

A STUDY OF THE OPINIONS OF BRASOV COUNTY SME EMPLOYEES REGARDING THE USE OF BUSINESS GAMES

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Abstract: *A scientific research was carried out using a 17 - question form, which was filled out by 335 businesses from Brasov County, through which we wanted to determine the awareness degree in regard to some information system notions. To analyse the data the SPSS software was used. The research reached the conclusion that the employees of businesses from Brasov County know very little about information systems.*

Key words: *business game, information system, decision tree, training, statistic tests.*

1. Introduction

Several studies developed by Feinstein (2001), Posch, Rosemann and Bielski (2001), Ellington (2001), Feinstein and others (2002), Grisoni (2002), Armstrong (2003), Faria and Wellington (2004), Euler and Hahn (2004), with Sloane and Dilger (2005), Eysenck and Keane (2005), Selten, Abbink and Cox (2005) show that the use of business games has taken an unmatched proportion.

This is teaching and training method (that has already entered routine) for future managers who are currently enrolled in universities. All Faculties of Economics organize training sessions through business simulations.

Bennis and O'Toole (2006), Peach, Mukherjee, and Hornyak (2007), Greenberg and others (2007) and Whetten

(2007), Lainema & Lainema (2007), Yourstone and others (2008), Tempel & Walgenbach (2008) Adekola and Sergi (2008), Thompson and Fandt Purdy (2008), Gomes De Oliveira Lisboa, and Yasin (2008) – point out that management simulations were extended worldwide. They are especially preferred by the Chinese, who have repeatedly won international competitions.

Today, worldwide, there are thousands of business games. Most of them are used in universities to prepare students for future job requirements. Other games are used by large companies, especially multinationals, as a form of employee-training and as recruitment tool for selecting future quality managers.

The implementation of business games for SMEs in Romania is a requirement for

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businesses to adapt to modern training methods. This will clearly lead to increased efficiency in small and medium enterprises in the future. The importance and implementation of economic simulations as an alternative to classic training programs for managers and employees is presented, as well as the conclusions of a market research on the implementation of business games.

2. Theoretical concepts

The decision and classification trees are one of the main Data Mining techniques. Analysing decision trees allows forecasting the affiliation of some objects/instances to different categories, starting with their rates depending on one or more predictors. [5]

Objective – forming homogeneous subgroups from the point of view of the Y dependent variable.

Segmentation (partition) evaluation measures

The test of independence

$$\chi_{calc}^2 = \sum_{i=1}^p \sum_{j=1}^q \frac{(n_{ij} - nt_{ij})^2}{nt_{ij}} \quad (1)$$

where: n_{ij} – are the observed values,
 nt_{ij} – are the theoretical (expected) values,
 p – the number of lines,
 q – the number of columns.

and its normalization Tschuprow,

$$t = \frac{\chi_{calc}^2}{n\sqrt{(p-1)(q-1)}} \quad (2)$$

Establishing the size of a tree

The partitioning process continues until all the terminal nodes become pure. This can result into the fact that the number of

The decision and classification trees can be:

- Classification trees, when the prediction result is the data affiliation class;
- Regression trees, when the forecast result can be considered a real number (oil price, the price of a house);
- CART (C&RT) Classification And Regression Tree (Breiman, 1984) – combines the two cases mentioned above.

Growing a decision tree

The root node divides the collectivity into groups depending on the Y dependent variable. The first segmentation variable is chosen and it results in son-nodes. If a son-node is homogenous, it becomes a pure node (a leaf node); if it is not, a new segmentation variable is chosen and the process continues until the tree ends in leaf nodes.

the objects of these nodes (leaves) is too small or the tree is too big.

The optimum size can be determined by:

• **pre-pruning** – along the induction process, the tree extension is stopped by settling a set of Stop-rules.

For example, in the CHAID method, at the level of the node which is to be segmented, it is chosen a *significance level* which will be compared to the *p-value* level of implication of the χ^2 test. If $p\text{-value} < \text{significance level}$, the segmentation is accepted; if not, the segmentation is stopped (if $p\text{-value} = 0.025$ and *the significance level* = 0.01 or 1%, the segmentation is rejected).

Usually, there are used two stop rules:

The minimum n; it relates to the Stop-condition specifying a minimum number of objects which must be embodied in the terminal nodes. In these conditions, the division of a node ends either when the node is pure or when the node does not contain more objects than the specified number;

The proportion of objects; it relates to the Stop-condition imposing that the division of a node should end either when the node is pure or when it does not contain more objects than a minimum proportion (percentage) from the size of one or more classes.

• **post-pruning** – the afterward setting, a process developing overhand by the quantification of the classification error (the ramification of a node can be dropped

out, by this means, the node becoming a leaf).

3. The Respondents Preferences Regarding the use of a Business Game

The decision tree technique - The selected variables in the analysis are:

The dependent variable Y – Has your company ever used a business game? (Use_of_a_business_game? (Yes, No))

Independent variables:

1. Does your company currently use a specialised business management information system? (use_of_a_information_system ? (Yes, No))

2. If you would take into consideration a business game, what would you like it to be focused at?

- a. game_production
- b. game_marketing
- c. game_finances
- d. game_accounting
- e. game_business_strategies
- f. game_human_resources
- g. game_research_development
- h. game_IT
- i. game_organization
- j. game_all_aspects

The decision tree has been created using SPSS Clementine using the CHAID technique.

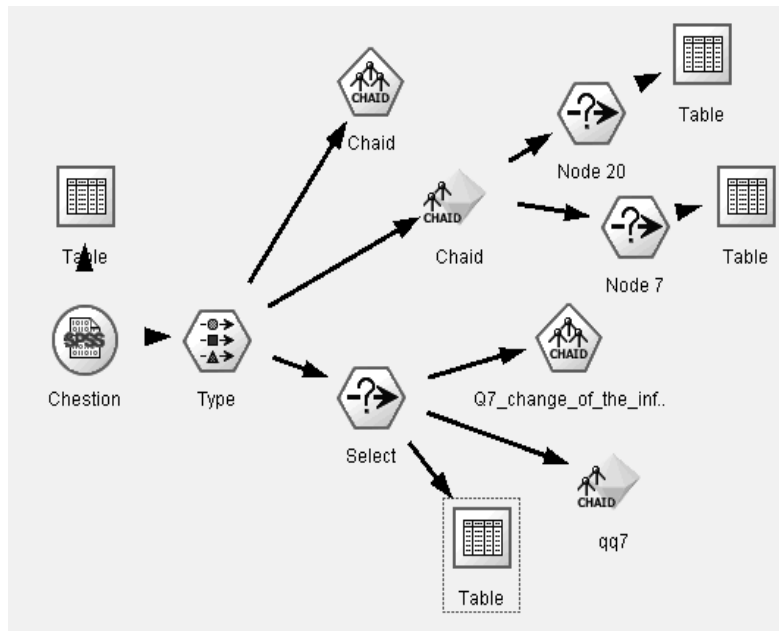


Fig. 1. Creating a decision tree – SPSS Clementine

Out of the 335 total responses 233 were valid for the dependent variable. Out of these 194 (83.26%) have not used business games while the rest (39 – 16.74%) have used a business game. The model was interactively constructed, resulting 6 levels. The segmentation variables were selected according to the χ^2 test If $p\text{-value} < \text{significance level}$.

Decision rules:

- the first segmentation variable was `use_of_a_information_system`. Two knots resulted: a knot with 118 respondents; 50,64% use a specialised business management information system out of which 85 have never used a business game and 33 have. 115 respondents have declared they do not use a specialised business management information system. Out of those, 109 have never used a business game and 6 have;
- 22 respondents out of those who use a specialised business management information system are interested in `game_research_development`; out of these, 19 have never used a business game;
- 8 respondents who use a specialised business management information system are interested in `game_organisation` and `game_research_development`; they are limited companies with under 250 employees;
- 24 respondents out of those using the specialised business management information system are interested in `game_marketing`; out of those, 19 have never used a business game;
- 6 respondents are interested in `game_IT`, 12 in `game_business_strategies` and 4 in `game_human_resources`;

- 19 respondents out of those who do not use a specialised business management information system are interested in game_organisation; they are limited companies with under 250 employees;
- 25 respondents out of those who do not use a specialised business management

information system are interested in game_marketing and 17 in game business strategies.

We have noticed that 58.8 of the total 233 respondents are interested in business games and especially those who have never used such a game.

The situation of the respondent interested in business games

Table 1

Place	Type of game	Use of a business game?		Total
		Yes	No	
1	Game marketing	7	42	49
2	Game business strategies	2	27	29
3	Game organization	5	22	27
4	Game research development	3	19	22
5	game IT	4	2	6
6	Game human resources	3	1	4
	Total	24	113	137

4. The Opinions of the Respondents Regarding the Business Games

This analysis required the selection of the respondents who have used business games, a total of 39.

The dependent variable Y – Would you like to change/improve your businesses information system?

(change_of_the_information_system (Yes, No))

Independent variables:

Reasons for using a business game

- a) it_is_a_good_method_of_trainig
- b) ability_to_make_decisions_under_pressure
- c) it_combines_theory_and_practice_very_well

- d) identifying_more_easily_current_business_issues
- e) work_better_as_a_team
- f) understand_the_functional_relations_within_the_firm
- g) develop_analytical_and_planning_skills
- h) it_is_interesting_motivating
- i) develop_competitive_skills

Decision rules:

- 15 respondents agree with the statement - ability_to_make_decisions_under_pressure
- 13 respondents appreciate the statement - it_is_a_good_method_of_trainig
- 6 respondents appreciate the statements - work_better_as_a_team,it_is_interesting_motivating, it_is_a_good_method_of_trainig

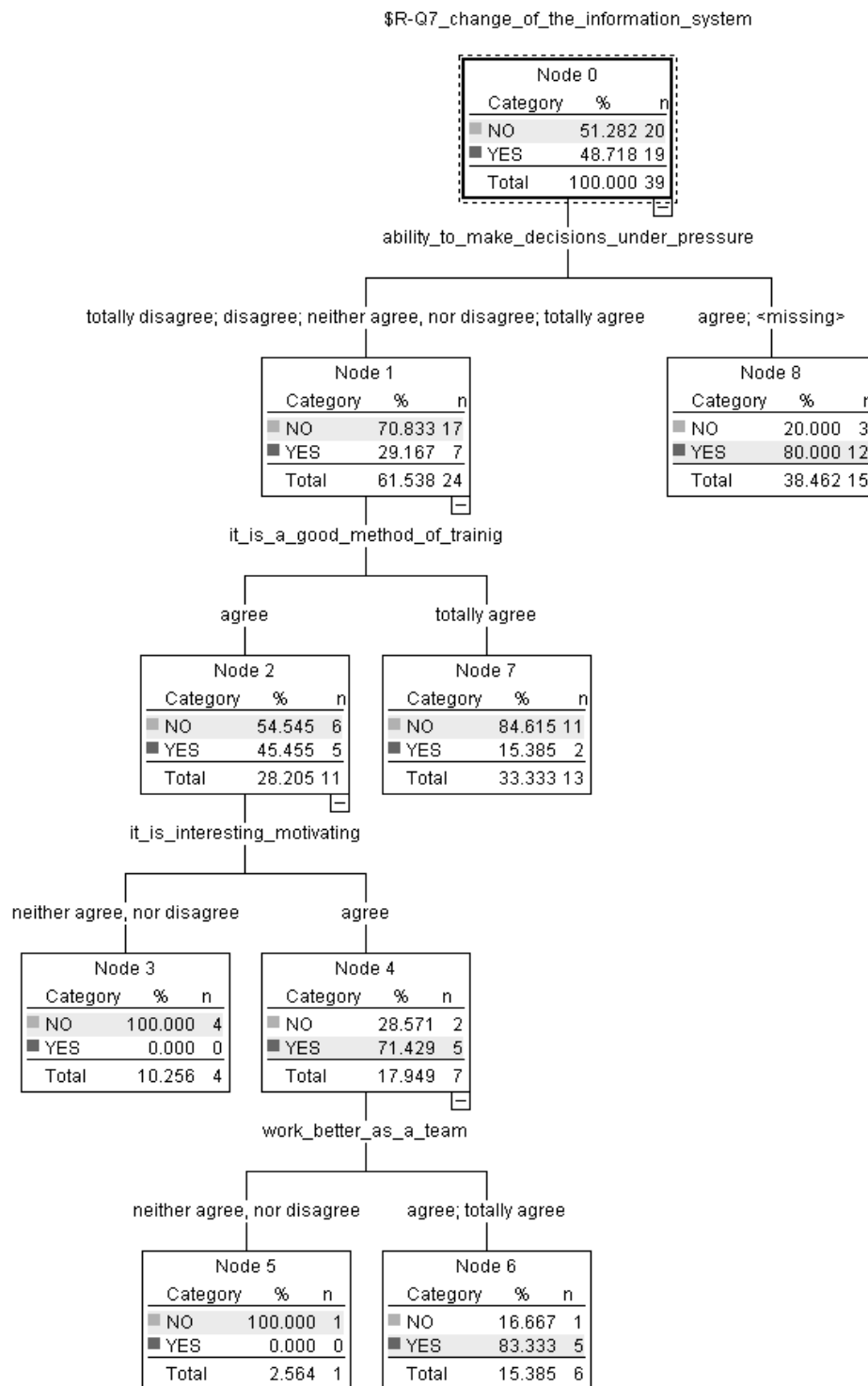


Fig. 2. Decision Tree

5. Conclusion

We believe that implementation of business games for SMEs in Romania is a requirement for businesses to adapt to modern training methods.

This will clearly lead to increased efficiency in small and medium enterprises in the future.

Moreover, it is imperative for SMEs to improve their system and have specialized business management software, to keep up with the changing competitive environment.

By participating in the games, the employees will gain important abilities, skills and knowledge to help them perform better at their future employment. At a global level, business games are considered a very good training method, the most modern, and managing to combine theory and practical application. Participants will develop their ability to make decisions under pressure, be more competitive, perform better in a team environment and will generally be more motivated to improve their activity.

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