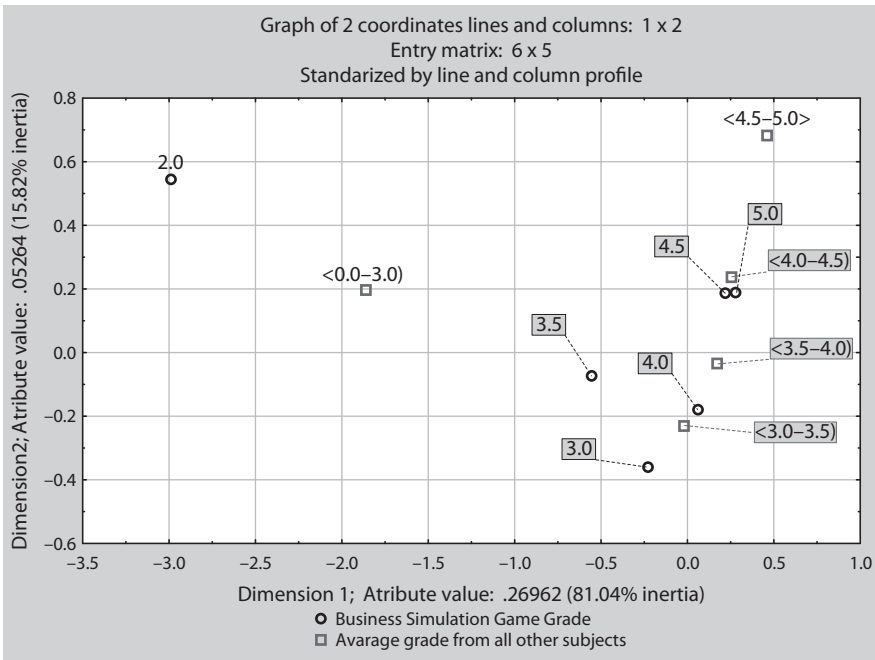

Figure 12. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (full-time students participating in the Comstrat game)

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{87.497}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 87.497 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.576} \text{ – strong correlation}$$

After analysing the grades in BSG and the average grades of the 6th-semester students (full-time) we may notice that the increase of the grade in BSG corresponds to an increased average grade. It can be also stated that there is no clear relationship between the average grade and the BSG grade. Only the students who have the average grade of <3.0, 3.5) generally obtained 4.0 in BSG, while the students who have the average grade of <4.0, 4.5) generally obtained 4.5 or 5.0 in BSG.

13th Case – part-time students participating in the Comstrat game (985 persons)

H_0: $P(X = x_i, Y = y_j) = P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are independent of each other,

H_1: $P(X = x_i, Y = y_j) \neq P(X = x_i)\ P(Y = y_j)$, i.e. the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other.

$$\chi^2 = \mathbf{58.712}$$

The critical value of the statistic can be taken from the chi-square distribution table at a significance level $\alpha = .05$ and 20 degrees of freedom (5 – 1)(6 – 1). The value is **31.410**.

In this case $\chi^2 > \chi^2_{\alpha;\,(r-1)(k-1)}$, since 58.712 > 31.410. Therefore, the null hypothesis can be rejected and the alternative hypothesis can be accepted. This means that the grade in Business Simulation Game and the average grade in all other subjects are not independent of each other, with the probability of the type I error equal to 0.05.

$$\Phi = \mathbf{0.244} \text{ – weak correlation}$$

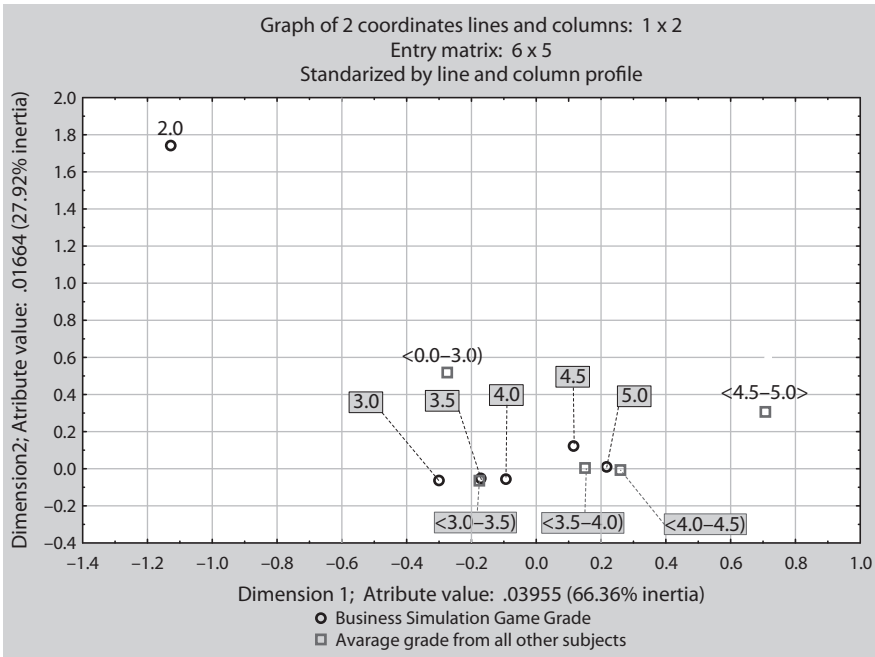

Figure 13. The correlation between the grade in Business Simulation Game and the average grade in all other subjects (part-time students participating in the Comstrat game)

After analysing the data in the Figure 13 we can divide the students into two groups. The students with the average of less than 3.5, obtained grades between 3.0 and 4.0 in BSG. The students with higher averages were assessed by the BSG teachers at 4.5 or 5.0.

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COMPUTER SIMULATIONS OF MACROECONOMIC POLICY IN ECONOMIC EDUCATION OF MANAGERS, USING THE WARSAW UNIVERSITY SCHOOL OF MANAGEMENT IS-LM SOFTWARE

1. INTRODUCTION

The aim of these simulation models is to get students acquainted with mechanisms of influencing the economy by implementing macroeconomic policy. In simulations we use macroeconomic models of short-term balance consistent with J.M. Keynes's theory. Thanks to computer simulations executed in the spirit of that theory it is possible to present to students, in a simple and comprehensive way, complex macroeconomic interrelations and problems regarding methods of influencing the economy using typical macroeconomic policy instruments. This

paper presents macroeconomic policy in computer simulations using four economic models, which are divided into closed and open economy models.

The general concept behind the software and the specific method for its practical use are based upon the quasi-simulation game approach. This means that participants are divided into teams that compete with each other. The team that presents the most interesting solution for a given problem is the one that wins the game.

2. THE PURPOSE BEHIND THE SOFTWARE DEVELOPMENT

The principal aim of software that involves computer simulations of macroeconomic policy is to get students properly acquainted with instruments of fiscal and monetary policy and the way they influence economic processes. One of the strengths of simulations is that they enable the user to identify the differences between the mechanisms of transmission of fiscal and monetary impulses upon the area of the real economy.

As students carry out simulations on their own, they gain the ability to correctly evaluate changes that take place in the macroeconomic business environment as a result of macroeconomic policy that is being applied in a given country and to transfer the effects onto economic decisions made in enterprises.

Using the presented simulation models, students learn about the possibilities and limitations of influencing the domestic economic situation, while foreign relations with the global economy are becoming more and more complex as a result of ongoing processes of integration and globalisation. Simulations also make the students aware of the phenomenon of goals of internal and external balance of the economy, which in fact compete with each other.

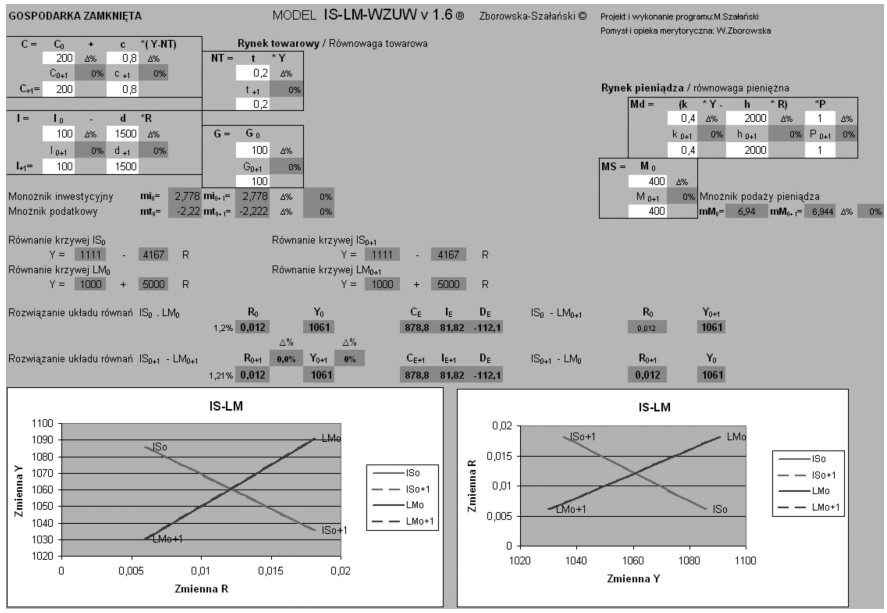
Simulation models of macroeconomic policy provide students with a set of economic tools that enable them to assess the consequences of using various variants of macroeconomic policy.

3. A PRESENTATION OF THE ARCHITECTURE OF A MODEL OF MACROECONOMIC POLICY SIMULATION IN COMPUTER SOFTWARE

The software is divided into several models, depending on the conditions of the economy in question.

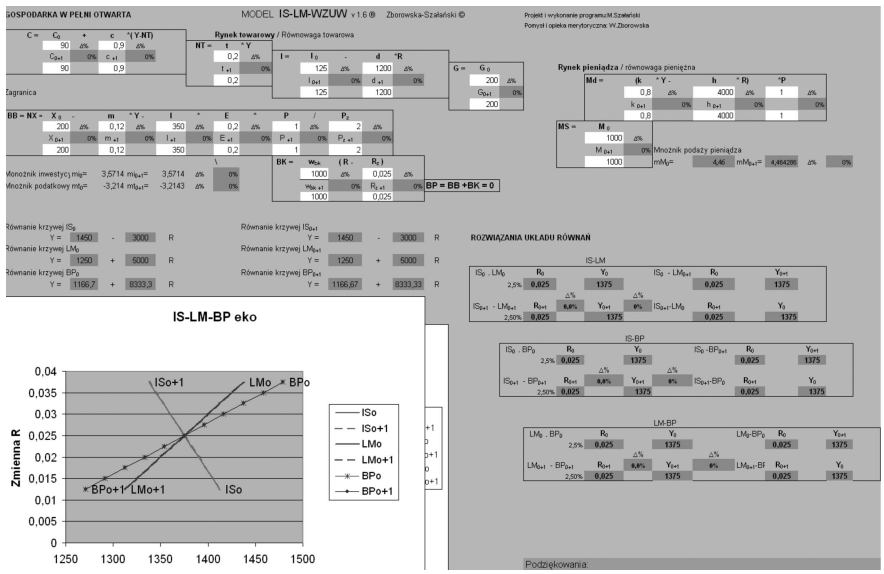
Some example fragments of the software tables are presented below:

Table 1. Closed economy model



Source: Software IS_LM WZUW v1.7 2008.

Table 2. Fully open economy model



Source: Software IS_LM WZUW v1.7 2008.

4. THE ANALYTICAL POSSIBILITIES OF THE MODEL

These simulation models of macroeconomic policy enable users to carry out multi-faceted analyses concerning changes that occur in the economy as a result of economic policy applied by the State.

Using the simulations that are available in the provided models of national economy, it is possible to reveal the most important relations between basic macroeconomic data, such as production, percentage rate, employment and changes in general level of prices.

One of the characteristics of simulations of macroeconomic policy is that they are presented as a sequence from the simplest to the most complex models of national economy.

Within the closed models of national economy, it is possible to analyse the scope of available adaptations of fiscal and monetary policy in order to achieve a variety of goals assumed for the economy over a given period of time. Simulations provide the basis to present different effects of macroeconomic policy applied in three principal markets: the commodity, monetary and labour market. The simulation model allows observing the effects of macroeconomic policy also in sectoral categories, i.e. in terms of the public and private sector.

Another obvious strength of simulation models is the possibility to analyse how domestic macroeconomic policy influences an open economy that has various levels of integration with the global economy, with particular emphasis upon changes of the level of internal and external balance of the economy. In this context simulations also provide an appropriate basis for evaluating the efficacy of fiscal and monetary policies applied under the conditions of fixed and floating currency exchange rate regimes.

Simulations of macroeconomic policy also enable analyses of the effects of economic shocks, both internal and external, which cause the condition of macroeconomic balance. Moreover, they may be used to evaluate the ability to absorb negative consequences of economic shocks using macroeconomic policy. Also, it is easier for users of simulation models to assess the efficacy of macroeconomic policy that is applied in order to achieve set out goals under conditions of changing prices, both domestically and internationally.

Simulations models explain the mechanisms with which the economy regains proper balance and they emphasize the place and role of the State in the process of restoring balance, at various levels of income and production. In our opinion, an important feature of the presented computer simulations of macroeconomic policy is that they enable their user to, on the one hand, understand conditions and interrelations inherent in the economy as the whole and, on the other hand, appreciate the role of the State and its possibilities of influencing the economy. We are convinced that computer simulations highlight the practical aspects and dilemmas

that accompany choosing an adequate type of policy mix to solve the crucial problems of contemporary economies.

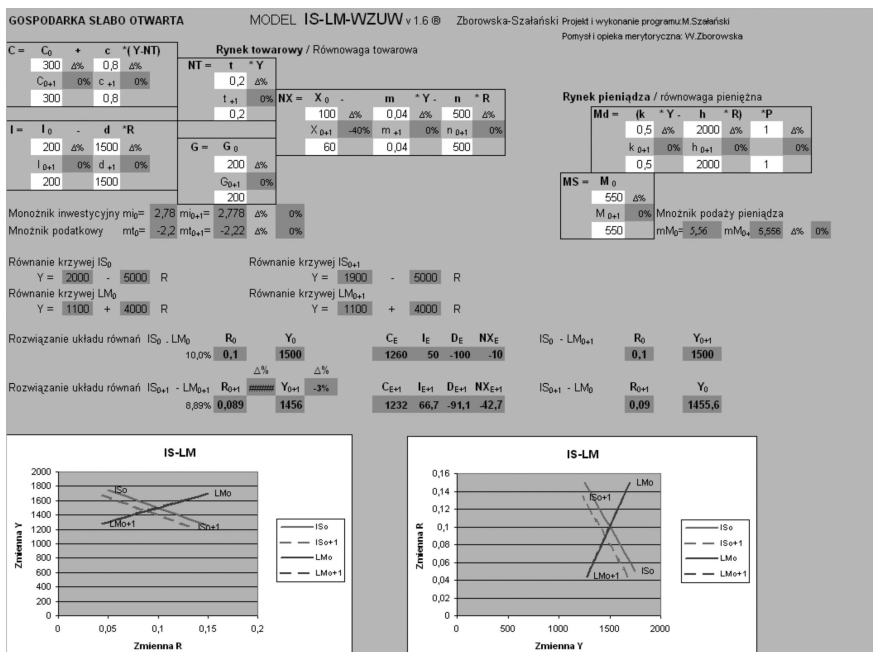
We believe that the users that carry out the simulations of macroeconomic policy will gain knowledge of the limitations of economic policy practice. Such limitations result from the following:

- differences between macroeconomic policy priorities in short-term and in long-term perspectives;
- various levels of sensitivity of micro-businesses to typical instruments of fiscal and monetary policy in use;
- the need to coordinate fiscal policy of the government with monetary policy applied by the central bank;
- differing times of reaction of the economy to macroeconomic policy tools;
- application of additional policies in the practice of economic policy, such as income or trade policy.

5. AN EXAMPLE OF USING A MODEL TO EVALUATE AND ALLEVIATE THE EFFECTS OF THE GLOBAL FINANCIAL CRISIS – MODEL ANALYSIS

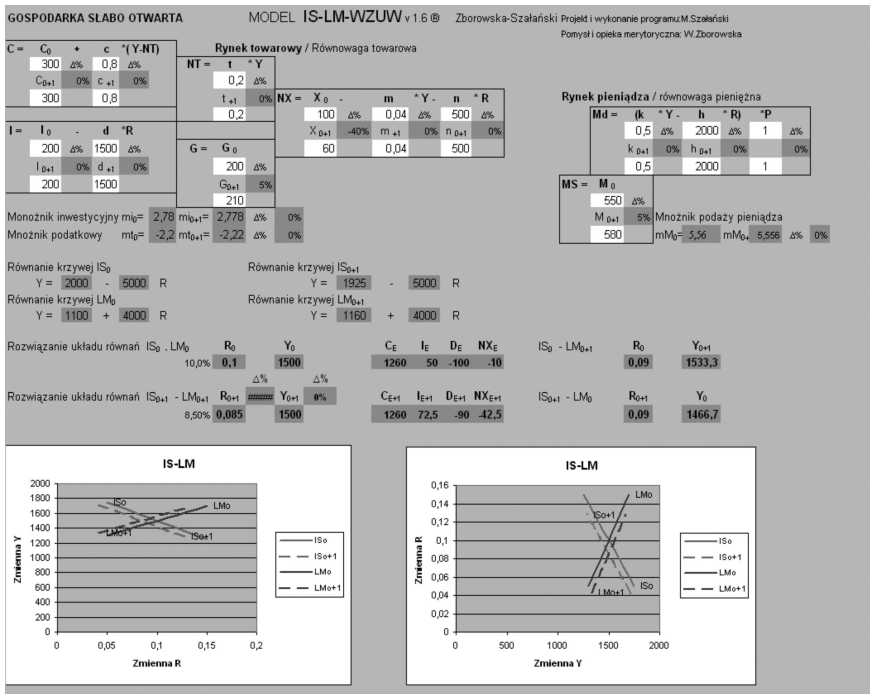
As mentioned in the introduction, the software is based on the quasi-simulation game concept. For example, it can perform an evaluation of

Table 3. Small open economy model



Source: Software IS_LM WZUW v1.7 2008.

Table 4. Small open economy model



Source: Software IS_LM WZUW v1.7 2008.

the impact of the recession, suffered by Poland's principal trade partners as a result of the expansion of the global financial crisis. It is also possible to present, in simulations, the efficiency of macroeconomic policy in reducing the negative consequences of the deteriorating economic condition abroad. Such a situation can be presented in a model of small open economy, where links between the domestic economy and the foreign sector are reflected in the changing trade balance. This is illustrated by the following example: let us assume that as a result of the recession experienced abroad the export during the year 0+1 decreased by 40 units. This is going to cause a reduction of the global demand and a decrease of production from 1500 to 1456. In consequence, the trade balance will deteriorate (the level of trade deficit will increase from –10 to –42,7), which will be accompanied by a worsening budget condition (tax income of the budget will decrease).

An appropriate macroeconomic policy can alleviate the negative effects of the recession experienced abroad. In order to achieve this, the implementation of an appropriate combination of fiscal and monetary policies is necessary, for example one will maintain domestic production at a constant level. One of the possibilities is an increase in State expenditure by 10% (Expansive Fiscal Policy), as well as an increase

in the supply of money by 5% (Expansive Monetary Policy). As a result of applying this policy mix, production will be retained at a level of 1500 units. Additionally, the interest rate will decrease. The decrease of the interest rate will improve the domestic economic condition by stimulating domestic investments financed by credit.

6. USING SIMULATIONS IN DIDACTIC PRACTICE

Students that participate in exercises of simulation of macroeconomic policy should have fundamental mathematical knowledge and have completed basic level courses in both microeconomics and macroeconomics.

Classes are held in the form of seminars, thus allowing active forms of participation of all students in the didactic process. Students work in the computer rooms of the faculty. Each seminar during which computer simulations are used, is preceded by a presentation, which is prepared by teams of three people. This provides the necessary theoretical knowledge related to the expected simulations that will be carried out for a given model of a national economy. The simulations are performed by students in three-person teams or individually.

Each simulation task has a precisely defined objective that should be achieved through the application of an appropriate variant of macroeconomic policy. Students are also provided with a set of criteria that enables them to carry out an evaluation of the effectiveness (efficiency) of a chosen type of macroeconomic policy, i.e. its actual ability to solve a given problem. At the end of each stage the students present their solutions and select the best one.

We have prepared a guidebook about computer simulations, which will be a significant support for the students participating in the seminar. This contemporary guide combines the necessary theoretical background with examples, including computer versions of national economy models. It also includes examples of outcomes of simulation tasks with comprehensive comments regarding the obtained results. At the end of each chapter of the guidebook a set of tasks is added, intended as an individual exercise for the users.

The script also includes a list of basic and supplementary economic literature concerning the areas and issues covered by the computer simulation.

Computer simulations of macroeconomic policy are performed at the Warsaw University School of Management, in the Macro Economy II course of the bachelor's degree studies and in the Economic Policy course of the master's degree studies (the public management course).

7. CONCLUSION

Three years of experience in performing macroeconomic policy simulations at the Warsaw University School of Management reveal the significant cognitive value of the model in question. It actively involves students in the didactic process, enabling them to solve, both individually and collectively, a variety of problems concerning the way the economy works. Additionally, it makes it possible to pick out the teams that manage to solve the economic problems that they are confronted with in the best and most efficient way.

The broad analytical potential of the model on theoretical level and the multi-layered references to economic practice allow to develop skills of critical judgment of changes that take place in the macroeconomic business environment as a result of economic policy applied by the State.

The software is available free of charge on the following website:
http://www.wydawnictwo.wz.uw.edu.pl/ebooks.php

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THE EFFECTIVENESS OF SIMULATION GAMES IN SERVICE MANAGEMENT TRAININGS

I hear and I forget. I see and I remember. I do and I understand.
Confucius

1. INTRODUCTION

CTPartners S.A. is a Polish company providing training and consulting services since the year 2000. Our mission is to popularise the effectiveness in IT organization management as well as the knowledge, standards and best practices in IT service management. Since 2003 we offer EXIN licensed "ITIL® Foundation" trainings. The scope of these trainings is strictly defined by the EXIN requirements. The knowledge these trainings are to deliver is broad and complex, thus the instructive methods need to be intense and creative. The analyses of queries and interviews show several goals of participants who undertake the training. These are:

- to transform the IT organization into a modern and professional IT service provider;
- to learn the best practices of effective management of the service life cycle – from defining the strategy for service delivery, creating new services, service transition, maintenance and operations, up to the mechanisms of continuous improvement of processes and services;
- to learn and to understand the key concepts of the IT branch in Poland and worldwide;

- to improve the knowledge and qualifications in the field of processes, services, IT organization and also managing customer relations, external suppliers, developer and test groups;
- to achieve knowledge that will be verified by the "ITIL® Foundation" certificate and that will allow for an effective and dedicated improvement of the IT process service in the organization.

In order to help the participants attain all their goals we have started cooperating with world-renowned experts who have the best achievements in this matter. CTPartners actively cooperates with the Dutch company GamingWorks B.V. that offers progressive education programs in the form of simulation games. The first of those games that was translated and offered on the Polish market was "Apollo 13 – an ITSM case experience™". This simulation game gives the possibility of active and practical education of IT service management. Encouraged by the market success of this game, CTPartners has translated another game, namely "The Challenge of Egypt™", which teaches the management and effective implementation of projects. This year our offer was widened with the game "PoleStar*ITSM", created by G2G3, our partner from the UK.

2. "APOLLO 13 – AN ITSM CASE EXPERIENCE™"

The "Apollo 13 – an ITSM case experience™" simulation game is an intense, one-day training in which through the use of an interactive game the participants learn the processes and concepts of ITIL®. The training is based on the real course of events from the lunar-landing mission Apollo 13. The participants are working in a group and they simulate to be the staff of the Mission Control Centre in Houston. Their mission is to bring the crippled spacecraft and its crew safely home. By doing so, they will learn and experience all the benefits of the ITIL® best practice solutions.

The participants work in a team of 8–14 members of the Mission Control Centre. During the four rounds of simulation, the team has to transform the NASA strategy into the real service projects "Build and Launch" and "Mission Maintenance and Support". The task is to transmit the Apollo 13 spacecraft and its supporting devices into the life operational environment. During the mission the participants will encounter various events, incidents and requests from the spacecraft crew. In each round the team has to undertake the following steps: process design and improvement, action simulation, reporting and considerations. The game applies variant ITIL® processes in order to let the mission control team, the spacecraft crew and the mission director set out the priorities, make decisions concerning problem-solving, yet also to introduce in the right time the changes in rocket and spacecraft configuration and the trajectory. Here we will need various handy accessories and special game cards.

Even though the game was designed to improve the knowledge of ITIL® concepts, it is suitable for any organization that wishes to learn the advantages of effective team work as a results of increasing the number of their IT services.

The "Apollo 13 – an ITSM case experience™" simulation game has already been, owing to its popularity, translated to English, German, Dutch, Spanish and Polish.

3. THE EFFECTIVENESS OF THE TRAINING PROCESS

Taking into account the several years of experience we may claim that **the application of simulation games in the process of training the IT managing staff does increase the effectiveness of this process**. The primary assumptions that have inclined us to decide on introducing the game into the CTPartners offer, was the wish to enable the participants to supplement their theoretical knowledge from the "ITIL® Foundation" training with elements of practice, which would help them adapt this knowledge into the real life of their organizations. Thus, the game is offered both as a separate workshop training and as a part of other trainings:

- **ITIL® Foundation Extra**. The theory from the "ITIL® Foundation" training is complemented by exercises in the four-round simulation game "Apollo 13 – an ITSM case experience™".
- **Support Centre Analyst Extra**. The theory from the "HDI® Support Center AnalystSM" training is complemented by exercises in the four-round simulation game "Apollo 13 – an ITSM case experience™".
- **Apollo 13 Plus**. The "Apollo 13 – an ITSM case experience™" simulation game is preceded by a short "ITIL® Review" training.
- **2X Apollo 13**. The "Apollo 13 – an ITSM case experience™" simulation game is played by two (or even three) teams simultaneously, which brings in elements of competition, but the collective discussions are to give a wider range of considerations.

The previous argument is also proved by the **comparison of results from the IT service management exam** that took place after the training. The non-obligatory part of the training was the participation in the "Apollo 13 – an ITSM case experience™" simulation game, which included the content of the theoretical part of the training. Some participants (679 persons) only took the theoretical part of the training after which they took the exam. Other participants (505 persons) took both the theory training and the simulation game workshop after which they took the exam.

Comparing the exam results of both groups (those who took part in the simulation game (93% passed) and those who did not take part in the

Table 1. Exam results comparison

After the theory training	679 persons	After the theory training complemented by the simulation game	505 persons
passed	609 persons	passed	470 persons
failed	70 persons	failed	35 persons
percent of participants that passed	90%	percent of participants that passed	93%
average points, scale: 1–40	31.08 point	average points, scale: 1–40	31.19 point

simulation game (90% passed) allows us to state that the participants who took part in the simulation game workshop after the theory training had better results (by 3%) than those who only took the theory training. The comparison is based on trainings that were conducted by several different instructors and several different training groups. All analysed exams were conducted and evaluated by an independent institution.

Another proof of the effectiveness of trainings that use simulation games is the satisfaction with its results expressed by the directors of departments and organizations. The outcome of this satisfaction is the continuous cooperation between CTPartners and numerous Polish companies that order our trainings. Our sales experience has shown that the most difficult thing is to convince the customers to try the simulation game for the first time. Very often the game is mistakenly seen as a useless form of fun, entertainment that does not benefit the company. This is probably due to the common connotation of the word "game". However, having tried the game for the first time and seeing the effects of simulation game training in their employees' performance, directors usually decide to purchase trainings that are complemented by simulation games. There are companies that have used this approach to train all or almost all of their IT department employees. This proves that organization managers acknowledge the effectiveness of simulation games.

4. WHY DO SIMULATION GAMES IMPROVE THE PROCESS OF LEARNING?

Using simulation games in trainings has its base in the Experiential Learning (10) method. It is not only a very effective teaching methodology, but also the easiest way of identifying the problems of an organization

and comprehending the importance of knowledge delivered during theory trainings. The knowledge that the participants receive in the course of the training is a set of theoretical principles and rules that they have to digest in a very short time. They have no opportunity to verify or utilize this knowledge in practice. As we all know, exercising the gained knowledge is the best way to understand and to consolidate it.

Training experience shows that participation in simulation games brings more benefits than participation in standard trainings. During standard trainings the participants, managers or IT department employees, meet and together with their instructor train the rules of infrastructure configuration management and change management process. They create practical supporting tools and together discuss the pros and cons of particular solutions. Such training lacks in one thing though. These exercises do not let the participants verify the received outcome and forces them to trust the instructor's opinion. We know that this method does not have a positive impact on their belief that the taught rules can be successfully applied in their everyday work experience. Without a personal conviction of the effectiveness and the possible negative results of introducing the changes, the participants will display a conservative attitude towards them.

Taking part in a simulation game will let the participants see how the principles they have learnt during the theoretical part act in reality, how implementing them influences the organization performance and what problems might appear as a result. If a simulation game is well constructed and the workshop well conducted, it can bring effects that could never be achieved even during the best theory training. It can be inspiring, it can broaden views and break stereotypes. Thanks to the fact that the game is set in real practice conditions, where the decisions are influenced by attitudes and moods, communication skills, different opinions, irrational antagonisms and priorities, the participants will receive knowledge that is directly linked to reality.

The results achieved by the participants of the training will be immediately assessed during the simulation game and will therefore remain the most durable. Simulation games successfully teach the teams to concentrate on a common goal, on risk definition and risk taking, on working under time pressure, taking responsibility and initiative as well as on the continuous improvement and active reinforcement of necessary changes. The simulation gives an opportunity to verify how the participants use their knowledge in reality and what their real skills are. The quick and exciting action of the game will reveal the real habits and customs of the participants, which also real life lead to the decisions they make. Taking part in the game will let the participants see how an actual management process improves management itself. They will also realize how introducing the appropriate communication will improve process management results. Moreover, the simulation allows the

participants to verify various solutions without the additional costs that always follow when implementing such solutions in the company. Participation in a simulation game gives the chance to verify a solution on a smaller scale, in virtual reality without taking responsibility for the real consequences. However, this solution will be tried out in the very same circumstances and among the same processes as those that occur in the participants' workplace. Furthermore, the simulation allows the participants to see in one day a smaller-scale image of their own organization, its actions and improvements. It gives a perspective on different positions in the company, and the roles and duties of the department members.

A simulation game that is appropriately adjusted to the theory training, gives a wide range of education opportunities. For example, the "Apollo 13 – an ITSM case experience™" game being offered together with the "ITIL® Foundation" training, shows in a practical way not only the ITIL® practices, but also the knowledge of process management, communication, cooperation and customer relations. It allows gaining a sustainable education effect by the active participation in planning, solving and analysing critical problems of IT management. There is no theory training, or even a workshop that can deliver to such a wide group of different recipients a homogenous conviction on the rules of IT service management in the way that simulation games do. This conviction and experience gained in task solving during the game directly relates to the participants' work performance and consciousness of the decisions they make.

5. THE QUALITIES OF AN EFFECTIVE SIMULATION GAME, USING THE EXAMPLE OF APOLLO 13

There are several conditions a simulation game needs to fulfil in order to be considered effective and its results sustainable. At first, a game has to be strictly connected with the theory training. It has to demand from the participants the practical application of the knowledge they gained during the theoretical part of the training. The contextual connection of the "ITIL® Foundation" theory training with the "Apollo 13 – an ITSM case experience™" simulation game was made on account of personal experience of the game architects.

"Apollo 13 – an ITSM case experience™" is created by ITIL® experts who have more than 15 years of experience in implementation, as well as by experts in human resources development. The architects of this game are the authors of ITIL® and members of the ITIL® advisory board. They know the theory of IT service management that is delivered to the training participants very well, as well as its practical application. This let them create a game that shows the practical application of ITIL®. Many

years of their experience and analysis of the most critical factors of success and defeat were implemented in the "Apollo 13 – an ITSM case experience™" simulation game.

Furthermore, a simulation game must reflect reality. The scenario should be based either on real or very probable events. The game plot must be realistic and motivating, whereas the roles that the participants have to play need to be close to the real everyday situations in which they usually find themselves. This way the participants can exercise, experiment and find solutions for their own organizations. The screenplay of "Apollo 13 – an ITSM case experience™" precisely reflects the real course of events from the lunar-landing mission Apollo 13 that was launched in 1970. And even though the participants of this training are IT department employees and not astronauts, this game requires them to apply management principles that they also need in their everyday work.

"Apollo 13 – an ITSM case experience™" contains 42 different incidents and situations, each of which is a different didactic goal and each of them requires the analysis of a different success factor with the use of ITSM best practices. This way "Apollo 13 – an ITSM case experience™" can be used for a very wide range of ITSM educational needs, from the simple improvement of ITIL® awareness to learning about IT control. It is also important for the game to be as interesting and exciting as possible. Simulation must be real enough, so that the participants could even forget it is a game and try to make the same decisions as they would in reality of their company. In this case the principle "Learning must be Fun" is most definitely adopted, which results in teaching effectiveness.

6. CONCLUSIONS

Simulation games greatly increase the effectiveness of IT service management trainings. Since a few years already this is being proved by the official results of ITIL® exams, as well as by the real increase in the productivity of companies that have sent their employees to such trainings. Directors very soon notice the positive results of simulation games and very often decide to take complex trainings for entire departments. Furthermore, their workers praise the simulation games, because they let them develop real skills and their role in effective work as well as communication with others. Simulation games increase the effectiveness of the learning process through the interactive practice of acquired knowledge and communication based on the real skills, experience and attitudes of the workers.

Increasing the level of effectiveness as much as is described in this article is only possible if the simulation games fulfil a set of conditions

that are mentioned in the 5th chapter of this paper. First of all, they have to be closely linked to the contents of the theory training, and their plot needs to be realistic, interesting and highly engaging for the participants. In terms of the concept, every simulation game project has to be based on the official didactic principles, which define the contents, methods and means by which the training will be conducted.

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TRAINING GAMES AS AN EFFECTIVE TOOL FOR DEVELOPING THE COMPETENCIES OF EMPLOYEES

So far, acting out staged situational scenes has been considered to be the most attractive form of acquiring practical skills. However, the participation of a trainee in the acted out scene paradoxically makes a staged situation distant from the one that occurs in life. A participant acting out a scene tries to do his best, seeing it not as an exercise or a way of showing his competencies in a given situation, but as a specific acting challenge. He does his utmost best to come out well, fearing embarrassment that could have social or professional consequences. During an open training, the participant is afraid of being ridiculed in the eyes of his colleagues.

The fact that a participant will be assessed by other partakers of the training, and first of all by the coach, makes him behave and take actions aimed at obtaining positive feedback. Intuitively he avoids actions that involve the risk of a negative evaluation, although in reality it could bring the best effect. As a result, what becomes the most important is the evaluation of "the scene", and not its real effect. This might prevent the trained individual from using new, creative methods, as he is not sure what effects they can bring, i.e. what his final assessment would be. Paradoxically, the better the trainee performs the acted role, the less he is himself. Participants acting out scenes perform certain,

often imposed, roles and because of that they are less themselves. They put on masks that hide their real, conscious and unconscious competencies.

The way to avoid those shortcomings is to use suitable coaching games. A well designed training game generates such high involvement and motivation of participants. It makes them forget about their masks and they are themselves. The script of the training game very often seemingly does not relate to the topic of the training, which makes participants forget about their need to play their roles. They aim at achieving the purpose of the game, and by this they remain themselves. This allows observing their actual and genuine competencies.

It is important that participants can transfer and apply to work the experience gained in the game. Coaches running the training the game need to show considerable skills with respect to the subject of the training, as well as workshop and coaching skills. The participants perform the tasks connected with the purpose of the game, which seemingly has no relation to the work they carry out daily. The attitudes and behaviours of the game participants are then discussed in detail among themselves and the coaches running the game, bearing in mind the implementation of the learnt input in daily practice, i.e. business practice.

From the point of view of coaching, games can be divided into separate categories depending on the following criteria: time, subject matter or goal of the game (coaching or integration & entertainment).

Taking into consideration the above criteria, coaching games can be:

- the main item of the training;
- an element of the training;
- a substantial and organizational base;
- a solely organizational base for arranging the training;
- a special attraction involving participants of the training in their free time.

GAMES AS THE MAIN ITEM OF THE TRAINING

A training game is the main item of the program during which the training material is carried out. The training game takes up most of the time planned for didactic activities. It means that participants take part in the training as players of the game. The subject matter of the training is presented during the game and it enables participants to get familiar with the specific issues of the training.

Our experience shows that such a way of presenting and using knowledge greatly increases the learning effectiveness. This is happening because participants are highly involved and highly motivated to acquire

the training input, because they have to know it and use it in sudden unexpected and unusual situations.

During traditional training, motivation and involvement is markedly lower, since trainees do not see a direct opportunity of applying the new knowledge and the perspective of using it is too remote, which triggers a considerable limitation in perception. Using coaching games as the main item of the training increases the attractiveness of this form of learning and enhances the effectiveness of acquiring knowledge by extending the memory span.

GAMES AS AN ELEMENT OF THE TRAINING

A game can take the form of short entertainment (from 1.5 up to 4 hours) and it can be conducted as one of the modules of the training. It can also be played in breaks between particular training sessions – as an element that joins delivered input, or on the contrary – as a break preparing trainees for a new topic.

Such a game uses experience from the learning process, known as the Kolbe Cycle, which starts with going through the experience and finishes with reflection and action planning on business level or finding a solution for a specific problem.

The game works as an icebreaker and energises the group, and consequently one avoids the drop in motivation during the training caused by fact that the participants already knew a given game or activity.

An example of a game that can function as an element of training is the "Amber Chamber" game during which trainees have to determine the place where the legendary treasure was hidden on the basis of available information (obtained thanks to their resourcefulness). Having located the treasure, they have to plan (with respect to logistics and finances) the operation of excavating it. The game develops skills related to planning, communication, trust and teamwork. Using the training game in the form of a training element perfectly emphasizes the purpose and subject of a given training module, which boosts its dynamics and allows experiencing new challenges linked to the subject matter.

GAME AS A SUBSTANTIAL AND ORGANIZATIONAL BASE

The game is used as a substantial and organizational base and it relates to its topic, which means that both the game goal and the ways of achieving it have a direct connection to the substance of the training. Such a game takes up most of the time planned for didactic activities and imposes its rules on the organizational cycle of the training.

The purpose of such a game and the entire training encompasses a full spectrum of expectations and desired competencies such as: interpersonal communication, time management, negotiations, assertiveness, planning, organizing, managing the team, delegating tasks, etc.

An example of such a game is the "Diplomatic Mission" game, which organizes and fills in most of the time devoted for training, while its participants gain firsthand experience on a number of issues related to the above-listed areas.

Taking into consideration training practice, the use of coaching games as a substantial and organizational base is the most effective way of acquiring knowledge, mastering skills and shaping attitudes of the trainees.

GAME AS A SOLE ORGANIZATIONAL BASE FOR ARRANGING THE TRAINING

The game used in such a form has no direct relation to the subject matter of the training, but it creates an organizational scheme (the base) into which a specific subject related input is interwoven, e.g. between parts of the game. The mini-lectures, case studies or simulations require maximum attention from the participants, as the presented content will be checked at the end by means of questions. How well the trainees retain the information from the mini-lectures will determine how well they perform in a following round of the game. Such use of the game is particularly recommended during the so-called "hard training topics" (financial, accounting, legal, industrial safety, technical and product trainings).

A good example of such a game is the "Veneficium" game. This game has a very attractive background. Each team presents a historical figure, which is physically represented by the character of a knight. The knight has to move on the territory of two countries, visit castles – symbolised by the models with photos of authentic strongholds, and he has to avoid the fields with poisoned plants. Making each move in the game requires having legal tender – the thalers. One possibility of obtaining them is performing tasks given to the teams of participants between the rounds. The tasks are closely connected with the topic of the training.

Despite the seeming lack of connection to the topic of the training, using the game only as an organizational base of the training makes trainees focus their attention better and greatly enhances their retention, all of which translates into higher chances of victory during the competition. It creates endless possibilities of universal use as far as the topic of the training is concerned. This way, the game gives a lot of freedom, both organizationally and substantially, which enlarges its possibilities of effective use.

GAME AS A SPECIAL ATTRACTION INVOLVING PARTICIPANTS IN THEIR FREE TIME

In situations when the training takes up longer than one day, organizers encounter the problem of how to fill in the free time in the afternoon or in the evening. Typical outdoor games are already hackneyed by many companies, so they do not trigger the enthusiasm of the participants.

Moreover, many outdoor tasks require trainees to be in a good physical shape and demonstrate psychological courage to perform many of them. A lot of trainees perform such tasks under high stress, not sharing it with anyone in fear of the consequences or mockery in the work place. Thus, instead of motivating, the tasks bring reverse result. The scenarios of our games (also outdoor games) do not allow for such situations. The roles that the trainees have to play are adjusted to their abilities, needs and readiness for involvement in specific tasks, roles and stages of the game.

The games that at first sight serve to entertain, allow in fact for the unconscious development of a number of desired behaviour patterns and skills, the lack of which might often be too embarrassing to communicate directly.

WHY IS IT WORTH USING GAMES DURING TRAININGS?

- They greatly increase the effectiveness of the learning process.
- Trainings assume an attractive, motivating and involving form.
- Trainings become original, more interesting and spectacular, and therefore more effective.
- It is a differentiating feature for the company who organizes them on with respect to its competitors; “the games we offer are our original projects, which limits the risk of repeating the elements participants already know”.
- They can be an opportunity to carry out a second, not immediately evident training.

Using this type of games during the training is an innovative and unconventional solution. The rules of the majority of games are so flexible that they can be modified depending on the training topic. Games can be used in implementing almost all training topics, for both soft and hard skills. Games should be prepared and adjusted to the specific needs of a company and they should be carried out by experienced coaches. They are the best tool to broaden knowledge and develop skills and attitudes in education, business and administration.

Training games can be conducted in any place – starting with the training room and ending with outdoors (be it a training facility or

rented premises of a castle). Games follow a scenario through which trainees get to know the goal of the game and that also reflects the situations and phenomena that relate to the subject matter of the training.

Summing up, training games are a tool that can significantly increase the effectiveness of each training, on account of the boost that is achieved in the involvement and motivation of the trainees. Games make the training attractive and unconventional in its form. The way of presenting the training input makes it memorable in for the participants for a long time, not only due to its form, but also its content.

The above described forms of games are not the kind of business simulations where trainees work with sheets of data. They are governed by a meticulously prepared scenario that occurs in a chosen time and place.

We encourage everyone that has a connection with personnel development to use the potential hidden in such forms of training.

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THE USE OF SIMULATION GAMES IN PROGRAMS AIMED AT FACILITATING SOCIAL INCLUSION (THE CASE STUDY OF GETIN BANK AND FISE)

This paper focuses on the use of simulation games in an untypical context, i.e. in programs for an untypical target group.

1. MANAGEMENT AND BUSINESS GAMES

Simulation games are mostly referred to in the context of managerial education. It becomes clearly visible even when we take a look at the titles of this conference's papers. Most of them are about management games and their effectiveness. Indeed management simulation games have been applied for many years worldwide and they are gaining in significance as a powerful training tool also in Poland. They are being used not only at universities in programs that educate future managers, but also in companies that appreciate the effectiveness of this tool. Large sums of money are being spent on designing simulation games to be used in corporations. There is a common conviction in the business environment that this tool is worth investing, because it gives the participants valuable and real experience of teamwork and complex decision making situations. Given those characteristics, it enables to achieve training goals in a shorter time (compared to classical training tools). And in the business world there is no truer statement than "time is money".

2. GAMES FOR THE UNEMPLOYED?

However, abroad we are witnessing more and more often the application of simulation games in programs for a different target group than managers, namely for people threatened by social exclusion. These are games designed for people that remain outside the labour market and face problems with re-entering the professional life. They were targeted for example in a quite revolutionary project in Switzerland in 2006. Labour market experts and game designers developed a simulation game that would help the unemployed to assess their skills and competences and to regain self-confidence and self-esteem. For 6 days the participants (the long-term unemployed from a Swiss community) playing the roles of authorities of a fictional town were trying to solve a crisis situation that occurred in the area. The goal of the project was to identify the participants' strengths, build their competence profiles and provide them with guidelines concerning their employment possibilities.

The principles of this project assumed that the biggest barrier for people to return to their professional life after having been unemployed for many years is constituted by psychological factors, such as:

- the lack of faith in one's ability to adapt to and get by in a new workplace;
- the fear of new technologies (computer software etc.);
- the lack of awareness of one's own potential.

Given those factors it seemed that a game in the Swiss project is a perfect tool to help people overcome those problems. Providing experience and emotional engagement games can help people in difficult life situations to:

- get accustomed to teamwork (extremely important in almost every workplace and often forgotten when unemployed);
- do a dry run of making difficult decisions concerning one's employment before being confronted with them in real life;
- discover one's potential;
- regain self-esteem;
- hone networking skills and make friends (build support groups).

Nowadays many social policy institutions across the European Union and further consider simulation games as a powerful tool of empowerment and they propagate their application in programs aiming at facilitating social inclusion.

3. POLISH EXAMPLES

Also the Polish ground is rich in projects targeted at the unemployed and some of them involve simulation games. The situation of the Polish

labour market can be shortly described in three points, according to the expert analysis (Mazur, Pacut 2008):

- From the beginning of the transition the **long-term unemployed** constitute a classical problem group.
- A significantly **low employment rate among the oldest social groups** is typical for the Polish labour market.
- **Lonely parents** (especially mothers) are a problematic group in terms of employment rates.

Given those groups and the barriers they face on the labour market, more and more organizations are addressing projects that enhance the social and professional inclusion of the so called "problem groups".

This paper focuses on two examples of projects in which simulation games were successfully used in the context of empowering people threatened by social exclusion. Both of them were based on games prepared and run by the Polish game design team "Pracownia Gier Szkoleniowych".

3.1 "Work for the 40+" – the social project of Getin Bank (May–June 2008)

3.1.1 The project

Background:

- Migration flow of young labour force abroad.
- The ageing processes in society (more older people).
- Low employment rate among older people.
- The bank needs employees, searching for them among older people can be a good idea.

Target group:

The project was aimed at people at the age of 40+ that wanted to return to their professional life after having had a longer break (caused by child raising and household running). According to research findings, the group of people over the age of 40 is facing a lot of barriers of re-entering the labour market. These are mainly stereotypes that express the belief that only young and educated people are attractive for employers, but there are also psychological barriers, such as not believing in one's potential.

Goal:

Direct: job activation and empowerment of 40+ people.

Indirect: finding employees for the bank.

Elements of the project:

The "activation of workshops" based on a simulation game and training.

Scope of the project:

Around 250 people in 5 cities in Poland in regions with high unemployment rates: Łódź, Katowice, Lublin, Szczecin, Gdańsk.

3.1.2 The game

In each city the people participated in a simulation game that is normally used in managerial contexts, such as training managers in cross-functional communication and cooperation. The project goals of using this game for the unemployed were:

- to allow the participants to get to know themselves in a new situation, i.e. the workplace (entering new roles, facing new challenges);
- make the participants aware of their strengths (which they experience and evaluate during the game) and raise their self-esteem and faith in their abilities;
- integrate the participants in action, so relations and networks created during the game can serve as informal support groups;
- help to open up participants to the training part of the workshop.

3.1.3 The results

With respect to the results of this project on the level of overcoming psychological barriers, it is best to refer to what the participants stated themselves. According to an evaluation questionnaire run after each workshop, the participants said the following:

Thanks to the game I found out about myself that:

- I focus too much on details and I care for other, less active people and I am relatively communicative;
- It is no use to be afraid of myself and I can count on myself and the others;
- I am creative and I do not fit in the role of a subordinate, I prefer to have a managing function.

When asked whether they would like follow-up meetings to be run in a form of a game, all of the participants answered "yes". The reasons given were various:

- The game provided emotions and practical knowledge about myself. It engaged others.
- The game opened people to reciprocal relations.
- The game provided the conviction that it is possible to take a step forward.

In a space for free comments one of the participating women wrote:

> "The workshop and the game were an interesting lesson for me. I am 43 and looking for a job. Before, for many years I have been taking care of my children and running the household and in the game I played the role of a CEO. It was a new and surprising challenge for me. My task

was to coordinate the work of the team and the contact with the client. I discovered some new skills in me! I discovered my organizational skills and the ability to work under time pressure".

Looking at the statements above it seems justified to say that the game played a significant role in helping participants regain self-esteem and that it contributed to their empowerment.

3.2 "PROES3" – the project of the Foundation of Socio-Economic Initiatives (April–May 2008)

3.2.1 The project

Background:

- The group of the long-term unemployed is growing over time.
- It becomes crucial to include them into the labour market.
- The social economy sector is developing.
- Let's promote the social economy as a place for the long-term unemployed to find work.

Target group:

These are the employment advisors in the employment offices and their clients (the long term unemployed for various reasons in danger of social exclusion, for whom the institutions of social economy can constitute a solution that enables their return to their professional life).

Goal:

To support the employment advisors in the process of working with the long-term unemployed, provide them with a tool that gives insight into the possibilities of social economy.

Elements of the project:

A manual for the employment advisors on social economy, accompanied by an interactive guide to social economy in the form of a computer game aimed at the unemployed.

Scope of the project:

Around 400 employment offices across Poland.

3.2.2 The game

A short computer game has been designed and enclosed to the manual for the employment advisors. The goal of this game is to:

- support the advisor in helping the Client (the unemployed) to chose his optimal employment path;
- show the possibilities of employment in the social economy sector (the rules of functioning, modes of support);
- help to diagnose the players' preferences and their potential (focusing on features helpful in the employment in the social economy institutions).

3.2.3 Results

It is still too early to measure the effectiveness of this tool. Many employment offices have not yet incorporated the game to their programs. The eventual application of the game in the employment offices is very much dependent on the individual habits and preferences of the advisors and their computer skills. One of the employment offices reported that they installed this game on each computer in the office. Another however admitted they "did not have the time" to use the game yet.

While waiting for the possibility of a complex evaluation it is however possible to refer to the observations made during the pre-launch tests of the game. Before it was sent out to the employment offices, the game was tested on a group of prisoners in Wrocław and on a group of people with disabilities in a NGO in Warsaw. The game proved to be effective in stimulating the players to open up to a personal conversation with the employment advisor. It proved also effective in drawing people's attention to the opportunities raised by the sector of social economy. Furthermore, overcoming fears concerning computer skills and getting accustomed to working with them was a very important result.

4. WHY BOTHER?

The aim of this paper is to present inspiring case studies of the use of simulation games beyond the context of managerial education. The author also wanted to sensitise the readers, maybe game designers, trainers or people responsible for human resources management, to the fact that applying innovative training tools in programs for groups that are outside the mainstream really is worthwhile.

The belief of the author is as follows: investing in innovative tools of socio-economic inclusion is profitable. According to the Nobel Award Winner in Economics, Edmund S. Phelphs, the effective reintegration of people in danger of social exclusion saves society from high costs of fighting crime and delinquency, including the healthcare system and social welfare. The power of using simulation games in programs for the unemployed lies, among other things, in helping to overcome the lack of faith in one's potential and to support self-confidence.

A good quote of Edmund Phelphs, the winner of the 2006 Nobel Prize for Economics, to sum up:

"A man staying at home deprives himself not only of his money. He deprives himself of a significant part of his life. And the society as well is being deprived not only of the work the person could be doing. It is deprived of the ideas that could come to this person's mind while having contacts with others and ideas that could inspire the others while contacting him".

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SECOND LIFE – WAY OF LIFE OR JUST A GAME

Days go by according to a certain rhythm and often change into routine and become boring. That is why people seek excitement, emotions and the feeling of being outside of the "real" reality, and thus go for an "alternative" reality. They chose various ways, which more and more frequently involve the newest technologies in the form simulation games. In this publication the author presents the most important characteristics of the alternative reality of a plot simulation games and the risk of substituting real life with a game.

1. INTRODUCTION

The author of the article: a middle aged woman, works 80 hours a week, has no free time, looks – when you know her, you know.

Uifi Kohime: age undefined, does not have to work, spends time playing, can fly, has long hair and a slim figure.

Recently, the author noticed advertising billboards saying, "life is a game" (advertisement of sport betting polls, Inowrocław, 30.08.08). Also in conversations with students that participate in research on changes of the personalities of players, the expression "games are life" has come up. No matter how we look at it, the issue of games in our lives plays an increasingly more important role, which is connected to the need of creating a different type of reality known as the virtual world (Latawiec 2005) or alter-reality (Więcek-Janka 2006).

The virtual reality, or alternative reality (alter-reality), describes an artificial world created inside the computer in a three-dimensional environment, in which people can move and manipulate virtual objects.

Virtual worlds became interactive worlds (interactive VR) (Burda, Coiffet, 2003), most of the time with multiple users (multi-user VR) (Burda, Coiffet, 2003).

2. THE NOTION OF ALTER-REALITY

The phenomenon of units operating in a different world than the one in which they actually exist is often defined as fiction. Fiction is often the contradiction of reality. It also happens that fiction is based on reality and is a model and simulated reflection of reality (Więcek-Janka 2006).

The alternative reality delusively resembles the real world to such an extent that a human being does not see the difference anymore between the two worlds. The objective of virtual reality was to create an artificial environment, which would resemble the real world in the best way possible. Virtual reality is an artificial reality created with the use of information technology (IT). It consists in the multimedia creation of objects, space and events that do not exist in nature. This is done by generating pictures and acoustic effects. Computer games are a good example of virtual reality. They are a reflection of the real world, or a mathematic model of world climate used to forecast weather.

The father and creator of the idea of Virtual Reality is considered to be Lanier. Together with Bryson, based on their research work in NASA, he defined reality as follows: "Virtual Reality is the use of computer technology to create the effect of an interactive three-dimensional world in which the objects have a sense of spatial presence" (Lanier 2001).

In practice, virtual reality is understood as a system that is composed of special software and equipment. Usually, the software transforms the picture from 3D graphics to the projection of a stereoscope picture. Additional equipment supports the feeling of so-called *immersion*, which is the plunging into the computer generated environment (Lanier 2001).

The virtual world was created for the first time in 1965 by Sutherland (Sutherland 2001), using computer graphics. Thanks to him the user had the impression of being in a real environment, which was however entirely created by the computer. Lanier called the equipment used in his experiment an "overhead projector". It was a kind of helmet with two screens that gave the illusion of being in a three dimensional space (head movements forced instant calculations in the computer and generated the picture that should be seen in a given position in order to maintain the illusion of being in a still environment).

The works of Burdea and Coiffet (2003) give a definition of virtual reality in terms of I3: Interaction + Immersion + Imagination. Such an approach views alter-reality as the immersion into an imaginary world where there are certain interactions between the participants of the game.

3. SECOND LIFE CHARACTERS

The player that "enters" an alter-reality creates a character that will be introduced to other alter-reality members. Such a character is called an "avatar" and usually impersonates the characteristics that its creator lacks in real life.

The notion of avatar is linked to Indian mythology in which the god *Wasudewa-Narajana-Wisznu* reveals himself in five stages of uneven perfection. The third aspect of the highest god is incarnation, initially called "becoming", and later "descending" (*avatara*). Wisznu assumes many different shapes when he descends to earth to perform certain acts (Choroś 2000).

The fundamental language of the 3D virtual world is the VRML specification, which was officially announced April 3rd, 1995 (*Virtual Reality Markup Language* – later on the word *markup* was replaced with *modeling*) (VRML, ISO/IEC DIS 14772, 1997), i.e. the language of virtual reality modeling. It enables to create multimedia and interactive services, sending it through the Internet and replaying on the receivers' computers. The objects and worlds of the VRML require the installation of a special software in the Web browser, called the VRML explorer (Choroś 1997).

4. PARTICIPATION IN ALTER – REALITY

The games "Eve" and "Second Life" serve as examples of the coexistence of the real and the virtual world. "Eve" is a game of the MMO-RPG type (*massive multiplayer online*) and it is placed in a fictitious world. It functions independently of whether or not the game is played on a multiple server network. It requires from the user an installed up-to-date "access version", a paid license fee and an Internet connection. At the beginning of 2003, the CCP Company with headquarters in Reykjavik, opened game servers for player all around the world. Thanks to the unprecedented structure of the program and server network it became possible to host many thousands of users in one world at the same real time. There are several game based on the MMO rules, but this one is unique as it gives the user the possibility of development.

Everyone who logs in creates a character that becomes one of the many spacecraft pilots. The world in which they can move is huge. It is a galaxy that is composed of over 5,000 star systems. Each star system is a space in which there are celestial bodies that are known to us, as well as imaginary constructions of bases and space stations. By means of a very innovative system of orientation and distance coordinates, the sizes are entirely real. This means that if a planet is dozens of kilometres in diameter, it is not just statistics and pictures, but it is in fact of that size.

The distances between celestial bodies and constructions are measured in AU (astronometrical units), which is the approximate distance between the Earth and the Sun (around 150,000,000,000 km). The graphics create am excellent reflection of reality, with breathtaking views that give the player the feeling of the overwhelming vastness of the world.

The "Second Life" game (*SL*) is a game of the MMORPG type (*massive multiplayer online role playing game).* It is a partially payable virtual 3D world, made accessible for public use in 2003 by the Linden Lab Company. The Second Life "world" is located on multiple servers managed by Linden Lab. This server connection is known as a grid. The game client provides the users (called residents) with tools to modify the SL world and gives them the possibility to participate in a virtual economy that slowly begins to act like a "real" market. At the beginning of March 2007 there were about 5.5 million registered players, of which about 1.7 million played on a regular basis. Unlike traditional MMORPG games, the character created in "Second Life" does not have any predefined features. The description of the character profile (called avatar) is similar to the information that is usually accessible in social networks (a short description of character, interests, a picture, the groups the player belongs to).

The creation of the *avatar* is very interesting and by far more detailed than in other MMORPG games. By sliding particular buttons (on the boards that represent particular body parts) in a given menu, you can define not only the colour of your skin or hair of, but even the length of the arms or the shape of the mouth and you can select the body shape of your dreams. On top of that, you can add tattoos, for example. Also clothing can be carefully chosen. There is a multitude of options to choose from, which makes it almost impossible to meet identical characters in a game. Additionally, the *avatar* can be given so-called *attachments*. This includes all objects that can be added to a character. Just like in other MMORPG games, this can be clothes, weapons or jewellery, but also specially shaped eyes (ex. reptile) or hair (more realistic). In practice, the only limitation with respect to *attachments* is the imagination of the authors.

In reality people should work and earn money. "Second Life" responded to that need. The monetary unit in the game is the *Linden Dollar (L$).* This currency can be used to make all transactions within the game. Money can be gained by offering various goods or services. Additionally, it is possible to exchange real money into *L$*. This can be done with the use of a credit card or the PayPal system. A reverse operation is also possible. The economic system itself is close to the natural one, based on the demand and supply system for a given product. Therefore the exchange rate of the US dollars into *Linden Dollars* changes in time. According to data available on the game Website, the total average value of transactions made daily in the game varies from 400 to 500 thousand US dollars.

Like in the real world, the most desired good is real estate. The value of land depends on its location. Land can be bought from other players or directly from the game authors. Besides one time payment for land purchase, an owner has to pay a monthly maintenance fee (it is paid in US dollars). The monthly fee depends on the size of property. Another much more expensive option of land purchase is buying an own private island. Like in the real world, there is a market inside SL that reacts to real mechanisms of supply and demand. In the game one can buy and sell many products, from turnkey houses, to animals, cars and various services. Most of those products are created by the players. The prices, just like in the real world, depend on the interest in and the quality of the product, and are defined by sellers (game authors do not interfere directly in the pricing of products). Apart from products created by regular players, one can also buy products created by companies known from reality (for example Adidas or Toyota). Additionally, there is a vast number of the so-called *Freebies* in the game, which meant for new players and are available for free or for a small fee. Just like in the real world, also here one can find objects or scripts available in the form of Open Source (Grynkiewicz, Makarenko 2006).

Life in SL replaces more and more the human activity in real life, including professional careers. Each avatar wants to be Anshe. Anshe was born in China. She got married and moved to Germany with her husband. In 2004 she entered Second Life for the first time, mainly out of curiosity and boredom. She paid 9.95 dollars for entering and was put in the middle of a desert, just like 1.5 million previous users. In real life she did not have to work. Ailin (Anshe in SL) started visiting many virtual worlds, but she remained in Second Life for good, because it proved to be more than just a game. Within three years Anshe created a gigantic business. She sells clothes, gadgets, cars, houses. All virtual. All for linden dollars, which can be exchanged for real ones at any time. She barely manages to keep up with orders. In China she employs 20 IT specialists and is planning to hire 20 more. Anshe is the goddess of the new world. In America everyone wanted to be Rockefeller, in SL everyone wants to be as successful as Anshe. She is probably the richest person in SL (Casati, Matussek, Poemke, Spiegiel 2007).

Many well-known brand names from the real world operate within the virtual world. There is competition. General Motors sells a Pontiac Solstice model tailored to customer requirements. IBM supports tennis tournaments. American Apparel lets you buy prime collection clothes and offers discounts for the purchase in real stores for virtual clothing buyers. Leo Burnett builds a virtual campus. The Starwood Hotels network invites to their five star hotel Aloft, which is available in real life since 2008. In Second Life, next to CNET and Wired, Routers created its offices, whose reporter Adam Pasick is known as Adam Routers in the virtual world. His work, as he admits himself, is no different than

the one in real life (Śliwiński, www.drugieżycie). SL is also a place for the work scientists – virtual equivalents of the real ones. The most famous project refers to interpersonal communication. The Stanford research team proved that the distances that avatars keep between themselves reflect the distances from the real world. This means that men keep larger distances between each other than women or couples do (Grynkiewicz, Makarenko 2006).

The game "Second Life", with the advertising slogan "Your World, Your Imagination", is the first virtual world that became so popular. This shows the right path to followers and imitators who want to use good, tested patterns and add something new from themselves. As the creator of "Second Life", Philip Rosedale says: "The task of SL is not to create a new version of life. It just helps to move the lives we have to a different dimension and experience something that is impossible to experience in real life" (Przekrój, 18.03.2007).

5. SUMMARY

When illusion becomes the core of life, it loses its value
Piers 1984, p. 77

The intention of the author was to draw attention to the problem of the almost unlimited possibility to move from the real world to alter-reality. In 2008 the author performed a short survey among 168 students in which she asked to decipher the abbreviation of Second Life, describe the game and give the name of their avatars. The survey showed that 92 know the game, 59 have an avatar, 48 play the game on a regular basis (they are living a Second Life) and 9 of them earn money in this alter-reality. 61 students regularly meet with other avatars and lead an extensive "social life". In 2007 a similar survey yielded significantly different results. In 2007 a number of articles were published in popular magazines concerning Second Life, which caused an increase in the SL popularity. Because of the high market sensitivity (linked to promotion) it can be stated that SL is still a novelty in the world of games. The popularity of Second Life is presented in Table 1.

Table 1. Results of research on the popularity of Second Life in 2007/2008

Year/number of students	Know the game	Have an avatar	Have meetings in SL	Are active in SL
2007/180	138	81	67	29
2008/168	92	59	48	9

In previous articles (concerning similar issues) the author addressed the problem of the influence of frequent "visits" to alternative realities, which may lead to personality changes, especially in the case of young people. At the end the following question should be asked: Where does the game end and real life begin, even if it is a "second life"?

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PART II

GAMES REVIEW

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THE NEW COMMONS GAME, ENERGYQUEST™ AND HEXAGON

Effective business and sustainable development
Gaming & simulations vs. ecological challenges

THE NEW COMMONS GAME

This is a game about sustainable development, combining individual goals with common wellness.

A strong and challenging experience:

- How to link economic growth with environment awareness?
- Is there any strategy that effectively combines current incomes with long-term development?
- Who should be responsible for the creation and implementation of mechanisms that protect common goods?

Game description

Number of participants

- 8–30

Course of the game

- Participants take roles of management boards of fishery companies operating on one lake.
- There are 12 companies on each lake (one company = one pair of participants).

- Game is run in rounds; in each round players choose (individually) strategies in order to achieve the best scores.
- The aim of the game is to earn as much as possible during the entire game.
- The game session is followed by a debriefing (sharing experiences, looking for similarities between the game and reality).

Duration

- 3,5–4 hours
- The game session: 2 hours
- The debriefing session: up to 2 hours

Technical requirements

- A room with tables
- Projector, screen

Aims of the program

- To raise the awareness of challenges and social traps related to managing common goods (lakes, air, rivers, rare species etc.).
- To raise the awareness of the importance of coordinated, common actions to be taken at all levels (company level, local level, national level, European level, etc.) in the field of ecology.
- To encourage the participants to take active part in inventing, implementing and promoting ecological behaviours.

Evaluation method

- Questionnaire

Target Group

- Public sector officers (local and national level politicians)
  How to manage common goods successfully?
- Businesses
  Is it possible to link short-term profits with sustainable development?
- Journalists
  How and why to inform society about ecological challenges?
- Not only youth
  What can I do to minimize my negative impact on the environment?

NCG uses simple and clear metaphors to illustrate the real challenges that we face in our everyday experience of managing common goods. Participants can easily and automatically translate experiences and lessons from the game into their own context.

ENERGYQUEST™

This is a business simulation about effective business and is based on the idea of sustainable development.

Mathematics and strong business logic is where measurable effects matter.

- Can ecology in business be profitable?
- How to optimise energy consumption in the company?
- Is it possible to generate important savings on energy?

Game description

Number of participants

- Min: 9
- Optimal: 18
- Max: 32

Course of the game

The participants are divided into a few teams, which represent the management boards of competing companies. Their aim is to build and implement a winning strategy for their companies. During the dynamic game they discuss several areas:

- Purchasing
- Production
- R&D
- Sale
- Marketing
- New market development
- Finance

In each of the fields players face challenges related to ecology and sustainable development (how to optimise energy consumption, asset management, long-term perspectives, ecological products on different markets).

Technical requirements

- A room with tables
- Projector, screen

Aims of the program

- To give the participants the possibility to look at their business from a wider, ecological perspective. Can ecology be profitable?
- To experience the long-term consequences of everyday decisions in various segments of the company. Their consequences on the company efficiency, and the natural and social environment.

- Internal team integration around the idea of sustainable development.
- A presentation of good practices, inspiring case studies.

Evaluation method

- Questionnaire

Target Groups

- Managers of various departments of a company.
- Employees of companies/institutions that implement programs/strategies for sustainable development.

HEXAGON

The HEX GAME is a strongly engaging experience of ruling a country with limited and hardly accessible resources. Disturbed communication, negotiations and crisis situations – these are the challenges faced by the rulers of Hexland. During the game players will experience:

- the relations between local and regional management
- effective teamwork in crisis situations
- setting priorities
- leadership
- resource allocation

The Hex Game is a universal, powerful metaphor of managing a multilevel organization with limited resources.

Game description

Number of participants

- 18–20

Course of the game

The goal of the game is to guarantee welfare in the ruled country.

- The participants are divided into teams, which represents authorities at different levels.
- A three level board representing the management hierarchy (local, regional and country level) is used in the game.
- The game is run in cycles/years.
- In each cycle local settlements produce various goods and services to be traded between each other.
- The participants of each level are given different resources, rights and responsibilities.

Technical requirements

- A room with tables
- Projector, screen

The participants will experience

- Managing different organizational levels (with the opportunity to change roles, pick a function different than the real one).
- Challenges that are typical for a multilevel structure.
- The role of cooperation (in terms of information management).
- The role of leadership (on every level).
- Creating and implementing a strategy in a situation of limited time and resources.
- Relations between all management levels.

Evaluation method

- Questionnaire

Target groups

The original version of the game has been used for years in various different contexts. As long as the emphasis lies on effective communication, coordination and the rational management of resources, the game can be used in:

- Business
- The public sector
- NGO's

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ENVOYS, VENEFICIUM

ENVOYS

The participants of the game are transferred to the reality of the year 1364.

The goal of the game is to obtain natural resources, **Tansy** plants (*Tanacetum vulgare*), which are essential in curing various common ills, which beset some castles. Each castle has its own cultivation of the mentioned plant, but the plantations are too small for the needs that arose. What can be done is to send envoys to do a reconnaissance of the area, while holding talks with the other princedoms or – what is also possible – preparing for warfare.

The game is meant to be played by 9 to 40 people. Players are divided into 3 to 8 teams. Each team comprises 3 to 5 participants.

The game is played in two rooms quite far from one another. One of them represents The Castle Hall. There are some castles in it and tansy grows around them. The second room is the Prince Hall. This is where all the princes live that are responsible for making decisions. They cannot communicate directly with the castellans that are in the Castle Hall. They have to do it through their envoys.

The game becomes truly attractive, when it is played in a real medieval castle rather than training halls. There is an option to engage knight brotherhoods to the game, which increases the attractiveness of

the game and it introduces additional training elements. Some knights then become the supporters of particular Princedoms, while the task of the others is to make it more difficult for them to achieve the purpose of the game.

The participants have the following benefits from playing the game:

- The scenario of the game enhances their involvement in the activity, which makes them very quickly forget about their daily roles in their organization. They simply become themselves showing their real behaviour and attitudes.
- They experience the processes that take place in business organizations. This is happening in the reality of the game, which seemingly has no resemblance to the contemporary business organizations. However, while discussing the game after it is finished, the participants themselves draw conclusions that the way the players behaved in the game is how they behave in their organizations. So it can be said that their organizations function in almost the same way as their team functioned during the game. By finding the solution to the goal of the game and through ways of achieving this goal they probably discover that they can improve their daily work in the company.
- They find out the negative impact of communication barriers on the functioning of the company. Removing any barrier, regarding subject matter (disruptions, their consequences and costs) as well as those "physical" ones, requires certain efforts so that the negative consequences of inadequate communication are avoided.

The game can be modified so that its essence best fits the subject of the given training.

Some topic proposals are described below.

STEREOTYPES

There is a string of conceptual stereotypes such as the one that if one can conquer castles and defend them it seems that conquering them is the key to success. Nothing could be more misleading, because each team needs a different part of the plant (flowers, roots, leaves, stalks), and thus a complete success can only be reached by way of common negotiations. On the other hand, in order to succeed the players have to foresee the moves and reactions of their contenders in given situations occurring in the course of the game.

COMMUNICATION

There is a number of ways of communicating here: verbal, non-verbal, written, body language. All types of communication barriers occur as a result. A typical situation that occurs at first is communication chaos. Additionally, the information passed on by the envoys, as can be seen

in the game of "Chinese whispers", is not always precise despite the sincere commitment of the game participants. The following rounds of the game teach more precise ways of posing questions and giving answers as well as an adequate interpretation of non-verbal messages, which are unconscious and we have to deal with them daily.

NEGOTIATIONS

Depending on the needs, the emphasis of the game can be based not so much on communication, but on negotiations. By limiting the role of the envoys (and communication barriers) the participants can practice various strategies and negotiation techniques, establish BATNA, challenge objections of the other side and build trust, aiming at achieving the goal of negotiation. The contenders have to be persuaded to cooperate and to draw common benefits, and the winners will be all the game participants.

SALES – COMMERCE

It is very easy to modify the game in order to give it a strictly commercial/sales character. It can be played individually, where each player has his own castle with a field where the plant grows (the envoy and informer are eliminated from this version), or in groups. The sales/commercial characteristic is achieved by introducing a price list for the particular parts of the plant and by instituting a commodity stock exchange. The prices will fluctuate depending on the supply and demand. By adding some elements related to the seasonal character of the commodity will create a reflection of the contemporary market (some commotion can be introduced by for example Venetian merchants importing a part of the commodity from China). The winner is the person (or team) that in the course of the game makes the most profit from sales or spends the least money on the purchase of the commodity.

The game is good for various purposes, such as:

- Team building (cooperation on team level or on the level of all participants that could seem to be contenders);
- Time management (introducing harsh time constraints on particular activities, which causes the necessity of task division, delegating tasks, making priorities, and setting long- mid- and short-term goals, as well as a practical application of particular rules of time management).

VENEFICIUM

The participants of the game are transferred to Medieval Times, to the year 1453, a year before the burghers' revolt that will be supported by the Polish king and that will begin the 13-year war. The "diplomatic and reconnaissance" war is already underway, with numerous assassinations occurring here and there. The goal of the game is to solve a crime that took place in one of the castles.

Introduction to the game

Excerpt from the introduction for the participants:

We are in September 1453, when the sides of the conflict prepare for the war. Although the intensive "diplomatic and reconnaissance" war is already in progress, nobody knows yet that on the 6th of February 1454 in the state of the Order of the Teutonic Knights of St Mary's Hospital in Jerusalem *(Latin:. Ordo fratrum domus hospitalis Sanctae Mariae Theutonicorum in Jerusalem),* commonly called The Teutonic Order, a revolt of the burgers will erupt, which will be supported by the Polish king. This will begin the 13-year war during which the Polish king will use the same tactics of lightening raids against the Teutonic Order as the Order did against the Polish Kingdom.

This is also the time of burgrave Lubomir Drogosławski, who through the marriage with Ludgarda is closely related to baron van der Borgh tot Verkvolde. Because of his Polish descent and German family connections, he enjoys the trust both of the Polish and Teutonic Order courts.

Burgrave Lubomir is guided by his own personal interest and expects huge profits and privileges if he provides secret information to the Polish nobility and to the Teutonic knights. Burgrave Lubomir Drogosławski rides all over the Polish Kingdom, Mazovia and the Teutonic Order State gathering information and accumulating great wealth of unimaginable proportion. However, one day, burgrave Lubomir Drogosławski disappears without a trace. After several months, Venetian merchants journeying the Amber Route find his body close to the Polish-Teutonic border. They assume that he was kept in the dungeon of one of the castles. However, his body shows no wounds, so they guess he must have been poisoned. They also find a ring on his finger with the family crest bearing the Latin inscription: *secreti mei cave (protect my secrets).*

Goal of the game

The task of the participant is to find the answer to the following questions:

- Who poisoned burgrave Lubomir Drogosławski?
- Which castle was he poisoned in?
- What poison was used?

Form of the game

The game has a very attractive background. Each team represents a historical figure that in the game is physically symbolised by a figure of a knight. The knight has to move over the territory of two states, visit castles (symbolised by models with photographs of real castles), and avoid fields with poisonous plants. The game requires having a big room/space.

To be able to make a move in the game, the participants have to use the wherewithal – the thalers. One possibility for the participants to gain this resourse, is to perform the tasks that are given to them between the rounds of the games and during the game as well as possible.

The tasks that the participants have to perform during the training can be used as an inspiration and the gained experience can be used for their own needs during internal training sessions.

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THE CHALLENGE OF EGYPT™

GAME DESCRIPTION

"The Challenge of Egypt™" simulation game is an intense one-day training to practice the basics of teamwork and project management. In the game the participants will encounter situations that could have happened during the building process of the Chufu pyramid. The participants work in a project team where they become historical figures of Pharaoh's court. Their task is to construct a huge pyramid for the Pharaoh himself and another small one for the Queen. While completing their tasks the participants will experience the advantages of methodical approaches towards project management. Success can only be achieved by team cooperation and effectiveness in project management organization.

"The Challenge of Egypt™" is a board game that uses special accessories. To prepare the game we need a room of at least 8 x 10 meters, equipped with a multimedia projector, screen and 2 flipcharts.

The goals of the training

- Teaching to manage a big long-term project that is dependent on the external environment and changes that occur in time. It is a practical training, realized in a real business environment.
- Introducing the organization of a structured project, the basis of staffing and giving assignments on the basis of the Prince2 approach.

It will lead to achieving the goals in time and according to the set out assumptions.
- Introducing methods for risk analysis and decisions with respect to corrective measures. Showing the essence of reporting and project evaluation according to the established standards.
- Improving the cooperation and communication skills of a project team.

Training description

The full training takes 8 hours (e.g. from 9:00 a.m. till 5:00 p.m.). It is conducted according to the following scheme:
- 09:00–10:00 beginning, game introduction and project organization
- 10:00–10:30 first three cycles of the game
- 10:30–10:45 coffee break
- 10:45–11:15 launching the project
- 11:15–12:30 simulation, 1st round
- 12:30–01:15 lunch
- 01:15–02:45 simulation, 2nd round
- 02:45–03:00 coffee break
- 03:00–04:00 simulation, 3rd round
- 04:00–04:30 simulation, 4th round (end of the project)
- 04:30–05:00 game review

In each round there will be time for

- the instructor to explain the tasks;
- simulation;
- recap and considerations after the simulation;
- discussion about the basis of project processing and its application.

During these four rounds of the game the most important features of methodical project management will be introduced and exercised. The players will experience them and participate in them. Their own actions have an impact on the game course. The simulation of the building process for a pyramid will let the participants recognize the methods of project management. Each of the participants will be given a unique role in the project management process. The group's goal is to construct a pyramid in a set out time frame. This process is influenced, as it would have been influenced in reality, by different events specific for those ancient times. At the end, when the pyramid is raised, the project will be evaluated and the participants will be given didactical instructions referring to the situations that have occurred during the game session.

Considerations throughout and after

Educational effects are achieved not only by means of the practical application of a chosen project management approach, but also thanks to

a recap that takes place after each round and at the end of the game. During these sessions the instructor will analyse the results and their reasons. The team decides whether there is a possibility to improve the chosen method of teamwork. They observe the impacts of their decisions and the importance of the issues such as effective priorities, project management and control, leadership and management style, team cooperation and communication.
The benefits for the participants can be divided into four groups:

Training effects that are the results of practice

- team building or improving the cooperation in the existing team;
- team communication;
- decision making under time pressure.

Cognitive effects that allow assessing the effectiveness of

- structured project organization;
- project management approach;
- change management;
- planning and time management;
- reporting and project evaluation according to the acknowledged standards.

Essential effects on account of delivered knowledge on

- the basis of methodical project management;
- risk analysis and decisions with respect to corrective measures;
- roles, tasks and rights of the project team members.

Side effects

- gaining basic knowledge on pyramid building;
- learning about the fascinating history of ancient Egypt.

After the training the employees will pay more attention to:
- risk recognition and analysis before taking actions;
- action planning in the context of possible events and circumstances;
- strategy planning with a clear role and task distribution;
- increasing self effectiveness in a project team;
- distinguishing project management form its technical realization.

Training evaluation

There is no competition in the training. All participants (8–14 people) make up one team that has to achieve a common goal. The game teaches in a practical way to manage a big long-term project that is dependent of the external environment and of changes that occur in time. It introduces the organization of a structured project, and the basis of assigning

roles, tasks and rights to the project team members. It shows that a project that is effectively managed according the methodology will make it possible to fulfil tasks in time and according to previously stated assumptions. It presents the methods of risk analysis and decision-making for the sake of corrective measures. It also shows the essence of reporting, project evaluation according to the established standards and it improves the cooperation and communication skills of a project team.

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APOLLO 13 – AN ITSM CASE EXPERIENCE™

GAME DESCRIPTION

The "Apollo 13 – an ITSM case experience™"" simulation game is an intense, one-day training in which through the use of an interactive game the participants learn the processes and concepts of service organization management. The training is based on the real course of events from the lunar-landing mission Apollo 13. The participants are working in a group where they become the staff of the launch control centre in Houston. Their mission is to bring the crippled spacecraft and its crew safely home. By doing so, they will learn and experience all the benefits of the best practice solutions in service management.

"Apollo 13 – an ITSM case experience™" is a board game that uses special accessories. To prepare the game we need a room of at least 8 × 10 meters, equipped with a multimedia projector, screen and 2 flipcharts.

TRAINING DESCRIPTION

The full training takes 8 hours (e.g. from 9:00 a.m. till 5:00 p.m.). It is conducted according to the following scheme:

09:00–09:30 A short introduction to the game and to the case of Apollo 13 mission.

09:30–11:00 **1st round – Build and launch.**

Phase: Service Strategy. Fundamental basics of service strategy; Financial aspects of the service; Strategy and organization; Strategy, tactics and actions.

Phase: Service Design. 5 aspects of designing; Service Catalogue Management; Service Level Management; Capacity Management; Availability management; Service Continuity Management; Information Security Management; Supplier Management.

Phase: Service transition: Transition planning and support; Change management; Configuration, Change and Service Resource Management; Release and Deployment Management; Service Validation and Testing; Service evaluation; Knowledge Management.

11:00–11:15 Break

11:15–12:45 **2nd round – Earth orbit and lunar approach.**

Phase: Service transition. Service Validation and Testing.

Phase: Service operation. Event Management; Incident Management; Request Fulfilment; Problem Management; Access Management; Operation in different life cycle processes.

Phase: Continual Service Improvement (CSI). The 7 steps of the improvement process.

12:45–01:30 Lunch

01:30–01:45 2nd round – recap.

01:45–03:00 **3rd round – Transearth coast.**

Phase: Service operation. Event Management; Incident Management; Request Fulfilment; Problem Management; Access Management; Operation in different life cycle processes.

Phase: Service transition. Change Management; Service Evaluation; Knowledge Management.

03:00–03:15 Break

03:15–03:30 3rd round – recap.

03:30–04:30 **4th round – Atmospheric re-entry and splashdown.**

Phase: Service Operation: Operation in different life cycle processes.

Phase: Service Strategy: Basics of service strategy; Financial aspects of the service; Strategy and organization; Strategy, tactics and actions.

04:30–05:00 Mission recap.

During the game the participants will first plan and organize the processes, then they will experience their effectiveness. Later on they will discuss and analyse the process course. Having reached the conclusions they will have a chance to correct and to repeat the whole cycle. Finally, transporting their conclusions from the game to their work life and their daily duties, they will be able to put them into practice. After each round there will be enough time for discussion, analysis and individual comments, so that the participants can better remember what they have learnt, and so that the knowledge can become coherent with their work experience.

The purpose of the training

- Showing the basis of service management in a dynamic customer-user environment. Better understanding of the processes and their influence on business continuity. Introducing the way a successfully managed process can improve the support department.
- Showing with the example of Apollo 13 how processes are interconnected and applied. Introducing the way processes can be improved by effective design and implementation.
- Understanding the importance of teamwork, good organizational decisions and human communication.
- Identifying the problems in organization on the basis of simulation. Creating an individual point of view on the possible improvements in the work environment.

The benefits for the participants can be divided into four groups:

Training effects that are the results of practice

- team building or improving the cooperation in the existing team;
- team communication;
- decision making under time pressure;
- change and project management;
- planning and time management.

Cognitive effects that allow assessing the effectiveness of

- service department operations;
- building an organization based on process management;
- knowledge management in the organization;
- best practices.

Essential effects on account of delivered knowledge on

- ITIL® V3 foundation (for the participants working in an IT environment);
- service life cycle and simultaneously occurring processes;
- roles and task of the process participants.

Side effects

- gaining basic knowledge on space-rocket construction and lunar mission;
- learning the history of an extremely interesting mission, Apollo 13.

After the training the employees will pay more attention to:

- prior definition of maximum results before setting the real goals;
- gathering and analysing data before taking action;
- action planning in the context of complex results;
- roles and tasks in strategy planning;
- increasing self effectiveness;
- distinguishing between activity and effectiveness at work.

Training evaluation

There is no competition in the training. All participants (8–14 people) make one team that has to achieve a common goal. The team will receive the NASA service strategy document and a Balanced Scorecard (BSC) representing the Service Level Agreements (SLAs) to be achieved. After each round they will have to report on their performance in relation to the service levels. The team must demonstrate that they can manage costs and risks and at the same time deliver performance and business value. Prior to each round, elements of the theory and their relation to the coming processes will be explained. At the end of each round the actual status of the Apollo 13 mission will be discussed and related to the applied processes, showing in how far the mission success was accomplished by the use of them.

Considerations throughout the mission

During each round the team will have to apply the Continual Service Improvement practices that aim at evaluating and improving the service quality as well as assuring their continuous fitting to the changing NASA expectations. At the beginning of each round the team has to decide upon their methods in relation to the strategic goals. In each round they have to enable data gathering. At the end of each round the teams will analyse the collected data and draw conclusions in order to identify the priorities and to choose the improvement actions. Every choice they make should be justified before the flight director who will be played by one of the group members.

Considerations after the mission

After the simulation the participants will discuss the achieved results, share their observations and experiences. They will review the failures

and successes gained during the mission. The participants will analyse the service management possibilities in comparison to the strategic resources letting NASA gain business values. They also have an opportunity to compare the game experience with their own work environment, as well as to identify the possibilities for service improvement in their own organization.

The game is designed for

- Service department employees, service department managers, process managers, team managers, and others who need to improve their working processes.
- Employees requiring more knowledge or experience of service and process management.
- Employees who have followed the ITIL® Foundation course and want to experience and exercise the processes in practice.
- Employees responsible for applying best practices or improving their own processes and procedures.
- Managers and employees wanting to see and experience the benefits of process-based ways of working.

The game is dedicated particularly to the IT department employees who apply ITIL® (**Information Technology Infrastructure Library**) best practices. The trainings for these groups refer directly to the indications of this paper.

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THE QUARTER – STRATEGIC MARKETING GAME

A BASIC DESCRIPTION OF THE GAME

"The Quarter" (pl. "Kwadrans") is a new Polish game that aims at improving the abilities of marketing staff in a most intensive way. This game is meant for employees who possess a vast supply of thematic knowledge as well as n experience in managing a product, a brand or a region of activity. However, the main purpose of the game is to perfect the capability of managing a brand in quickly and constantly changing conditions of the market. The character of the game and its course require engagement, an ability to make decisions in a flash, coordination of work in a team, adaptation of marketing-mix composition to the constantly modifying situation on the market and reactions to operations performed by competing firms. The ultimate aim of this game is to achieve the highest possible profit from the sales of a product on the market.

THE MARKET

The main task of a group is to place a new product on the market of a fictitious country, Fares. This country is divided into 6 regions: Caingom, Temeria, Lyria, Angren, Nazair and Mettita. Each of these regions has its own economic specificity that needs to be taken into consideration while planning the activities supporting the sale. The sale of the product can be carried out in 3 basic sections of the market: the section of retail sale (Tradesmen and Wholesale firms), the section of catering business and the institutional section (orders, institution auctions and supermarkets). The first task of the group is to analyse the situation

on the market in Fares and its regions. Then the group needs to plan and implement marketing projects supporting the sale. In a given region the group will organise a distribution network (by buying wholesale firms and employing tradesmen) and help the sale by using the ATL and BTL instruments available. The ATL activity can be realised with the use of the media of both Fares (TV stations, radio stations, daily papers, weekly and monthly magazines) and its regions (radio stations and daily papers). The BTL activities are planned on the basis of the offer of billboard companies, mailing etc. The support of the sale can also be achieved by so-called Events. The increase in the sales on the markets of Fares is achieved by gaining Co-called PEM (Points of Marketing Effectiveness), which are the results of the marketing activities of the groups. The PEM influence the results of the sales and are an important feature of market contribution in each of the regions. The Events are an independent element. A group can gain extra PEM or propose a plan on the occasion of a crisis or change the marketing-mix composition.

TECHNICAL ORGANIZATION OF THE GAME

A group that takes part in "The Quarter" has at its disposal a laptop with the Micon Marketing Consultants' software. The computer is used for the basic calculations of the group. It does not simulate a market. Every quarter of an hour a group has to deposit a result. The group has to take into consideration the suggested sale price, standing charges and floating costs as well as the level of sales, the level of marketing expenses and the PEM index achieved. At this moment each of the groups is using the so-called Marketing-Mix Optimisation, i.e. it searches for a kind of variant that will provide the best profit in a particular situation on the market. Having taken into consideration the results of the group, the actual results of sales and shares in the market can be presented.

RUNNING OF THE GAME

"The Quarter" is run by 5 trainers. Each of them has a different role to play:

- the ARBITRATOR: this person's task is to solve disputes between the groups. he plays the role of an independent judge and has the right to impose financial penalty, especially in the case of breaking the rules of The Regulations of the Game or making mistakes that can be disclosed in the so-called Control. The Arbitrator is an independent person and his/her decisions must be accepted by the groups.
- the ADVISOR: this person's task is to supervise the course of the game as well as to consult and train all groups.

- the BANKER: his/her role is to sale market data and media. This person also takes care of lending and takes over in the case of a bankruptcy. His/her task is also to collect the calculations of the groups and give information about the development of the sales on the market.
- the SPY: this person is not prescribed to any concrete group. The spy's task is to collect and supply information about the work of the competing groups. The Spy is not allowed to make any notes and that is why every piece of news needs to be communicated orally.
- the HR-MAN: his/her job is to manage the personnel of sales of each group (Tradesmen), to improve their skills as well as to manage fairs (it is only possible to gain tradesmen at a fair). The HR-MAN announces not only the beginning of a fair in a particular region but also the beginning of the instruction course that might be attended by tradesmen in order to improve their efficiency at work.

ORGANIZATION OF THE TIME OF THE GAME

The time of the game is presented on The Clock of the Game, which is obligatory for all participants of the game. The basic unit of time is a quarter of an hour of the actual time. During these 15 minutes every group must deliver their results. The game goes on without any pauses. Every hour is defined as a Round.

ESSENTIAL ASPECTS OF THE GAME

In the basic construction "The Quarter" differs from all previously known games of decision. The main assumptions of this game are based on the following elements:

- The improvement of group work, especially in the sphere of taking collective decisions and responding to the constantly changing situation on the market.
- The ability to make decision in particularly stressful situations, such as time restrictions. Also the intensity of the game may cause such situations.
- The improvement of the ability to organise the system of distribution and marketing projects supporting the sale of the product.
- The improvement of the ability to react to unpredictable situations that are an important part of our game.

The following elements might be considered as the main features of the game:

- The multiplicity of variants. This makes it difficult to predict the final result of the game as it depends mostly on the behaviour of a given firm (group) on the market. There are indeed no restrictions (except

for the one connected with the demand on the market, buying power etc.). That is why each group is different, since the strategies and the marketing conceptions realised by these groups might be very different from each other.

- The flexibility of the game. The basic rules of the game can be adapted to almost any product or service existing on a market, including such specific one as banks or tourist services, or business-to-business relations. It is enough to only change specific parameters connected with the cycle of existence of a product, specific distribution network or the characteristics of unpredictable situations appearing on the market. At the same time the basic rules of the game stay the same.
- The capability of adaptation. The game has a very high capability of adapting, for example, the development of existing product, which is perfect for training with concrete products. The country of Fares itself, as well as its regions, give a number of possibilities. The economic characteristics of the regions can be based on sociological conditions of the actual country or its regions This way, the characteristics of international groups can be based on the actual results of marketing tests and knowledge about the behaviour of clients.
- The variability of the game. Although the basic rules of the game are unchangeable, the leaders have the possibility to control and impose unpredictable situations or economic factors. Thus it is possible to simulate a crisis linked to the breakdown of the market, a bankruptcy of the media or absorption of the market. To make this happen leaders of the game have to be coordinated and a constant control of the situation on the market is necessary.

THE WORK OF A GROUP

Every quarter of an hour the group needs to search for an optimal variant of the interdependence of the sales of product, its floating costs, its standing charge, and the planned sale and marketing budget in order to achieve the best possible economic result. The dimensions of actual sales achieved in each of the regions depend on the following elements:

- The points achieved for the existing system of distribution (Points of Commercial Competence, PSH). In the case of, for example FMCG, the task of the group is to create and manage a system of distribution based on a typical trading network (wholesale firms, supermarkets, institutional orders, etc.) and to master the process of employment, training and the circulation of employees. The group can send a tradesman to training where he/she possesses, for example additional PSH. The tradesman can be promoted to a Key Account or Gastronome Manager, what will enable sales in other segments of the market. The maintenance of the tradesmen as well as the work

in the wholesale firm generate specific levels of charges (standing – in the case of wholesale firms, and floating – in the case of tradesmen).

- The achieved points for constructed and implemented marketing projects (Points of Marketing Effectiveness, PEM). In this case the basic rules of planning actions of ATL and BTL with the use of achieved tools and the media existing on the market are specified. At the same time each group has particular chances for using an optional tool of which the efficiency is individually specified.
- A precise competing situation on a particular market. For example, if in a particular region of Fares there already are 2 firms that possess high shares in the market, achieving high economic result by a third competitor will bind them to present a more effective and more substantial marketing project. It is convergent with the actual conditions of the market where the entering of a competitor into an already occupied segment of the market demands a stronger marketing support and is linked to a bigger risk. Analogically, segments of the market or regions in which there are no competitors allow for the usage of a typical 'skimming'. Market shares of competing firms in every region do not only depend on specific clear economic parameters, such as price flexibility, but mostly on the effectiveness of the distribution system and the power of the market resulting from the implemented marketing projects.

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MARKETPLACE BUSINESS SIMULATION

GAME DESCRIPTION

Web Marketplace is a state-of-the-art business simulator. It combines a powerful simulation model that has been constantly refined for more than 12 years, with the latest Internet technologies. It is an interactive computer based business simulation created by Innovative Learning Solutions, Knoxville US. Marketplace has benefited from 12 years of professional experience, the expertise of a dozen international faculties and business people, a team of expert software developers, and feedback from tens of thousands of students and executives. Marketplace is a superbly crafted learning tool that is both easy to use and very effective in developing high performance management skills. Innovative Learning Solutions, Inc. (ILS) administers and maintains the Marketplace business simulation.

The Marketplace simulation immerses the participants into a virtual business world. They build an entrepreneurial firm, experiment with their marketing and business strategies, while competing with other virtual companies. The incremental approach with frequent repetition allows participants to gradually absorb the entire complexity of the business process.

In Marketplace, players start up and run their own company. They deal with business fundamentals and the interplay between marketing, operations, finance, accounting, and team management. The participants

manage their virtual firm through several decision cycles. These cycles represent quarters in the life of their company. Repeatedly, they analyse the situation, plan a strategy and then execute it out into the future. Participants execute true-to-life business decisions. They work in teams with real time pressure and face great uncertainty from the outside environment and from their own decisions. As they repeatedly analyse their performance and revise their strategy, they internalise business concepts and ways of thinking.

Participants can log in to Web Marketplace from anywhere and at any time. The Virtual Team feature allows the team members to access team data over the Internet from different locations simultaneously. The Web Marketplace users are not limited to using Windows operating systems. Web Marketplace runs on any computer with a common Internet browser, regardless of its operating system.

DESCRIPTION OF THE COURSE/TRAINING BASED ON THE GAME

Owing to the elasticity of decision processing it is possible to schedule classes depending on the educational goals. Two formats are available: an intensive short course conducted in the computer lab and a multiweek Internet delivered course. The total duration of the course depends on the chosen version of the simulation (6 to 12 quarters/decision periods).

Marketplace can be used at all levels within an organization and at many college faculties connected with management, marketing and economics. Courses can be designed to accommodate large number of participants regarding the fundamentals of business or the principles of marketing. More advanced courses can be designed to teach advanced marketing management or integrated business management to leaders and managers. The flexible design of Marketplace allows for customisation to the strategic objectives of the organization and to the teaching goals of the educational institution.

COURSE/TRAINING OBJECTIVES

The Marketplace simulation enables participants to see and feel the financial implications of their business decisions. This is accomplished by linking each decision to the firm's cash flow and financial performance. The participants' ability to make better decisions in the next round of decision-making depends upon the cash flows and profits generated in the current round. This results in greater financial accountability. The learning occurs because the cause and effect relationships become crystal clear.

The simulation is designed so that focusing only on financial performance is not enough. Success lies in attracting customers and keeping their business. Participants must satisfy customers in an environment where the competition is continually trying to do a better job. Thus, the delivery of customer satisfaction becomes a dynamic goal.

The virtual business environment stimulates the competitive spirit. This competitive excitement is infectious. Most importantly, it drives the learning. The focus is on outsmarting the competitors in a friendly competitive game. Learning takes place as a necessity to master the game and to perform better than the other teams.

KEY BENEFITS FOR PARTICIPANTS

In Marketplace, participants gain tremendous business experience by making real business decisions. Time is compressed and the product life cycle is accelerated. The players are immersed in the management of business.

BENEFITS FOR EDUCATIONAL INSTITUTIONS

The Web Marketplace business simulation allows students to apply the newly acquired theoretical knowledge in a simulated business world. As the students make realistic business decisions and analyse the results of their actions, the important business principles will become a part of their natural thinking. While bringing more excitement to the classroom, the realistic experiential learning delivered by Web Marketplace can greatly increase the learning retention rate of the students.

Over the course of the entire exercise, the players' understanding of the connections among the functional areas of business grows at an exponential rate.

Marketplace simulations range from simpler marketing games for introductory courses on the undergraduate level, to mid-level games for the capstone marketing strategy or new venture courses, to complex games designed for integrative courses on undergraduate, MBA and EMBA levels.

The instructors have instant access to students' assignments. With the password they can monitor their progress online. Instructors can view their students' decisions at any time, even before they are finalized. They can trace the activity of every single student within each decision period, and throughout the entire exercise. Web Marketplace prepares a variety of reports and graphs. These are designed specifically to help recognize the stronger and weaker points of the students so that the instructors can coach them accordingly.

BENEFITS FOR BUSINESS CUSTOMERS

In the Marketplace exercise, functional silos do not exist. The Marketplace firm is small enough for everyone to pitch in and help each other. The marketing manager sits next to the operations manager who sits next to the finance manager. Each manager provides input into the decisions of the others. This clarifies the linkages between functional areas. The outcome is that participants see how their decisions can affect the performance of others and the organization as a whole.

The simulation may put each manager in the other one's shoes. Therefore they are able to see more clearly the connections among all the functional areas of business. They understand the whole business enterprise better. Marketplace teams are purposely formed to cut across functions and locations. The intensive learning experience and friendly rivalry among the competing teams create tremendous camaraderie among the players. Their common experience binds them together in new ways and, as a result, new channels of communication are formed within the sponsoring firm.

The Marketplace simulation may also serve as a recruitment tool. The employer can check the skills of individual candidates for a given post in a selected area, e.g. the ability of single-handed decision making, teamwork, working under time pressure and so on.

FORM OF THE COURSE/TRAINING EVALUATION AND METHOD

An integral part of the Marketplace simulation is the evaluation survey, which the participants fill in after the last decision period. Each participant may express their opinion regarding both the simulation and the training conducted with its use.

CLOSING REMARKS

With several difficulty levels covering various decision areas, the Marketplace simulations are targeted at a very wide group of educational and commercial users. Used by over 300 business schools and 180 corporations in 35 countries worldwide, Marketplace delivers a realistic hands-on learning experience. The Marketplace simulation is used by over 1,500 instructors all over the world, in six language versions. Dozens of thousands of students worldwide benefit from classes based on this simulation – including several thousands of Polish students. Marketplace has been adopted by more than a hundred business schools around the world

Marketplace has also been instrumental in the management development programs of Procter & Gamble, IBM, SmithKline Beecham Pharm., FedEx, Polkomtel and many other corporations.

The most appreciated advantages of the Marketplace Business Simulation Game are the following:

- A wide spectrum of applications owing to many difficulty levels of the simulation. The Marketplace Processing Center sets up the simulation game according to the instructor's specifications and then handles the game administration.
- Intuitive software. The step-by-step directions guide the users through the tasks they need to complete within each decision period.
- Low prices. There are special offers for educational partners.
- The simulation is available 24 hours a day, 7 days a week over the Internet.
- Dependability of the system.
- Easy and objective monitoring of work input of individual participants.
- Round-the-clock technical support.

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BLUE OCEAN STRATEGY SIMULATION (BOSS)

GAME DESCRIPTION

The Blue Ocean Strategy Simulation was created with the cooperation of professor Chan Kim and Renee Mouborgne, the creators of "Blue ocean Strategy (BOS)" and the StratX team, the leading education company providing courses and trainings for most of Fortune's 500 list. As a result of this collaboration the BOSS game was developed. This excellent support of didactic materials can be used as a part of courses for private organizations as well as for business schools.

"The simulation is based on a real industry, which is the electronic games console industry. The simulation involves students assuming the role of the Executive Team of a company that designs and manufactures video game consoles. The company has three major competitors who are aggressive in pursuing a market share". Players are supposed to create unique strategies breaking regular industry barriers and structures. "The industry is in a slow decline in terms of sales, and potentially, profitability". Simulation requires strategic decisions in developing high

value, low cost Service and Delivery offerings. Consequently, the players have an opportunity to achieve market success based on the BOS rules.

The simulation involves teams of 3 up to 5 students. It is played in 2 up to 4 rounds. The StratX's experience in designing computer simulations allowed for creating a friendly virtual environment, allowing players to obtain and analyse data easily. Moreover, it allows for a simple visual decision-making process, based on the BOS tools.

COURSE DETAILS

Main goal

The main purpose of this training is to develop skills allowing to "apply BOS principles based on the information provided (…) within the simulation as well as on general business acumen" of participants". As a result, the players have the opportunity to better understand the BOS logics. Moreover, they can acquire skills and practical experience through applying key tools and techniques, which are at the heart of the Blue Ocean Strategy.

Benefits

The participants of the BOSS training do not only better understand the Blue Ocean Strategy concept, but the simulation also allows for:

- "increased motivation and involvement of participants;
- learning from feedback;
- a healthy sense of inter-team competition and within a team;
- team building and improved group decision-making".

Training evaluation

Each team will be evaluated in tearms of individual results and performance. Thanks to an automated freedback generator, the debriefing sessions after every 4 rounds and the assessment of results, the participants will have an opportunity to assess their own results and evaluate different strategies based on the Blue Ocean theory.

Time schedule

BOSS is a flexible simulation that allows to organize the game in 2 up to 4 rounds. During each round the participants have to take from 6 to 9 managerial decisions, and develop a strategy in a virtual time period of 8 years. The simulation can be played in 2 up to 4 days or can be spread over time during a semester or a different time period.

Round	Activity	Place	Time
Red	Pre-Reading: BOSS Handbook & Introduction to Round Red	online	30’
	Introduction to Round Red + Organization of teams	Class	1h00’
	BOSS Session – Round Red – Instructor available for consultation	Workgroups	2h00’
Blue-1	Pre-Reading: Introduction to Round Blue-1	online	30’
	Debriefing of the previous Round results Introduction to BOS Theory & Introduction to Round Blue-1	Class	1h15’
	BOSS Session – Round Blue-1 Instructor available for consultation	Workgroups	2h00’
Blue-2	Pre-Reading: Introduction to Round Blue-2	online	30’
	Debriefing of the previous Round results Introduction to Round Blue-2	Class	1h00’
	BOSS Session – Round Blue-2 Instructor available for consultation	Workgroups	1h00’
Blue-3	Pre-Reading: Introduction to Round Blue-3	online	30’
	Debriefing of the previous Round results Introduction to Round Blue-3	Class	1h00’
	BOSS Session – Round Blue-3 Instructor available for consultation	Workgroups	2h00’
	BOSS Conclusion and Final Debriefing	Class	1h00’

Participants

Participants are divided in groups of 3 or 4. Because they do not directly compete against each other, the number of groups is limited by the availability of space and instructors only. An experienced instructor can successfully work with 5–6 teams, so groups of 25 and more require an additional instructor. As mentioned earlier, groups compete against the computer in their own games, but their decisions and results can be compared easily and this will give them an additional element of competition, although an indirect one.

Technology

The game is computer based and requires pre-installation of the simulation software on one or two computers per team. All computers used for simulation purposes have to be connected to the Internet, although data transfer is not essential.

SUMMARY

BOSS has specifically been designed for the use:

- "in the latter part of a course on business strategy;
- in more advanced business strategy courses;
- for management training and development;
- in general management executive programs".

"In any of these courses, BOSS can be used in conjunction with lectures, readings and case studies, or by itself". It is not only a perfect extension of teaching materials, but it also allows for gaining experiences and abilities from strategy implementation in practice. Large organizations where teams are usually distributed globally have the opportunity to compete with each other and develop individual strategic skills and techniques.

CREDITS

BOSS description was based on the Instructors Guidelines and participants manual thanks to the courtesy of the StratX company from Paris.

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MARZIPAN HOUSE CO

The author has created a course on FINANCIAL MARKETS, in which the game serves as a corner stone.

GAME DESCRIPTION

Aim of the game

Understanding crucial decisions in a Joint-Stock Company and Financial Market

Task of each participant

To gain profit above the risk-free rate.

Situation

Founders of a LLC observe that their new commodity has perfect prospects. The first profit is at sight. It is necessary to increase output dramatically by investing lump LVL 50,000. The LLC is transformed into a Joint-Stock Company. Shares emission is planned to secure the controlling block for core shareholders. The initiative group prepared a business plan for the Prospectus. The plan takes typical risks of the first years into account.

The plan is so optimal that an attempt to invest each LVL 1,000 (lump sum) above the plan (max 3,000) results next year in a 10% increment in net profits shown in the table. An investment below the planned volume results in a double drop of the net profit next year.

The development of a new commodity can be started. It demands a lump investment of LVL 10,000 and will last two years, bringing LVL 3,800 in the 3rd year, 4,800, etc., if additional investments are done in a 8-year cycle, as is shown in the table.

Servicing of only one bonds issue per year is allowed.

Year	Additional Investment		Net Profit Forecast	
	LVL	% growth	LVL	% growth
1	50,000		3,800	
2	2,000		4,800	26
3	3,000	50	6,800	41
4	4,000	33	10,200	50
5	5,000	25	13,800	35
6	6,000	20	15,100	10
7	4,000	–33	13,000	–14
8	3,000	–25	12,000	–9
9	2,000	–33	10,000	–16

Players

- Chairman of the board of directors. Makes the annual profit and strategy of the company public. Owns 64 ordinary (common) shares. Non-resident.
- Financial director. Annually defends the business plan. Owns 53 ord. shares. Resident.
- Friend of the Chairman. Lives fast. Not greedy. Owns 48 ord. shares. Non-resident.
- Marketing director. Manages the life cycles of goods. Owns 36 ord. shares. Resident.
- Rival of the Chairman. Strives to take over the management. Owns 100 ord. shares. Non-resident.
- Ally of the Rival. Votes counting commission chairman. Owns 99 ord. shares. Resident.
- Useful persons. Own preferred shares. No voting right. Residents and non-residents.
- Broker. Fulfils sell/buy orders (min lot is ½ of a minimal block), reports to the depositary and earns his living by charging fees (5% of each transaction).
- Analyst-pessimist. Recommendations to investors based on P, E, BV, P/E, P/BV.
- Journalist. Coverage of scandals. Independent research and forecast of P.
- Head of Central Bank. Announces the risk free rate following or counteracting the conjuncture. Controls reserves. Evaluates collaterals.
- Potential investors. Write buy/sell orders to the broker. Each owns LVL 10,000 cash. Residents.

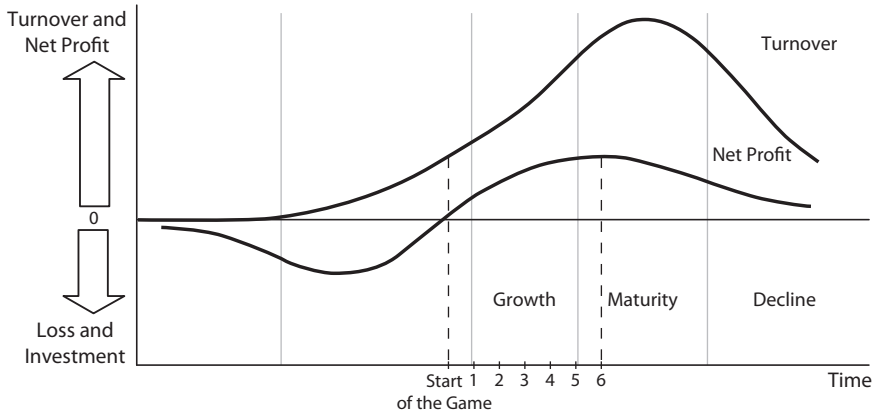

Figure 1. Turnover and Net Profit by Stages of the Life Cycle of a Commodity[1]

If nobody sells his/her stock after the second year, the moderator tells who must sell half due to family circumstances. All deals go through the broker.

The International Business Game ***Marzipan House Co*** implements logics of running a Joint-Stock Company from grounding to liquidation. The automated input of data, scheming of decision-making through categorized input screen, as well as the visualisation of net profit distribution elements secure the optimisation of financial policy of the Board of the virtual Joint-Stock Company. Drill-down reports help to keep an eye on multifaceted results of every year of the functioning of the company. Interaction with the user via input fields, buttons, tabs and query messages facilitates vivid discussions. The stockholders list is changeable. Individual performance of stockholders (preference and ordinary shareholders) is memorized. It is user friendly.

BENEFITS FOR THE PARTICIPANTS

The International Business Game ***Marzipan House Co*** implements logics of running a Joint-Stock Company from grounding to liquidation. The participants benefit in four major areas:

- they obtain skills in running a Joint-Stock Company by a team that issues three types of securities, which are preferred shares, ordinary shares and coupon bonds;
- they understand and make analytical use of the ten basic financial indicators of a Joint-Stock Company, including Earning per share (E), Price of a share (P), Book-value of a share (BV), P/E, P/BV, Capitalization, etc;

[1] Please, note the **starting point** of the game and the end of the **first** year.

- they discover financial market phenomena, such as liquidity of a security, risk assessment, the psychological factor, comparison of financial instruments as investment opportunities, etc;
- and they create a basis for understanding the issue of derivatives, such as warrants and options.

The participants choose one of the 14 roles and cooperate/collide with other participants.

The individual performance of stockholders (preference and ordinary shareholders) is memorized. The stockholders list is changeable. The automated input of data, scheming of decision-making through categorized input screen, as well as the visualisation of net profit distribution elements secure the optimisation of financial policy of the Board of the virtual Joint-Stock Company. Drill-down reports help to keep an eye on multifaceted results of every year of functioning of the company. Interaction with the user via input fields, buttons, tabs and query messages facilitates vivid discussions. It is user friendly.

The visualization of data in graphic form facilitates the analysis and substantiation of the decisions of the participants. There is multi-screen application used during shared sessions.

Thanks to the multiple language support (EN, LV, RU, D) languages can be added without additional programming and the participants can switch to the preferred language.

The moderator can create and save the desired number of Joint-Stock Companies, and create competition among groups. A break in the game is possible when desired.

The possibility of automatic verification of home assignments helps the moderator/teacher to mark the work of participants/students.

The game itself is very interesting and also raises the problems of the value of economic simulation, the effectiveness of courses based on such games, the psychology and ethics in gaming. It also enables consulting the founders of a Joint-Stock Company, social dialogue and conflict solving.

TECHNICAL NOTES

Web technologies

JavaScript
CSS (Cascading Stylesheets)
HTML (Hypertext Markup Language)
HTC (HTML Components)
HTA (HTML Application)
XML (Extended Markup Language) (optionally using XPath)
XYGraph v2.3 (http://www.structura.info/XYGraph/Technical.htm)
VML (Vector Markup Language)

The program uses its own database based on XML technology, manipulates online with user-entered data, generates reports from entered inputs, prints calculated values, and stores current situations in a file. The visualization of data in graphic form facilitates the analysis and substantiation of the decisions of participants. The program supports a reasonable, but practically unlimited amount of data.

There is multi-screen application used during shared session.

Thanks to the multiple language support (EN, LV, RU, D) languages can be added without additional programming.

Several simultaneous games are supported. The moderator can create and delete the desired number of Joint-Stock Companies, and create competition among groups.

There is a feature for exporting data to data storage devices and to Internet users. The program is portable and does not require installation.

The possibility of automatic verification of home assignments helps the moderator/teacher to mark the work of participants/students.

The program requires Internet Explorer Version 5 or later.

TEACHING NOTE TO THE GAME "JOINT-STOCK COMPANY MH: LEADER'S DILEMMAS"

Introduction

Although the game gives an insight into the challenges of grounding, running and liquidating a company, neither teaching nor studying of this case require a specialised economic background.

In order for the case to be less of a mathematical exercise, the quantitative values of all problems discussed have been loaded on a computer, converted into schemes, tables and charts and supported by statistics and cases of the Latvian and global stock market. Calculations are in the currency determined by the participants of the game.

The model of the market refers to the beginnings of the second millennium and it would be recommended not to reveal the current situation (the one of 2008) until the final episodes of discussion, in order not to influence the possible outcome. Riga Stock Exchange has an English version of their website at www.rfb.lv and it could be useful for the students to visit the website to have a better understanding of the problem.

This case is focused on dilemmas every participant has to solve and on major decisions that can influence the future of a company. Making the correct decisions would mean a breakthrough in the results and a winning place, but there are numerous unknown factors regarding running of the company. The key discussion is about the categories that are related to **re-investment of the net profit** and **dividend policy**, and **quotation of preferred and ordinary shares and business**

ethics. The game actually allows discussing these dilemmas, quantifying them and makes students arrive to a concrete and measurable solution.

The discussion can be quite stressful since it is related to a possible clash between short-term and long-term policies regarding these issues, as well as a clash of private interests. However, there are exact decisions that have to be made and that can lead to serious consequences. The situation is very sensitive since the virtual reality of the game illustrates logics of decisions connected to social responsibility items, investment of effort and resources in projects of importance.

Formally, the dilemmas discussed have to be solved by the Board of Directors. However, the discussion should be encouraged on the importance of the Chairman's personality. Since he/she is the co-owner of a company and by understanding his style of management, one may arrive to the conclusion that his vote has somewhat more weight than the votes of other Board members, to say nothing of the minor shareholders.

Since the case contains a lot of information and data, it would be useful to break down the discussion into blocks.

First of all, the discussion on issues and the goal of the exercise should be initiated. Although the game allows discussions in a number of areas related to the financial market in general and the situation of the case company in particular, the teacher might wish to focus the discussion on the following problems and goals:

Issues

- Principles of joint stock, grounding, running and liquidating of MH – many unknowns.
- Evaluation of socially relevant issues: creation of a joint-stock and elaborating decisions on re-investment and dividends that lead to certain evaluation of the shares by financial market. These factors do have a price in this case.
- The need to earn above the risk-free rate.
- Identification of fair price of MH ordinary and preferred shares.
- Dilemmas of relevant issues and possible action of case company and participants of the financial market.
- Relationship of the Board and the minority shareholders in these discussions.

The Pre-game period presupposes the explanation of the theory of joint-stock by the lecturer and homework by students on the basis of ***Handout block 1***. Past experience shows that by far not every student prepares for the game at home.

The Game period starts with filling in formats (database) in the computer as a result of explanation of the categories by joint efforts of the best students and the teacher. By doing so, all the students are prepared for the active phase of the game and everyone gets a role.

The active phase consists in elaborating decisions and tracing their consequences year after year, guided by the software of the author. The software allows re-playing key episodes, as well as making breaks and returning to the game later.

The Post-game period crystallizes the knowledge and gives basis for marking every student.

Later the teacher uses the episodes of the game in other topics of the course.

Goal of the exercise

- Gain knowledge on the theory of the financial market, supported by practical experience of elaborated decisions by key players of the market.

Once the terms of the game are represented and the necessary database is filled in, one of the ways to start the discussion is to ask the students:

What is your share price as a result of the 1st year of MH operations?

The case contains sufficient information for calculating and evaluating the price of an **ordinary share**.

If the students manage to name the price, they may be challenged and asked about the details on how they have arrived to it.

For example, if students suggest to value ordinary share above the nominal, the teacher might point out the risk of default on a credit in which a block of shares is used as collateral. The prospect of a financial crash of the creditor and a public scandal if this occurs makes students understand the drop in value of an ordinary share.

If the students suggest the lower mark-up option, the discussant could stress the risk of unforeseen costs and financial risks in general. Financial guarantees might require arranging the evaluation of shares from the bank.

If the students do not allocate the info-resources for the evaluation, the teacher delays in-depth discussion until the participants are ready for discovering the formula. Students could be given similar challenges regarding other elements constituting the price.

In order to be able to come to a somewhat common view of the issues of the case, it would be useful to discuss a number of dimensions of the case.

Dimension I: background information

Joint-Stock in Latvia

- The discussion would be pointless and unrealistic if one would ignore the “perfectly correct” approach to the relevant problems. During the discussion on Joint-Stock in Latvia, it should become clear that

at given circumstances a local company willing to violate rules and conditions would cease to exist.

The audience should understand the minimal statutory fund requirement, the obligatory reserve formation, the limitation of the non-voting preferred stock, the limitation of emission of bonds, the difference between preferred and ordinary stock in terms of dividends, the voting rights and liquidation quota. For an initiative group who would like to achieve remarkable results there is a need to start a business in compliance with the rules of the game.

Controlling block and minority shareholders

- Understanding the size of the controlling block is crucial for the success in the game. If the almost 50% block of voting shares that are in the hands of a prominent minority shareholder does not let him influence the decisions of the general meeting, all the participants start to take the issue seriously.

It is also a challenge to understand the shareholder's perspective. Even being an international investor and following corporate norms and rules, the minority shareholder suffers illiquidity of his shares, loss of value, and absence of dividends.

Dividend vs. Retained Profit

- The discussion could be initiated with the major topic of maximisation of the development efforts vs. the inclination to pay our dividends to ordinary shareholders. It is retained profit of the first two years that provides for additional investment in years 3 and 4, leading in turn to the pool of profit that suffices to service the bonds and successfully retire bonds (buy them out) in year 5.

Otherwise the company faces a lack of cash for the fulfilment of the investment program and ends with halving the net profit in the 6th year. The ability of the Board to resist pressure in favour of dividends to ordinary shareholders in the years 1–5, as well as the determination to use funding from bonds issue at the first opportunity in year 3, proves to be a crucial success factor. Besides the other qualities, the following could be stressed: professionalism, ethics, publicity, and the ability to get approvals from the stakeholders.

MH has all the preconditions to become a market leader and the new goods announced could help it on its way in achieving this position.

Risk-free interest rate

- What is it?
- How is attractiveness of a preferred and ordinary share dependent on the risk-free rate?
- What is the dynamics of a risk-free-rate?

A risk-free rate is shown in the game as a major element of the financial market. It is represented as the rate of interest on deposits in the first-class bank. It provides a benchmark for other earnings. Participants of the game can take a next step and calculate their risk premium.

The attractiveness of a preferred and ordinary share is strongly dependent on the risk-free rate. In fact, 7.5% dividend promised to the preferred stockholders proves to be attractive in the 1st year, against a 6% risk-free rate and very disappointing in the 4th and especially 5th year 9–10% risk-free rates. A ***no-dividend policy*** to ordinary shareholders in the first years undermines the quotations dramatically.

The dynamics of the risk-free rate is taken from the published chart of the US Fed funds rates of interest of 1987–2008. The chart can be found in handout No. 8. Each participant should have such a handout. Our previous experience proves that usually the chart is not considered in depth by the students on the eve of the game. So they cannot guess the skyrocketing dynamics of the rate going from 6 to 10% and then dropping to 1%, which is employed in the game. Some accuse the software author of being unrealistic in an attempt to justify their own mistakes. The moderator must keep cool. At some final stage of the game the teacher draws general attention to the chart proving that the game reflects reality and cuts the positions of dissidents in the eyes of the group.

Management of bonds issue

- Why bonds issue?
- Who makes the decision at the company?
- What terms are crucial for the issue of bonds?
- What is the successful retirement of bonds?

Bonds are issued to finance the elaboration of the new product that can raise the sales and net profit of MH. According to the rules of the game, a lump sum of €10,000 is to be invested to start earning €3,800, 4,800 etc. net profit in the third, fourth etc. year.

The marketing director together with the financial director are expected to come to an understanding of the need of external funding after two years of running the company. In the 3rd year the computer asks the question "Will you issue bonds?", which sounds quite unexpected at first. In many groups the Board is so overburdened with current decision-making in the first and second years that the reaction is negative.

In the groups where the leaders are capable of grasping the idea despite the stress, the bonds issue is adopted immediately in the 3rd year and correspondingly €3,800 is added to the net profit in the 6th year, which helps to positively modify the net profit curve of MH.

The coupon rate constitutes an additional problem. The risk premium of the bond proves to be psychologically dependent of the painful

experience of the preferred stockholders. As a result, the first bonds are issued with a disproportionably high coupon.

A successful retirement of bonds means the company can buy out the bonds at maturity and pay the last coupon without sacrificing investment and dividends. Technically, this demands sufficient retained profit and moderate dividends in the previous year.

Dimension II: Shareholder and investor criteria

Earnings per share E

- Who are shareholders?
- How are they going to earn money?
- What are their chances?

Earnings per share are easy to calculate. The only difficulty is to decide whether all or just the ordinary shares are to be taken into account.

Price-to-Earning Ratio P/E

- What figures are related?
- How are they interpreted?
- What activity can be substantiated by the P/E dynamics?

The case contains the information necessary to understand that dividing P (current market price) over E (earnings per share) creates an important indicator, namely the number of years after which the investment in the share breaks even. The teacher must explain that P/E is only one in a set of indicators. It is a rather optimistic indicator, since all of the net profit can never be distributed as dividends. A chart is attached (See Appendix 1 to Teaching Note) with the possibility to compare it with a number of other charts.

The outcome of the simulation that would take place during the Board Meeting and the GM of shareholders would be highly appreciated if students manage to produce their own version of this simulation and justify their proposal. The exact information on the prices of shares is not available. However, the approximate order of the price levels can be estimated with high probability.

Price-to-Book Ratio P/BV

- What are the main factors that divorce P from BV?
- What if P/BV equals 1?
- What if P/BV is above 1 or below 1?
- How reliable is the indicator for decision making in the financial market?

On the one hand, BV stems from the audited Report of the company and should be trusted. On the other hand, the participants of the

financial market never take the figure for granted. The solution of this contradiction lies in a deep analysis and interpretation of both P and BV and their interrelation against a wider background of the financial market.

Dimension III: Leader's dilemmas

The management of MH faces a number of dilemmas. Inappropriate solving of some of them may lead to negative consequences. What would be the Leader's viewpoint on each of them? Some examples of questions to be discussed are suggested below.

Dividend-oriented policy

- To what level should we arrange payment of dividends to preferred shareholders?
- Should we allocate cash for ordinary dividends in the first year period?
- What are the risks if we spend too much on dividends?
- What is the range of increase related to dividends?

In the case of preferred dividends, the Board and the GM tend to exploit the trap in which the initial owners of the preferred stock find themselves at the beginning of the game under growing risk-free rate. Only after the break of the risk-free rate dynamics can the holders of preferred shares enjoy positive risk premium.

Abstractly speaking, ordinary dividends are possible from the 1st year. But according to the theory, this can only crash quotations, since the market takes such news with great suspicion and usually treats dividend payment as pumping cash out of the company. The model demonstrates this very clearly in the 1st and the 2nd years: ordinary stock quotation goes down if any positive dividend to ordinary shareholders is decided.

In the game the ordinary dividend should be 0 until the company honours the first bonds. For example, a mere €1 dividend to ordinary share in the 5th year prevents two steps in the re-investment flow and cuts net profit of the 6th year by €1,510, which can be sued by ordinary shareholders who are deprived of €1,510 or €3,775 dividend per share in the 6th year!

It is necessary to elaborate the growing dividend policy, which is most favourable for a stable growth of quotations.

Maximisation of the value of the Company

- Should we arrange a maximization of the value of the company?
- Can we use investment, reserve and dividend policies?
- Is it visible to the public?
- Does it involve risk of bankruptcy?

Yes! And company value maximisation depends, among other factors, on a correct policy of the Board supported by the GM. For example, net profit plus retained profit of the previous year is sufficient in the 9th year to satisfy claims of all stakeholders and to complete obligatory reserve accumulation. This is highly appreciated by the market. The capitalisation of ordinary shares makes a jump, which is visible to the public. An obligatory reserve (although only one-third of the Statutory capital) diminishes the risk of bankruptcy.

Liquidation

- What are the risks if we go into liquidation?
- Does it involve risks of ungrounded claims?
- What is the sequence of claim honouring?

The liquidation procedure involves high costs, such as payment to the liquidator and his team, a loss of book value through the urgent sale of plant, raw materials, etc., in order to turn property into cash. Ungrounded claims emerge through forgery, plot, etc. Usually, a bankrupt has not paid taxes, penalties, etc. to the state. The state, employees, and creditors like banks start the line of claimers. After that bondholders must get unpaid interest and nominal value of their bonds. The rest is claimed by the shareholders - the first preferred shareholders.

Liquidation quota

- Should we arrange the quota above the nominal?
- What are the differences in claims?
- What are the risks involved in each of these cases?

If the cash remaining after honouring the claims of non-owners is above the statutory capital, the liquidation quota for the preferred and ordinary share gets the same. Every co-owner gets cash per share above the nominal. Otherwise, the preferred shareholders get the nominal value and the ordinary shareholders the residual claim. For an ordinary shareholder there is the highest risk of loosing 100% of the invested sum.

Reports of the participants

- **Reports are to be prepared by each participant and defended in the group**

Liquidation software includes a record of interests and dividends accumulated on the accounts of each participant. It should be shown to the participants, but after they submit their reports (in order to disclose miscalculations). It is advisable to honour the participants with special merits, not only the one with the greatest increase of the starting €10,000, but also the broker, the best speculator, analyst, minority shareholder, etc. Some students prove to be very inventive in pursuing their aims during the game, which is to be remunerated as well.

Dimension IV: Board meeting of the 29th of September 2008 (date of the game in the class)

Although the social dilemmas are discussed throughout the case, the Board meeting or GM should actually serve as a final point for solving the case. The opinions of the Leader are extremely important, but a formal agreement of the Board has to be achieved. To continue, or to liquidate the joint-stock company? Is the liquidation quota sufficient to satisfy the holders of the controlling block of shares? As stated in the introduction, the goal of the exercise has to be achieved as a result of a simulation of discussions that take place at a Board Meeting.

What is the agenda of this Board Meeting?

What would be the viewpoint of the Board Chairman?

Would other Members of the Board have different opinions on some of the issues?

What is the agreed dividend policy?

How is the discussion likely to happen in the General Meeting?

CONCLUSION

MH board won the game. It managed to match the criteria of the financial market and to offer growing value of the company (through capitalization of shares). During the process of running the company it experienced some investment problems, but managed to finalize the project successfully. The MH board secured a better growth of personal money of the participants who invested in the MH shares.

In 2008, the financial market in Latvia is experiencing the changes as a result of the factors disclosed in the game. However, MH has ensured a stable position among the leaders and continues implementing high value projects. One of the companies listed in the Riga Stock Exchange – *Kaija* – is bankrupt. A lack of professional ethics and unjustified dividend payments were noted by experts as the main reasons for this failure. In general, the E and P/E levels established by MH are consistent with those of companies listed in the RSE.

After the game students at home complete a set of calculations to be discussed during the next class.

It is important carry out a post-game class during which the questionnaire is filled out. The question-after-question principle provides the opportunity to generalize the crucial theoretical points solved in the game. Obviously monitoring attitudes and satisfaction of students are also important.

The post-game class provides a next level of study, i.e. the listing of securities at the stock exchange and related problems.

Later in the course the teacher returns to the calculated indicators and charts that were plotted during the game in order to explain derivatives.

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