

COMPARISON OF DECISION-MAKING SKILLS OF STUDENTS AND MANAGERS

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Abstract

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The aim of this paper is to analyze the level of decision-making skills of managers compared to the level of decision-making skills of students. Decision making is seen as a process that is based on our knowledge, skill, experience and partly influenced by our personality. The process ends by the right solution of the required quality, time and reasonable acceptability. Data was obtained through a questionnaire survey of 221 managers and 376 students from universities. Using the statistical method we accomplished to demonstrate that managers achieve higher levels of decision-making skills than students. The decision-making were based on analyses the three subareas, where they found that students achieve better results in the field of information retrieval, the administration of tasks and justify the decision where executives received an average of 29% more points.

Keywords: competence, decision-making, students, managers, experience, knowledge, skills

INTRODUCTION

The aim of this paper is to statistically verify, whether the assumption, that the managers achieve the same or higher levels of decision-making skills compared to university students, is correct or not.

Decision-making as an activity belongs to everyday activities. Daily we decide over small things, but often these decisions will affect our lives (or enterprises). An individual decides about himself, about his affairs, but his decisions also affect also others. It often happens that when we need to decide, we ask for help, advice either friends, psychologists, lawyers, experts in logistics, etc. (Bouyssou *et al.*, 2013).

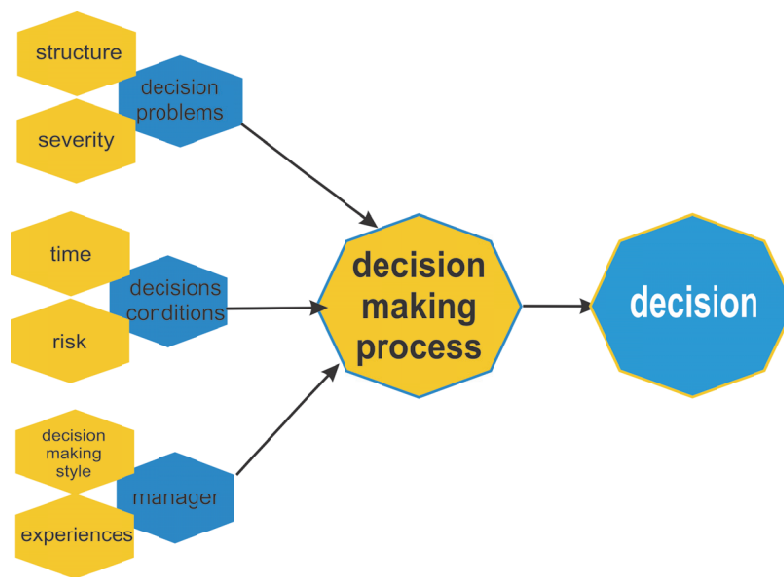
Decision making in today's turbulent times, in the era of globalization, in the time of rapidly changing markets and ever increasing competition, has increasing importance (Walter, 2010).

The ability of decision-making is among the most important activities of the manager. The quality and results of this competence is reflected in the efficiency of processes and in the future success of the organization. Poor and improper decision-making is often a major cause of business

failure. Influence and importance grows in direct proportion to the volume of resources, financial resources, which are linked with the process (Fotr and Švecová, 2010). High decision-making skills of managers affect business performance (Plattner, 1982).

Decision making is finding the right choice, usually between two or more alternatives, based on available information and experience, within time constraints and risk. Important role also plays manager's ability to explain or defend its decision before superiors or subordinates, and the associated level of acceptance (Fotr and Švecová, 2010). Frederick Shane (2005) in his research showed interpretation of correlations between cognitive abilities and decision-making. Next research proved by Klein (1999) examines the nature of the effect of formal education on some of the cognitive processes in decision making and lack of effect on other central components of decision making.

Every decision is result of a process, see Fig. 1. The scheme suggests, that the decision is based on three conditions; decision problems, represented by the severity and nature of the problem; conditions for deciding, represented by the time constraints,



1: *Decision-making process*
Source: Fotr and Švecová, 2010

the degree of risk and uncertainty and manager's personality, in this group we include attitude to decision-making, experience and decision-making style (Fotr and Švecová, 2010).

The above mentioned rational approach is an ideal state and helps to find the ideal solution in most cases. However, in reality such problems and situations are encountered only rarely and because most of the managers must decide quickly, there is no room for extensive analytical analysis. Therefore manager's intuition plays an essential role in the decision making process. Basing the decision solely on analytical data or intuition can become fatal for the company. Correct decision-making contributes to the well-articulated corporate strategy (Březinová, 2015). Intuition cannot be thought of as the opposite of analysis and reason, rather it must be seen as a sophisticated form of reasoning which consists of original experience of each individual. Its base can be divided into innate skills and lived experience. Intuitive processes take place in a similar way as structured decision-making with the difference of being undertaken on unconscious level. Those who are able to make decisions quickly have a great advantage because they are considered to be decisive and confident. Decisions based on intuition have also their faults. Contrary to popular opinion, that the first, intuitive decision is correct, psychological studies show that with reassessment we gain a better chance at a final administrative decision. Because people often simplify the given facts, they can overlook the most important information that would fundamentally affect our final decision. People in principle decide on the basis of their experience, preferences and habits (Janson, 2010).

Cejthamr and Dědina (2010) describes the influences on decision making. To make the

decision quality, timely, and ethically acceptable, we need to take in account three factors; personality of the decision maker, cognitive biases and barriers in the company (if it is a management decision). There are basically three types of skills that influence decisions, namely; leadership and interpersonal relations, decision making ability and skills associated with the task.

MATERIALS AND METHODS

The aim of this paper is to statistically verify, whether the assumption, that the managers achieve the same or higher levels of decision-making skills compared to university students, is correct or not. Decision making is seen as a process that is based on our knowledge, skills, and experience that are influenced by our personality, at the end of which is the right solution at the required quality, time and reasonable acceptability. The research itself was designed to eliminate the experience of individual respondents, as there can be assumed greatest advantage of managers. The research itself is consisted of a wider range of skills. These include communication, cooperation, efficiency, responsibility, independence and other competencies. Every competence was tested using at least 7 questions, which were randomized to avoid the anticipation of the result. The questions in the questionnaire were formulated in consultation with a psychologist and based on the recommendations of experts, than the adjustment was made according to the results of the pilot. Overall, questions in the questionnaire were divided into three areas: obtaining relevant information, the willingness to reach a decision, work with tasks. Both groups (managers and students) were submitted to identical questionnaires in order to obtain the results consistently.

The null hypothesis was set that the decision-making skills of managers and students are equal on the analyzed data. Data acquisition was carried out in the context of the dissertation thanks to a grant from GAJU 79/2013/S. 221 managers were questioned through a questionnaire survey with the participation of the South Bohemian Enterprise Chamber and CzechInvest, followed by 376 university students. Data was tested using a two-tailed Wilcoxon test (Freund *et al.*, 2010; Friedrich *et al.*, 2010) and its asymptotic variant. This is a two-sided non-parametric test, which is most commonly used; if not condition of data normality is not met. As a slight breach of normality for samples larger than 30 does not have a major impact on the results.

Let X_1, \dots, X_n and Y_1, \dots, Y_m be two independent random samples from two continuous distributions, the distribution function may differ only by position. $x_{0.50}$, $y_{0.50}$ are designated as the median of the first and second layout. We are always testing the hypothesis that the distribution function of both layouts are identical, in other words, that the medians are equal. Compared to the alternative, that the first of the medians $x_{0.50}$, the one from managers is greater than the latter (Budíková, 2010; Freund, 2010; Friedrich, 2010).

$$H_0 = x_{0.50} - y_{0.50} = 0 \text{ against } H_A = x_{0.50} > y_{0.50}$$

(Friedrich *et al.*, 2010).

In the first stage, all the $(n + m)$ values X_1, \dots, X_n and Y_1, \dots, Y_m are arranged in ascending order according to size. The whole test process takes place electronically using statistics software. Furthermore totals of order of values are carried out X_1, \dots, X_n and designated as T_1 . The sum of the order of students Y_1, \dots, Y_m is designated T_2 .

The next step is to calculate the test statistics for U_1 and U_2 , while it is still true that $U_1 + U_2 = mn$ (Friedrich, 2010).

$$U_1 = mn \frac{n(n+1)}{2} - T_1,$$

$$U_2 = mn \frac{m(m+1)}{2} - T_2 \quad (\text{Friedrich } et al., 2010).$$

If valid, that statistics $\min U_1, U_2 \geq$ of tabled critical value for the selected range of both selections and for chosen level of significance, then the null hypothesis about the identity of the compared groups deny at the significance level $\alpha = 0.05$. Since both samples in all tested cases, the n, m are greater than 30, we approach to the asymptotic variation of

Wilcoxon test (Mann-Whitney test), which is used for n and m larger thirty. Where $U'_1 = \min \{U_1, U_2\}$ (Budíková *et al.*, 2010; Wonnacot, 1995).

$$U_0 = \frac{U'_1 - \frac{mn}{2}}{\sqrt{\frac{mn(m+n+1)}{12}}} \quad (\text{Friedrich } et al., 2010).$$

Critical values for the right-field alternative to $W = \langle k_1, n \rangle$ non-negative values of k_1 and k_2 are accurately given in the literature. We reject H_0 at significance level α if $U_0 \in W$ (Freund 2010; Friedrich 2010).

The test results illustrate the differences in displacement of curves representing managers and students.

RESULTS AND DISCUSSION

Using a two-tailed Wilcoxon test (Mann-Whitney U test) are for the selected significance level $\alpha = 0.05$ tested hypotheses, where X = the ability to solve problems by managers and Y = the ability to solve problems by students. Two hypothesis were set; the null hypothesis, representing that decision-making skills of managers and students are the same as $H_0 = x_{0.50} - y_{0.50} = 0$, then the alternative hypothesis, which assumes that the decision-making skills of managers are at a higher level $H_A = x_{0.50} > y_{0.50}$.

Initially, all $n + m$ values X_1, \dots, X_n and Y_1, \dots, Y_m are arranged in ascending order according to size. Due to the large amount of data, this step is carried out electronically. Subsequently, the sum of the order of values is calculated X_1, \dots, X_n and designated as $T_1 = 2,688,699$. The sum of the order of values Y_1, \dots, Y_m is designated as $T_2 = 3,728,454$. Following Tab. I generated by the software Statistica lists most important values.

For columns managers and students are given the sums of orders of their values, U stands for the required min. value of U_1 and U_2 , Z is the value of the asymptotic test statistics in methodology designated as U_0 . P-value is desired calculated value, which will be compared with α and used to decide whether to reject the null hypothesis or not. Furthermore, the p-value will be adjusted for the one-sided alternative hypothesis and again confronted with α .

$$p\text{-value} = 0.000000.$$

$$\alpha = 0.05.$$

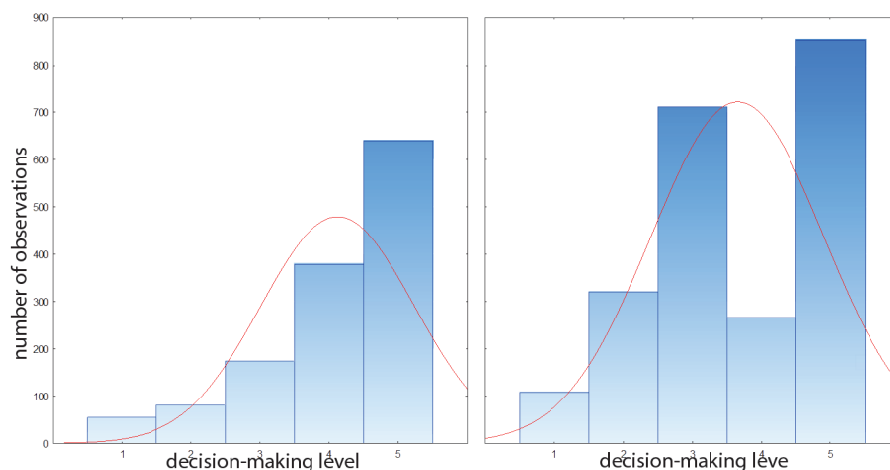
$$0.000000 < 0.05.$$

$$p\text{-value} < \alpha.$$

I: Mann-Whitney U test focused on the ability to solve problems

	managers	students	U	Z	p-value
decision	2688699	3728454	1182558	10,47865	0,000000

Source: authors



2: Curves of problem-solving skill incidence at students and managers

The final p-value is close to zero and lower than the chosen α , that is why we may reject the null hypothesis at a significance level of 0.05.

$$p\text{-value}/2 < \alpha.$$

$$0.00000 < 0.005.$$

Based on the analyzed data, the alternative hypothesis could not be rejected; half of the p-value is still lower than the chosen α . Therefore, we can continue to state that managers achieve better ability to make decisions than students.

The test results, also demonstrated by Fig. 2, show that the peak of the curve representing managers is at 4.1 points (left) and the peak of the curve representing students is in the area of 3.6 points (right). Also at students we can see different layouts mainly in three points.

On the results can also be viewed from the perspective of individual decision-making areas: working with relevant information, the willingness to come to a decision and work with tasks. In the area focused on the information needed for decision it is very interesting that students achieved an average of 16% better results compared to the managers. In areas relating to determine the willingness of

students reached 29% lower results (other direction in research will be the unveiling of this disparity). Managers also achieved 13% better results in terms of the questions directed at the area of work tasks.

It can be assumed that managers will have better decision-making skills than students, which was also confirmed by this post. One factor that affects the ability to make the decision is the experience of the respondent, which implies that managers are in a position of advantage over students who will have less life and professional experience (Synek, 2011). In the literature, however, we can also find different views, as expressed for example by (Wahlen, 2012). He says that it is easy to make a decision if we have no or only minimal information about the reality. The more sources we have for a decision, the more difficult it is to decide, which would mean that university students should have easier position for deciding than managers. Age is a factor that significantly affects the respondent ("Rozhodování," n.d.). The 35th year of an individual is seen as a break point. The individual has a more positive attitude to the decision, but after 35th year of his life he risks less, which would also imply that students will have more positive attitude towards risk and that would make the deciding process easier for them.

CONCLUSION

Decision making is a complex process, which we meet on daily basis, however, as the U.S. study states, every day one must decide, on average, 70 times and more than 50% of the decisions of managers take less than nine minutes, only 12% of decisions require more than one hour (Iyengar, 2010).

Deciding depends on a variety of circumstances and factors that affect the individual. Decision making is defined in this paper as a process that is based on our knowledge, skills, and experience, which are influenced by our personality; at the end of the process we reach at the right solution of required quality, time and reasonable acceptability.

The aim of this paper was to statistically verify the assumption that managers possess the same or higher levels of decision-making skills, compared to university students. The assumption was that managers will have a higher level of ability to make decisions, which was proven, based on conducted statistical analysis at significance level $\alpha = 0.05$ with p-value 0.000. The test results, also demonstrated by Fig. 2, show that the peak of the curve representing managers is at 4.1 points (left) and the peak of the curve representing students is in the area of 3.6 points (right). We can say that managers have better ability to make decisions than university students.

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