

## ASSESSMENT OF OCCURRENCE PREDICTORS OF COGNITIVE DISTORTIONS IN MANAGERIAL DECISIONS

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**Abstract:** The aim of the paper is to present the results of an analysis of assessments of the indicators of prediction of cognitive distortions in managerial work (PCD methodology) from the perspective of gender, managerial position, age and length of experience of managers. Based on the sample of 130 managers it was specified that female managers tend to take into account those facts which support their decisions; male managers tend to express their opinions on the topic they do not have sufficient information about; top managers more often ignore the facts they are not interested in and evaluate the situation on the basis of a single event; older managers and more-experienced managers tend to take into account all facts, not only those which support their decisions. Results acquired from the conducted research support the meaningfulness of studying the issue of cognitive distortions, primarily in the context of managerial decision-making.

**Key words:** cognitive distortions, PCD methodology, managers, decision-making, gender

DOI: 10.17512/pjms.2016.14.2.06

*Article's history:*

*Received* June 14, 2016; *Revised* October 29, 2016; *Accepted* November 10, 2016

### Introduction

Cognitive distortions in thinking and decision-making of people have been occurring for ages and will continue to occur, as they are a part of cognitive processes. Cognitive distortions may be caused not only by emergence of negative thoughts and mental disorders (depressions, anxiety, or social phobia) but they are a part of everyday life, not excluding managerial work.

One of the possible ways of regarding cognitive distortions is, according to Adamovová and Kordačová (2003) and Kordačová (2003), specification of the differences between how one should make correct decisions in accordance with rationality and logic (normative thinking) and how one actually decides in accordance with irrationality, illogical thinking, insecurity (personal thinking). It is evident that personal thinking based on intuitive judgments may deviate from the logical norms of rationality (Samuels et al., 2004; Kot, Măcriș, 2014; Grabara 2013). It is the managers who must make decisions in new, complicated situations, under the conditions of insecurity and where the likelihood of correctness of the decisions is not explicitly guaranteed.

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### **Cognitive Distortions in Thinking of Managers**

The knowledge area of occurrence of cognitive distortions in thinking of managers in a broader context represents application of knowledge from the cognitive psychology, primarily in the area of thinking and studying managerial work. The attribute of thinking, especially from the perspective of positive thinking, may be found in the concepts of personality traits of managers elaborated by various authors (Mueller, 2013; Kirchner–Adelhardt, 2014; and others). This application of the knowledge from the cognitive psychology is particularized at the level of information processing, organization of experiencing, cognitive structures (schemas, scenarios, stereotypes and attributions) and other cognitive constructs (Halama et al., 2012). The theory of cognitive processes assumes that the psyche of an individual (i.e. manager as well) is not a passive mirror which only reflects the external influences and reacts to them. The mental image of the external reality actively creates an interaction between the external stimuli and the already existing mental structures which are studied from the various perspectives and within various contexts, such as schemas, personal constructs, irrational beliefs, contra-fact thinking, risk, the burnout syndrome, the Dunning-Kruger effect and others (Ellis, 1962; Beck et al., 1979; Beck et al., 2007; Kelly, 1955; David et al., 2010; Allais, 1953; Mandel et al., 2005; Istenik, 2011; Štefko et al., 2015; Suhányi and Suhányiová, 2014; and others). In connection to regarding cognitive distortions generally within the context of managerial work, the role of emotions, which increase the likelihood of occurrence of these distortions, is accentuated. Abrams and Keren (1997) point out that mainly from the viewpoint of intensity and duration of emotions, very inaccurate estimations are frequently made, which is closely linked to the occurrence of cognitive distortions. Newel and Simon (1972) identified another possible source of cognitive distortions related to managerial work in limitation of the cognitive abilities of managers to resolve complex problems. For this reason, decision-making of managers about certain issues sometimes deviates from the criteria of the objective rationality; it often does not even approach them and is underlined by (as it was already mentioned) emotions and uses various schemas. When defining cognitive distortions it is important to highlight the fact that managers are not aware of their own cognitive distortions. A cognitive distortion is an incorrect conclusion in making of which the manager registers the real situation without knowing that this conclusion is wrong (Zibrínová and Birknerová, 2012). Because of this it is difficult to detect cognitive distortions. That is why it is crucial to distinguish between the unintentional cognitive distortions and the intentional lie-based argumentation (Ruisel, 2012). It is also necessary to distinguish cognitive distortions from the other forms of distorted perception, such as, for example, cultural or organizational distortion (Zibrínová et al., 2014). The typical cognitive distortions may be, according to Beck et al. (1979), specified in various forms among which there are also the distorted selection of facts and over-generalization. These two attributes of cognitive distortions in managerial work were accentuated also by the results of the

research conducted by Frankovský et al. (2015). For the aforementioned reasons, the attention in the presented research project was paid primarily to the analysis of assessment of the distorted selection of facts and over-generalization as two predictors of occurrence of cognitive distortions in managerial work in the context of gender, managerial position, age and the length of experience of managers.

## Method

The report presents the results of the research project conducted during the period between January 2016 and March 2016. The research included participation of 130 respondents. The research sample consisted of 56% of male managers and 44% of female managers, 38% of the first-level managers, 40% of the middle-level managers and 22% of top managers. The average age of these managers was 32 years (from 21 to 49 years) and the average length of their managerial experience was 6 years (from 1 to 20 years). The data were acquired from the respondents by means of the PCD methodology (Prediction of Cognitive Distortions) which consists of 16 items evaluated by the respective points of the Likert scale (1=definitely yes, 2=yes, 3=rather yes than no, 4=rather no than yes, 5=no, 6=definitely no). This methodology enables prediction of cognitive distortions on the basis of two predictors: Distorted selection of facts (Cronbach's alpha: 0.728) and Over-generalization (Cronbach's alpha: 0.703). The description about this methodology was published by Frankovský et al. (2015).

## Results

The main objective of the presented research project was to specify the statistically significant differences between the male and the female managers and among the managers on various work positions in assessment of the predictors of occurrence of cognitive distortions. At the same time the aim was also to identify the statistically significant correlations between assessment of the predictors of occurrence of cognitive distortions in managerial work and the age/length of experience of managers. On the basis of these research objectives, the following hypotheses were formulated:

*H1: There exist statistically significant gender differences in assessment of the selected predictors of occurrence of cognitive distortions.*

*H2: There exist statistically significant differences in assessment of the selected predictors of occurrence of cognitive distortions from the viewpoint of various managerial positions.*

*H3: There exists a statistically significant correlation between the assessment of the selected predictors of occurrence of cognitive distortions and the age of managers.*

*H4: There exists a statistically significant correlation between the assessment of the selected predictors of occurrence of cognitive distortions and the length of managerial experience.*

*Assessment of Occurrence of Cognitive Distortions by Male and Female Managers*

The first hypothesis assumes existence of statistically significant gender differences in assessment of the selected predictors of occurrence of cognitive distortions. This hypothesis was verified by means of a t-test for two independent selections (Table 1).

**Table 1. Statistically significant differences in assessment of predictors of occurrence of cognitive distortions in terms of gender**

Indicator of occurrence of cognitive distortions	Gender	Mean	Standard deviation	Test criterion	Sig.
<b>Distorted selection of facts</b>	male	2.61	0.648	2.412	<b>0.017</b>
	female	<b>2.35</b>	0.571		
<b>Over-generalization</b>	male	<b>3.93</b>	0.627	-3.089	<b>0.002</b>
	female	4.27	0.612		

Results of the analysis presented in Table 1 support the existence of statistically significant differences in assessment of predictors of occurrence of cognitive distortions between the male and the female managers. From the viewpoint of distorted selection of facts, lower score was achieved by the female managers. It means that female managers have a tendency towards this attribute of cognitive distortions more significantly, they notice the facts which support their decisions and which they understand and perceive positively. It is important to point out that the interpreted difference between the female and the male managers was found only within the agreement range.

The contrary tendency was detected in the context of assessment of the predictor Over-generalization. In this case lower score was achieved by the male managers. It means that the male managers expressed a significantly lower degree of disagreement or refusal of occurrence of this predictor of cognitive distortions than the female managers. They tend to express their opinion on the topic they do not have the sufficient information about and ignore the facts they are not interested in. They also tend to make decisions using only the categories of yes or no. From the perspective of this interpretation it is crucial to accentuate that the difference between the female and the male managers occurs only in the disagreement range. Since it was assumed that there exist certain gender differences in assessment of the selected predictors of occurrence of cognitive distortions, this hypothesis may be regarded as supported.

*Assessment of Occurrence of Cognitive Distortions from the Perspective of Managerial Positions*

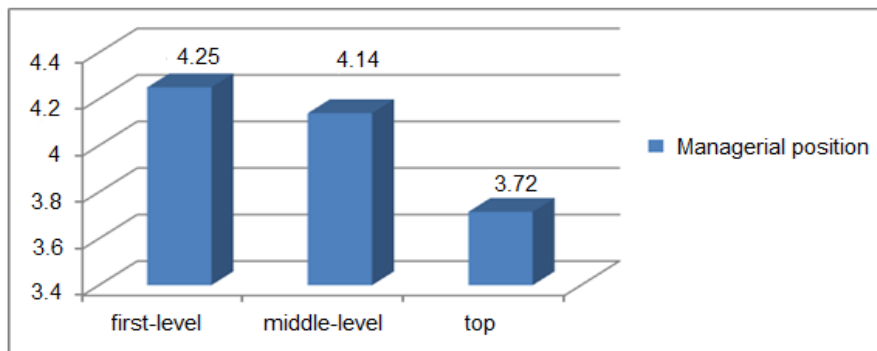
The second hypothesis assumed existence of statistically significant differences in assessment of the selected predictors of occurrence of cognitive distortions from the viewpoint of various managerial positions, whereas addressed were 49 first-

level managers, 52 middle-level managers and 29 top managers. This hypothesis was verified by means of the mathematical-statistical method One Way ANOVA with the use of Tukey test for post hoc comparisons of significance of the differences.

On the basis of the analysis of variance, a statistically significant difference in the predictor Over-generalization was detected in relation to the managerial position ( $F=7.274$ ,  $Sig. =0.001$ ). The detected statistically significant differences are presented in Table 2 and Figure 1. In connection to the managerial positions, there was no statistically significant difference found in the predictor Distorted selection of facts ( $F=0.141$ ,  $Sig. =0.868$ ).

**Table 2. Statistically significant differences in assessment of predictors of occurrence of cognitive distortions in terms of managerial positions (Tukey HSD)**

Managerial position	Managerial position	Average difference	Significance
<b>Distorted selection of facts</b>			
first-level	middle-level	-0.063	0.867
	top	-0.053	0.930
middle-level	first-level	0.063	0.867
	top	0.010	0.997
top	first-level	0.053	0.930
	middle-level	-0.010	0.997
<b>Over-generalization</b>			
first-level	middle-level	0.110	0.636
	top	0.534*	<b>0.001</b>
middle-level	first-level	-0.110	0.636
	top	0.423*	<b>0.009</b>
top	first-level	-0.534*	<b>0.001</b>
	middle-level	-0.423*	<b>0.009</b>



**Figure 1. Statistically significant differences in assessment of the predictor Over-generalization from the viewpoint of managerial positions (Tukey HSD)**

Results of the presented analysis support the existence of statistically significant differences between the top and the middle-level managers, as well as between the top and the first-level managers. It means that top managers often ignore the facts they are not interested in and tend to assess situations on the basis of a single event. It is important to highlight that all average values in the responses of managers on various positions as well as the detected differences were found only within the disagreement range.

Since it was assumed that there exist certain differences in assessment of the selected predictors of occurrence of cognitive distortions from the perspective of various managerial positions, this hypothesis may be regarded as supported.

#### *Assessment of Occurrence of Cognitive Distortions from the Perspective of Age of Managers*

The third hypothesis assumed existence of a statistically significant correlation between the assessment of the selected predictors of occurrence of cognitive distortions and the age of managers. This hypothesis was verified by means of the Pearson Correlation Coefficient (Table 3).

**Table 3. Correlations between the assessment of predictors of occurrence of cognitive distortions and the age of managers**

Occurrence of cognitive distortions predictor	Distorted selection of facts	Over-generalization
<b>AGE</b>	<b>- 0.331**</b>	- 0.106

\*\* Correlation significant at the level of 0.01 (1%)

Results presented in Table 3 support the existence of one statistically significant correlation between the age of managers and the predictor distorted selection of facts. This negative correlation means that the older the managers, the less they notice only those facts that support their decisions and the less they make decisions based exclusively on the facts they understand.

Since it was assumed that there exists a statistically significant correlation between the assessment of the selected predictors of occurrence of cognitive distortions and the age of managers, this hypothesis may be regarded as supported.

#### *Assessment of Occurrence of Cognitive Distortions from the Perspective of the Length of Managerial Experience*

The fourth hypothesis assumed existence of a statistically significant correlation between the assessment of the selected predictors of occurrence of cognitive distortions and the length of managerial experience. This hypothesis was verified by means of the Pearson Correlation Coefficient (Table 4).

Results presented in Table 4 support the existence of one statistically significant correlation between the length of managerial experience and the assessment of the predictor distorted selection of facts.

**Table 4. Correlations between the assessment of predictors of occurrence of cognitive distortions and the length of managerial experience**

Occurrence of cognitive distortions indicator	Distorted selection of facts	Over-generalization
<b>LENGTH OF MANAGERIAL EXPERIENCE</b>	<b>- 0.352**</b>	<b>- 0.001</b>

\*\* Correlation significant at the level of 0.01 (1%)

Similarly to the third hypothesis, this negative correlation means that the longer the experience of managers, the less they notice only those facts that support their decisions and the less they make decisions based exclusively on the facts they understand. Since it was assumed that there exists a statistically significant correlation between the assessment of the selected predictors of occurrence of cognitive distortions and the length of managerial experience, this hypothesis may be also regarded as supported.

### Discussion and Conclusion

Cognitive distortions are part of life of every person (not crossing the line of mental disorders) therefore it is possible to regard their presence as natural also in the decision-making processes of managers. Rachlinski (2000) claims that presence of cognitive distortions in thinking of people is indisputable. At the same time it is inevitable to regard cognitive distortions in the work of managers as a risk for their business. The presented findings gained by the research project as well as the already published ones (Frankovský et al., 2015) clearly support the meaningfulness of studying the issue of cognitive distortions also within the context of managerial work. Even though the concept of cognitive distortions in managerial work may be understood as a single complex issue, the presented findings serve as an evidence of certain specifics of perception of cognitive distortions.

Effectiveness of specification of the two-factor structure of assessment of cognitive distortions by managers was supported not only from the viewpoint of the psychometric criteria (Frankovský et al., 2015), but also within the context of the selected socio-demographic characteristics of managers. From the perspective of assessment of the predictor Distorted selection of facts it is possible to conclude that female managers tend to notice more those facts which support their decisions and which they understand and perceive positively. Older and more experienced managers tend to notice these facts less. As for the predictor Over-generalization it is possible to claim that male managers as well as top managers tend to express their opinions of the topics they do not have sufficient information about and they often ignore the facts they are not interested in, make decisions only within the categories of yes or no, and often assess situations on the basis of a single event. Increasing the level of decision-making of managers from the viewpoint of limitation of the effects of cognitive distortions is linked primarily to the awareness of presence of these distortions and specification of the possibilities



of their identification. Subsequently it is crucial to characterize the circumstances under which these distortions occur as well as the consequences they cause. An important role in this case is played by the feedback from the subordinates and co-workers and provision of trainings or courses, coaching, and other interventions designed to improve the decision-making process and removal of the tendencies towards cognitive distortions (Fischhoff, 1982).

Results of the conducted research project may be implemented in various areas of managerial practice, primarily in the area of managerial decision-making. The PCD methodology could be utilized in selection of personnel for managerial positions in the already mentioned sense that the tendency to make cognitive distortions is a risk factor in the work of managers. The presented findings, as well as the PCD methodology, may be used also in preparation of education for managers as a tool of narrowing down their focus and contents of education. Applying PCD before and after this education also enables identification and specification of the effects of education or its further course.

*This research was conducted with the support of two grant projects – VEGA – 1/0909/16 (Research of determinants of decision-making in the business management and sales management, taking into account the personal and psychological aspects of trading, and analysis of the possible implications in neuromarketing) and VEGA – 1/0706/14 (Cognitive distortions in thinking, their identification and evaluation in management).*

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## OCENA WYSTĄPIENIA PREDYKTORÓW ZAKŁÓCEŃ POZNAWCZYCH W DECYZJACH MENEDŻERSKICH

**Streszczenie:** Celem artykułu jest przedstawienie wyników analizy i oceny wskaźników przewidywania zaburzeń poznawczych w pracy menadżerów (metodologia PCD) z perspektywy płci, stanowiska kierowniczego, wieku i doświadczenia menedżerów. Bazując na próbie 130 menedżerów określone zostało, że kobiety menedżerowie mają tendencję do uwzględniania faktów, które wspierają ich decyzje; natomiast mężczyźni menedżerowie mają tendencję do wyrażania swoich opinii na temat, na który nie mają wystarczających informacji; menedżerowie najwyższego szczebla o wiele częściej ignorują

fakty, którymi nie są zainteresowani i oceniają sytuację na podstawie pojedynczego zdarzenia. Starsi oraz bardziej doświadczeni menedżerowie często biorą pod uwagę wszystkie fakty, a nie tylko te, które wspierają ich decyzje. Wyniki uzyskane z przeprowadzonych badań wspierają zasadność studiowania kwestii zniekształceń poznawczych, przede wszystkim w kontekście podejmowania decyzji menedżerskich.

**Słowa kluczowe:** zniekształcenia poznawcze, metodologia PCD, menedżerowie, podejmowanie decyzji, płeć

### 管理決定中認定失誤的事實預測評估

**摘要：**本文的目的是從性別，管理層位置，年齡和管理經驗長度的角度，介紹對管理工作中認知扭曲預測指標（PCD方法）的評估分析結果。根據130名管理人員的抽樣，規定女性管理人員傾向於考慮支持其決定的事實；男性經理傾向於表達他們對他們沒有足夠信息的話題的意見；高層管理者往往忽視他們不感興趣的事實並在單一事件的基礎上評估情況；老年經理和經驗豐富的經理傾向於考慮所有事實，而不僅僅是那些支持他們的決定的事實。從進行的研究獲得的結果支持研究認知扭曲問題的意義，主要是在管理決策的背景中。

**關鍵詞：**認知扭曲，PCD方法，管理者，決策，性別