www.etimm.ase.ro

Intuition or Marketing Research Information Usefulness In Business Organizations in The Light of Ordinal Regression Analysis

Piotr Tarka
Poznan University of Economics
piotr.tarka@ue.poznan.pl

Abstract
This article refers to theory of decisions investigating the extent of intuition vs. information use by managers and top executives, as two contrasting sources influencing their decisions. In the first part of article, the most significant assumptions underlying theory of decision making processes were described, and then the empirical results regarding the manager's preferences between intuition and information in context of decision behaviors were discussed. The author argues that decision makers in business organizations, in complex situations are more inclined towards the intuitive way of thinking, than analytical and logical reasoning supported by the marketing research information. In particular, top executives due to required effort in reviewing the stats derived from the research, perceive the information as useless in decision making. This preference causes serious problems, because managers unconsciously lose the information potential, simultaneously neglecting the marketing research.
The results of empirical study were collected on the basis of the internet questionnaire survey. The process of choosing the respondents to sample was conducted in Poland with the use of the two techniques: judgmental and snowball sampling. In this process, the data from two social networking sites, i.e. LinkedIn and Golden Line was applied. The final sample size equaled N = 391 and included mainly decision makers in companies.

Key words: marketing research, information, intuition, decisions, managers, top exceutives in companies.

JEL classification: M31.

1. Introduction

In literature, theorists characterizing managerial decision processes usually adopt the normative (rational theory) or descriptive (bounded-rational theory) approach. The former theory roughly demands high skills of managers to optimize choices (Ansoff 1965, Porter 1985). In contrast, in descriptive theory, it is argued that managers are hardly capable of making optimal choices (Cyert & March 1963, Starbuck 1985), since their decisions are largely biased by cognitive limitations, routines, enviromental constraints, etc. Although both approaches seem in the first sight to influence the decision-making process on equal level, as we further prove in the empirical research, managers and top executives declare most of their preferences towards the descriptive form of decision making, instead of making choices based on complete rationality theory. Thus, they are more linked with intuition or some kind of gut-feelings than information which requires logical/analytical thinking or combining facts on the basis of data.
Given the above facts, we need to find three reasonable explanations of such preferences, especially considering the managers behavioral style at decisions. First, human decisions are not well-structured and isolated in the mathematical sense, hence they are never optimal. Decisions are not limited to one or two variables that can be described mathematically. They are also much closer to the sphere of intuition which reflects subjective way of generating alternative source of thinking in supporting the decisions. Second, factors which contribute to the predominance of intuition (instead of information) in the decision making processes, belong to psychological dimension. In practice, it often appears that human being lacks of the self-control, or is unable to capture sequentially elements in decision making process. Third, decision makers, especially top executives, often hesitate to actively participate in the intellectual effort, (e.g., by reading the stats derived from marketing research), not to mention

their systematic and personal involvement in the research programmes. This sort of indulgence is due to the fact, that marketing information always contain some level of bias and randomness, hence putting the whole trust in it, can be for managers troublesome (Tarka 2017). However, believing that information is useless, without making efforts of diagnosing the research results, and without giving chance to choices which might be undertaken on the grounds of information, puts a new light on the matter (Tarka 2017).
In summing up, managers when making the loosely-structured decisions, typically assume guesses and focus only on intuitive and judgemental thinking (Hambrick & Mason 1984, Simon 1987), than informational sources supporting the conscious decisions. These issues become a subject of research and presented by the author empirical results.

2. The rationality and bounded-rationality theory of making decisions

In this section we will briefly characterize two contrasting with each other theories of decision making: rational (logical/analytical) vs. bounded-rational (nonlogical) (March 1978, Rubinstein 1998). The rational process is always proceeded by process of information search, evaluations of possible alternatives and choices. The rational decision is based on relatively fixed preferences and follows the logic of consequence, by which current actions of decision makers are dictated consciously by anticipation of the value associated with future outcomes. In other words, the rationally-oriented decision makers are motivated to maximize their interests, although the theory is silent about what those interests ought to be. This restriction on the meaning of rationality draws us attention to the fact, that rationality does not guarantee that the value-maximizing outcome will be obtained, only that it is the most likely outcome.
Since, the rational approach in making decisions is based on all relevant information about every alternative decision to be made, this concept assumes also that if people fail to meet normative standards, the failure will be caused by biases that might, given sufficient information and learning opportunities, be overcome with an appropriate effort. In other words, it is expected that people (managers) will make sound decisions on the basis of expected utility axioms, revising mathematically probabilities in accord with Bayes' theorem. This approach largely views humans (homo economicus) as "omniscient calculators" (Lupia, McCubbins & Popkin 2000) who can readily perform the cognitive manipulations required to reach a decision given adequate motivation. The question only is, would anyone in business organisations actually know how to do this? Assuming even there exists a decision maker with some "utility register" in the brain (that can easily assign utilities to different outcomes), once there are more than a few outcomes to sustain in mind (where each must be weighed by some subjective probability of occurring), keeping track of the calculations becomes quite challenging. Therefore, managers although theoretically are obliged to seek out relevant information, in reality, when considering the costs of gathering and processing information (Vriend 1996, Gigerenzer & Todd 1999), look for simpler solutions. In practical terms, information search, as well as information processing, is probably the most effortful task, hence it lies outside the realm of most rationality models. Besides that managers, in the course of making decisions, rarely know all alternatives and consider all the outcomes, so they will generally settle for comfortable alternatives that are "good enough" rather than value maximizing.
The concept of „bounded rationality" provides another basis for the managers' decision making. In its view, decisions are biased due to the cognitive disability of human nature in thinking, judgments made, etc. On the other hand, the irrationality of managers in decisions pertains to sphere of emotions and deviates from current actions chosen „rationally". Therefore, in the bounded-rationality theory managers are, by analogy, often compared to computers as the limited information processors, with no motivation nor the ability to make "consequential" calculations as described by rational choice theory (Hastie & Dawes 2001, Gilovich & Griffin

2010). A bounded-rationality theory highlights human limitations on information processing and limitations on information retrieval.

3. The heuristics, biases, intuition vs. information in decision making

A theory of decisions highlighted also numerous heuristics or rules of thumb that individuals may potentially use while making decisions (Hogarth 1980, Hogarth & Makridakis 1981, Tversky & Kahneman 1983, Markus & Zajonc 1985). Mintzberg et al. (1975) even stressed that heuristics lead to significant improvement of decisions due to lack of structure, complexity and predominance of open-endedness that characterizes most of decision processes. Managers who trust and apply heuristics may reduce the complexities of decision situations, although heuristics (which is not often mentioned in literature) lead to some systematic biases in decisions too (Haley & Stumpf 1989, Denes & Epstein 1994). Such biases occur typically when human cognitive abilities are limited, so the biases culminate with the inferior decisions. Haley and Stumpf (1989) categorized them into input and output biases. The input biases appear in case when decision makers selectively rely on data, giving some classes of data more weight than others. On the other hand the output biases occur, when decision-makers are unable to evaluate data at least appropriately. They also supply guesses in the absence of data or pad insufficient data. Given this, heuristics may, or may not, alter the qualities of decision outcomes. If biases result, they stem from inaccurate premises about the data and from inferring processes, however, decision heuristics may lead to biases that affect those premises and inferences processes. These facts let us pose a question of whether managers should trust the heuristics and intuition while making decisions in all, and whether there is any possibility to combine two contrasting spheres (intuition and information) influencing the decision process? In order to find the answer for questions, we need to clarify yet the meaning of intuition, adopting for example, the Western philosophers understanding, which perceives it as the most pure and immediate way of knowing (Wild 1938, Osbeck 2001), as it represents access to divine or inborn knowledge. In the East, many Buddhists viewed intuition as a means of obtaining penetrating knowledge reflecting a "gateway to a wider and richer world" (Guenther 1958, p. 26). While some authors maintain that intuition is a mystical avenue to knowledge (Vaughan 1979, Ferguson 1999), researchers in the areas of management and psychology explain also the intuition through a wide range of phenomena as: heuristics (Tversky & Kahneman 1983; Bazerman 1986), expertise (Prietula & Simon 1989, Blattberg & Hoch 1990), and nonconscious information processing (Epstein 1990, 1994, Lieberman 2000, Kahneman 2003). In general, as Hogarth (2001, p. 14) argued: "intuition can be reached with little apparent effort and without conscious awareness, as it involves little or no conscious deliberation."

The above definition suggests that intuition will not rather lead to increase in precision level of the managers' thinking and simultaneously improvement of their processes of making decisions, as typically enable informational sources derived from the marketing research. Too much belief put in intuition as the powerful remedy in solving decision problems mistakenly leads many managers to undertaking gambling acts with higher level of risk. Given this, it is clear, that information stands in opposite direction to intuition and vice versa. However, information may be a subject of serious criticism too. For instance, too much knowledge, as the result of information accumulation and storage in memory, leads to information overloading and simultaneously causes managers' confusion in decisions (Tarka 2017). Borges, Goldstein, Ortmann and Gigerenzer (1999) once even argued, the strategy of choosing the best alternative from a set of too many alternatives, is more accurate when knowledge is moderate than when knowledge is low or high. Therefore, too much emphasis on the information processing works in favor of intuition.

What is interesting, managers may sometimes process information analytically and sometimes may process information intuitively (Chaiken & Trope 1999). The analytical approach to information processing is more likely when motivation and the ability to process information carefully will be high. On the other hand, the intuitive processing will be more likely when motivation or ability of managers is low (Muthukrishnan & Kardes 2001, Kardes, Muthukrishnan & Pashkevich 2005). In other words, intuition can be of real help for managers in a wide range of critical decisions and can be integral part of successfully completing tasks that involve high complexity and short time horizons (Isenberg 1984, Shirley & Langan-Fox 1996, Hayashi 2001), however, the informational sources can not be excluded either from decision making process, as they play too significant role. Though intuition has something to say, managers need to carefully apply it in decisions and should treat only as supportive source of correcting the decisions based on the previously collected information. Managers and top executives need to find a balance between intuition and information, using both spheres in specific decision situations and the right moments.

4. Methodology of empirical research - data collection

In the process of collecting empirical data, the internet questionnaire survey was used, however, before this measurement instrument was posted on website, it was checked in the offline pilot study (N = 50). Next, to the chosen group of respondents working in enterprises located in the area of Poland (invited to the survey through the two social networking sites: LinkedIn and Golden Line), a direct link to the questionnaire was sent via personal emails. The whole empirical research was conducted between March 1 and August 31 in 2014, and the process of choosing the appropriate respondents to the sample was conducted with the use of two techniques: judgmental and snowball sampling. The last mentioned here technique was particularly useful, for it helped to increase the chance of reaching the specific individuals in the companies such as: owners, managing directors, product managers, etc.

Category	Respondent type	Percent	Employment level in companies conducting marketing research	Percent
Position occupied in the company	Director of Marketing/Sales Department	43	Less than 15 [at least 6]	9
	Product manager	37	From 16 to 99	17
	Co-/Owner, Vice-/Chairman, Managing Director – CEO	20	From 100 to 249	16
	Total	100	From 250 to 499	8
Education level	Master degree	73	Above 499	50
	MBA	27	Total	100
	Total	100		

Table 1. Respondents according to their positions and education, and employment in companies, N = 213

In sum, for 1100 sent invitations by email to the potential respondents - 289 responded. However, after eliminating companies that did not conduct the marketing research projects at all, the size of sample equaled N = 213. As a consequence, other companies, which didn't yet conduct any marketing research, and at the same time didn't meet the requirements of the empirical research, were excluded from further analysis.

The structure of sample included professionals who were in charge of strategic and tactical marketing activities. The sample structure consisted mainly of the respondents responsible for decision-making processes (Table 1), and the structure of companies (concerning their level of employment) included mainly the medium and large firms, based on their marketing research budgets. Managers in such firms tend to have more resources available for the research projects

and have more technically sophisticated research instruments, methods, etc. At the same time, in the process of selecting sampling units, the main focus was on the companies from industries as FMCG, finance and insurance, retail and wholesale, media. The choice of companies from such industries resulted indirectly from their big share of expenditures on research in the marketing budget, where for years the FMCG manufacturers are the leaders.

5. The ordinal regresion models in diagnosis of empirical data

Because responses in the measurement instrument were prepared on the basis of ordinal scale, for their analysis we applied ordinal regression model. According to performed analysis (see Table 2 and Figure 1) we noticed that the data did not meet the assumptions of normality. Both Kolmogorov-Smirnov's and Shapiro-Wilk's tests indicated on large deviations from normality within the measured variables. Therefore variables were verified on the basis of nonparametric principles of measurement. It is worth mentioning that these types of data and measurement scales (The classification of scales, depending on the nature of collected data, and description their relevance to the statistical procedures employed, can be found in Steven's works (1951), who distinguished nominal, ordinal interval and ratio scales.), as well as the class of problems related with them are often encountered in social sciences (McCullagh 1980). For example, in physical sciences the overwhelming proportion of data is essentially of the quantitative nature, while in social sciences (like in marketing, management, psychology, sociology and consumers studies), the qualitative data are more common. The qualitative measurements, whether subjective or objective, typically take values in a limited set of categories which may be on an ordinal or purely nominal scale (Pearson 1913, Plackett 1965). Thus, analytical methods and model which are useful in one discipline can be of little use or interest to researcher in another area.

The applied ordinal regression procedure, allowed for evaluation the importance of particular predictors (factors) in relation to two selected dependent variables of the ordinal nature. Just to remind, in case of ordinal measurement, the linear regression models do not work well because linear regression reflects high sensitiveness to the way we define categories of the dependent variables. In case of ordinal variables, researcher needs an ordering of the response categories. If two adjacent categories are collapsed into one larger category, only a small change will be made, and the models built using the old and new categorizations will be very similar. Any model that is built before combining categories will be different from model that built after. The linear regression models are hence sensitive to the categorization. More importantly, in the ordinal regression, thresholds or constants (corresponding to the intercept in linear regression models) depend only on the category's probability that is predicted. Values of the predictors do not affect the part of the model, and the prediction part of the model depends only on predictors and is independent of the outcome category. Finally, instead of predicting the actual cumulative probabilities, ordinal regression model predicts a function of those values.

Types of tests applied in the analysis				
Variables	Kolmogorov-Smirnov*		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
Information	0,21	0,00	0,89	0,00
Intuition	0,29	0,00	0,77	0,00

Table 2. Tests of normality of the dependent variables: "Intuition" and "Information", N = 213

Legend: * Lilliefors significance correction.

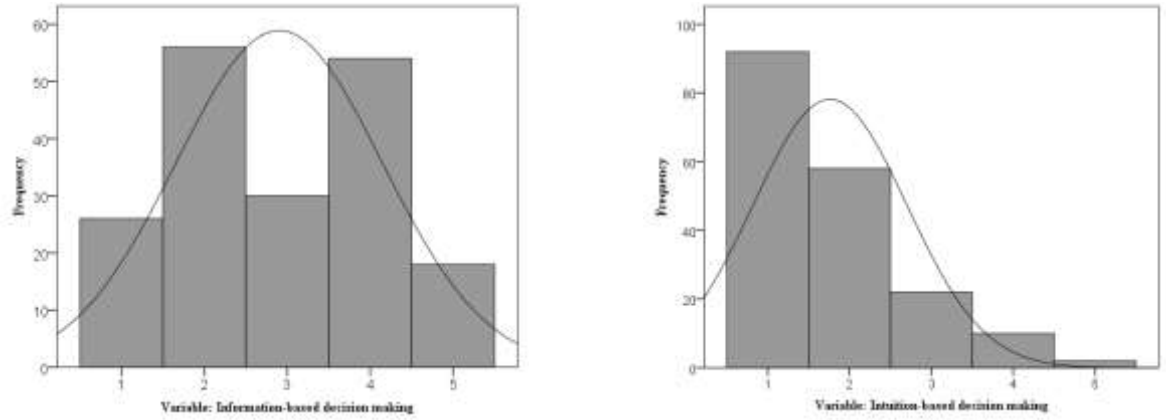

Figure 1. The histograms of dependent variables "Intuition" and "Information" applied in ordinal regression models, N = 213

The process of constructing regression models in the present study was based on several decisions. First, the author defined the tange of dependent variables and then decided which of the predictors to use for location the component of the model. A decision whether to include or not a scale component in regression analysis was a turning point, because the location-only model provides a summary of the data. In the interest of keeping things simple, it is best to start with a location-only model, and further add a scale component only if there is evidence that the location-only model is inadequate for the data. Accepting this methodology, we started initially with a location-only model, and after estimation of the model, we decided if the scale component might be warranted.

The ordinal-dependent variables were expressed in the form of short statements as follows:

1) In the process of making decisions I profit mainly by intuition and gut-feelings ("Intuition" variable); 2) In the process of making decisions I profit by information, derived from marketing research studies ("Information" variable) - where response answers were measured on 5-point Likert scale in agree/disagree format: 1 = I completely agree, 2 = I agree, 3 = I neither agree nor disagree, 4 = I disagree, 5 = I completely disagree.

On the other hand, in choosing predictors, we identified variable: *Formal position occupied by the respondent in the company* (abbrevation - "Position"), measured on three levels: "Director of marketing/sales department", "Product manager", "Co-/Owner, Vice-/Chairman, Managing Director – CEO" and his/her *Education level* ("Education"), measured on two levels respectively: "Master degree" and "MBA degree".

Both regression models contained the same two predictors "Education" and "Position" and one dependent variable ("Intuition" or "Information") interactively positioned in respective model:

$$\text{Model 1: } link_{(\gamma_{ij1})} = \theta - \left[\beta_1 x_{i1} + \beta_2 x_{i2} + \cdots + \beta_p x_{iJ}\right] \quad (1)$$

$$\text{Model 2: } link_{(\gamma_{ij\ 2})} = \theta - \left[\beta_1 x_{i1} + \beta_2 x_{i2} + \cdots + \beta_p x_{iJ}\right] \quad (2)$$

where: $link$- is the link function,

γ_{ij1} - is the cumulative probability of the j-th response category of "Information",

γ_{ij2} - is the cumulative probability of the j-th response category of "Intuition",

θ – is the threshold for the j-th category,

p – is the number of regression coefficients,

$x_{i1} \ldots x_{ip}$ – are values of the predictors: "Education" and "Position", for the i-th case,

$\beta_1 \ldots \beta_p$ – are regression coefficients.

In the next phase, an appropriate link function, in order to match the structure of the data with the hypothesized models, was selected. The problem is that, in literature one can find at least a

few options which are worth considering (Table 3 with functions – the link function is a transformation of the cumulative probabilities that allows estimation of the model) and there is no clear consensus over the best choice of link function that fits best to the empirical data. And although some of the functions behave similarly, in many instances (particularly the logit, complementary log-log and negative log-log function), there appear situations where choice of link function can break the assumptions of regression model. In some cases where the initial model performs poorly, we need to test alternative link functions in order to see if a better optional model can be constructed with a different option, i.e., a link function.

Function type	Mathematical form	Typical application
Logit	log(x / (1−x))	Evenly distributed categories
Complementary log-log	log(−log(1−x))	Higher categories more probable
Negative log-log	−log(−log(x))	Lower categories more probable
Probit	F−1(x)	Latent variable is normally distributed
Cauchit (inverse Cauchy)	tan(π(x−0,5))	Latent variable has many extreme values

Table 3. Five different types of link functions that can used in ordinal regression models
Source: McCullagh 1980

Regression model with configuration of variables: Position, Education regressing on Intuition*									
Function	Logit			Complementary log-log			Negative log-log		
Model fitting information									
Model	-2 Log Likelihood	Chi-Square	Sig.	-2 Log Likelihood	Chi-Square	Sig.	-2 Log Likelihood	Chi-Square	Sig.
Intercept only	94,13	-	-	63,26	-	-	94,13	-	-
Final	92,33	1,801	0,61	58,82	4,44	0,22	89,79	4,34	0,23
Goodness-of-Fit									
	Chi-Square	df	Sig.	Chi-Square	df	Sig.	Chi-Square	Df	Sig.
Pearson	24,97	17	0,09	16,27	12	0,18	22,65	17	0,16
Regression model with configuration of variables: *Position, Education* regressing on *Information*°									
Function	Logit			Complementary log-log			Negative log-log		
Model fitting function									
Model	-2 Log Likelihood	Chi-Square	Sig.	-2 Log Likelihood	Chi-Square	Sig.	-2 Log Likelihood	Chi-Square	Sig.
Intercept only	63,26	-	-	63,26	-	-	63,26	-	-
Final	56,48	6,77	0,08	58,82	4,44	0,22	56,33	6,93	0,07
Goodness-of-Fit									
	Chi-Square	Df	Sig.	Chi-Square	df	Sig.	Chi-Square	Df	Sig.
Pearson	13,01	12	0,37	16,27	12	0,18	12,55	12	0,40

Table 4. Model-fitting information for both ordinal regression models applied in the empirical study

Approaching now the interpretation of the empirical results, as it can be observed, the variable "Intuiton" has been strongly skewed, showing asymmetry towards two categories: 1 and 2. Thus, for that variable a negative log-log function was applied, as the lower response categories seemed to be more probable. The bulk of cases were located in the lower range of the measurement scale (1 and 2). In contrast, values of variable "Information" were evenly distributed across all response categories, so the variable should be estimated according to a logit function. However, due to analytical comparisons, we will use both functions: negative log-log and logit, as well as complementary log-log function. The results of comparisons were presented in Table 3.

Another aspect of the analysis was the question whether both regression models can provide an adequate fit to data. To answer this question, the model-fitting information (see Table 4) was reexamined on the basis of -2 log-likelihood values for the intercept only in regarding the baseline and final model with the predictors. While the log-likelihood statistics themselves are suspect due to the large number of empty cells in the model, the difference of log-likelihoods may usually be interpreted as chi-square distributed statistics. Therefore, (see Table 4) chi-square represents difference between -2 times the log-likelihood for the intercept-only model and that for the final model within rounding error. Consequently, we could observe no significant values pertaining to chi-square statistics, which may indicate that each model has yielded a significant improvement over the baseline intercept-only model. If we additionally compare the models with different link functions, we will notice that model (which included dependent variable "Intuition"), has obtained a slight improvement in case of negative log-log function and complementary log-log function, as compared to logit function. For example, in case of variable „Intuition", the chi-square statistics for the negative log-log (4,34) and complementary log-log (4,44) functions are larger than that with the complementary logit function (1,80). This suggests that they are much better than logit function.

The output of Table 4 presents also information about the goodness-of-fit (Pearson's chi-square statistic) for both models. This statistic tests whether the observed data are possibly inconsistent with the fitted model. If it is not, that is, if the significance values are large, then we would conclude that data and the model predictions are similar and the model, which is being under investigation, is good. Now, as can be observed, both regression models exceeded the level of p = 0,05 and proved adequacy, although one must admit it, they are still far from perfect configuration.

Finally, Table 5 presents the parameter estimates of both models. This information summarizes the effect of each predictor on dependent variable, and while the interpretation of coefficients in such models is difficult due to the nature of the link function, the relative values of the coefficients for factor levels (independent variables) provide insights into the effects in the model. Hence, a given factor level with a greater coefficient indicates a greater probability of being in one of the outcome (dependent variable) categories. As observed, the significance level of test for the model with variable "Information" estimated by logit function which was regressed by predictor "Position", is greater than 0,05 in two categories: 1 (represented by respondents as: Co-/Owner, Vice-/Chairman, Managing Director – CEO) and 2 (Director of Marleting/Sales Department) suggesting that their contribution to explanation of whether they use information, is due to chance. The same situation repeats with variable "Education", within which category no. 2 (representing managers with MBA level of education) has obtained nonsignificant result. In fact, there were only two categories which displayed significant results of the relationships with "Information" variable, namely: product managers (defined by category with no. 3 of the variable "Position") and respondents with master degree (category no. 1 of variable "Education"). That means, functional managers pay more attention to information and the market research, than their colleagues from higher levels in the company hierarchy.

Regression model with variables *Position* and *Education* regressing on *Information*						Regression model with variables *Position* and *Education* regressing on *Intuition*					
Logit	Variable	Estimate	Std. Error	Wald	Sig.	Negative log-log	Variable	Estimate	Std. Error	Wald	Sig.
Location	Pos. = 1	0,88	0,35	1,16	0,28	Location	Pos. = 1	3,92	0,32	28,35	0,00
	Pos. = 2	0,72	0,38	2,14	0,13		Pos. = 2	3,62	0,36	32,48	0,00
	Pos. = 3	3,41	0,35	29,02	0,00		Pos. = 3	1,10	0,27	7,29	0,02

	Edu. = 1	2,51	0,42	35,74	0,00		Edu. = 1	2,89	0,29	26,09	0,00
	Edu. = 2	0,56	0,36	0,19	0,67		Edu. = 2	3,11	0,42	18,15	0,00

Table 5. Parameter estimates of regression models based on location, contribution of "Position" and "Education" to dependent variables "Intuition" and "Information"

Legend: Categories with their short terms: "Position" defining: Pos.1 = Co-/Owner, Vice-/Chairman, Managing Director – CEO, Pos. 2 = Director of Marleting/Sales Department, Pos. 3 = Product Managers; and "Education" defining: Edu. 1 = Master, Edu. 2 = MBA.

Applying the same class of predictors ("Education" and "Position") in relation to another dependent variable describing "Inuition", as the source of making decisions in business environment, we could notice that all coefficients have obtained positive values. Therefore the probability associated with particular category of "Education" and "Position", of being in one of the lower categories (1 = I completely agree, 2 = I agree) of the outcome variable "Intuition", has increased. Especially, co-/owners, vice-/chairmen, managing directors were more likely to be located in the lower outcome categories, proving their stronger relationships with intuition. For the third group (i.e, product managers) although their relationship with intuition was also important, the parameter estimates were much smaller as compared with parameters in the group of top executives.

In general, the use of intuition vs. information can be seen as critical in differentiating levels, from top executives and board members to lower-level managers (product managers). The last group mentioned here pays more attention on informational sources.

6. Discussion and conclusions

It is a truism to say that all good decisions need constant monitoring and careful analysis, and there is no argument that managers need to acquire a great deal of information about the industry and social environment in which they operate. However, are these assumptions for managers in companies obvious? The results indicate on something different. It appears that decision makers are more inclined towards intuition or gut-feeling than information. The results might be surprising, especially if we consider the large share of intuition in the decision makers' life. To be clear, intuition although cannot be completely excluded from the process of decision making, it cannot also predominate that process since in practice, there are many proofs where only information derived from marketing research can be of real help.

Since, managers pay attention to intuition which prevails over the information, we can infer, it is due to the nature of problems they encounter in their work. For instance, the complexity of decisions and difficult tasks associated with information processing, makes managers to opt for effortless and simplified ways of comprehending the external environment. Perhaps, too much information discourages them from using information to a larger extent. Another argument tells us that decision users make their choices under pressure time (Eisenhardt 1989, Hitt, Keats & DeMarie 1998, Perlow, Okhuysen & Repenning 2002). Given this, intuition helps to reduce the time needed to undertake prompt decisions.

The frequent use of intuition, however, is not a panacea for all the managerial problems, especially it cannot denote a simple replacement over information which delivers objective understanding of the external market conditions surrounding the company. The frequent use of intuition may needlessly facilitate the decision problems at the expense of their accuracy. In fact, biases which are often committed by managers, can be largely avoided with objective information. Although intuition can be practiced in many decision processess, it cannot completely replace information. It can, however, be a real support for the managerial judgments and thinking (the intuition, under certain conditions may indeed facilitate rapid and effective decision making in business organizations). Marketing information contributes to increased

validity of the decisions in its own unique way. Perhaps, managers using partially intuition and information in specific situations, and balancing between these two spheres would behave more reasonably.

References

ANSOFF, H.I. 1965. *Corporate Strategy*. New York: McGraw-Hill.

BAZERMAN, M.H. 1986. *Judgment in Managerial Decision Making*. New York: Wiley.

BLATTBERG, R.C. & HOCH, S.J. 1990. Database models and managerial intuition: 50% model + 50% manager. *Management Science*, 36, 887-899.

BORGES, B., GOLDSTEIN, D.G., ORTMANN, A. & GIGERENZER, G. 1999. Can Ignorance Beat The Stock Market? In G. Gigerenzer, P.M. Todd (Eds.), *Heuristics That Make Us Smart* (59-72). Oxford, England: Oxford University Press.

CHAIKEN, S. & TROPE, Y. 1999. *Dual-Process Theories in Social Psychology*. New York: Guilford.

CYERT, R,M. & MARCH, J.G. 1963. *A Behavioral Theory of the Firm*. Englewood Cliffs: Prentice Hall.

DENES-RAJ, V. & EPSTEIN, S. 1994. Conflict between intuitive and rational processing: when people behave against their better judgment. *Journal of Personality and Social Psychology*, 66, 819-829.

EISENHARDT, K. 1989. Making fast strategic decisions in high velocity environments. *Academy of Management Journal*, 32, 543-576

EPSTEIN, S. 1990. Cognitive-Experiential Self-Theory. In L. Pervin (Ed.), *Handbook of Personality: Theory and Research* (165-192), New York: Guilford Press.

EPSTEIN, S. 1994. Integration of the cognitive and psychodynamic unconscious. *American Psychologist*, 49, 709-724.

FERGUSON, G. 1999. *Cracking The Intuition Code*. Chicago: Contemporary Books.

GIGERENZER, G. & TODD, P.M. 1999 *Simple Heuristics That Make Us Smart*, Oxford University Press, New York-Oxford.

GILOVICH, T.D. & GRIFFIN, D.W. 2010, *Judgement and Decision Making*. New York: Wiley.

GUENTHER, H.V. 1958. The levels of understanding in Buddhism. *Journal of the American Oriental Society*, 78, 19-28.

HALEY, U.C.V. & STUMPF, S.A. 1989. Cognitive trails in strategic decision-making: linking theories of personalities and cognitions. *Journal of Management Studies*, 26, 477-497.

HAMBRICK, D.C. & MASON, P.A. 1984. Upper echelons: the organization as a reflection of its top managers. *Academy of Management Review*, 9, 193-206.

HASTIE, R. & DAWES, R.M. (2001). *Rational Decision in An Uncertainty World: The Psychology of Judgment And Decision Making*. London: Sage Publications.

HAYASHI, A.M. 2001. When to trust your gut. *Harvard Business Review*, 79, 59-65.

HITT, M.A., KEATS, B. & DEMARIE, S.M. 1998. Navigating in the new competitive landscape: building strategic flexibil ity and competitive advantage in the 21st century. *Academy of Management Executive*, 12, 22-42.

HOGARTH, R.M. 1980. *Beyond Static Biases: Functional and Dysfunctional Aspects of Judgemental Heuristics*. University of Chicago: Gradute School of Business.

HOGARTH, R.M. & MAKRIDAKIS, S.M. 1981. Forecasting and planning: an evalutation. *Management Science*, 27, 115-138.

HOGARTH, R.M. 2001. Educating intuition. *Journal of Consumer Research*, 22, 98-109.

ISENBERG, D.J. 1984. How senior managers think. *Harvard Business Review*, 62, 81-90.

KAHNEMAN, D. 2003. A perspective on judgment and choice. *American Psychologist*, 58, 697-720.

KARDES, F. R., MUTHUKRISHNAN, A. V. & PASHKEVICH, V. (2005). On The Conditions under Which Experience and Motivation Accentuate Bias in Intuitive Judgment. In T. Betsch

& S. Haberstroh (Eds.), *The Routines of Decision Making* (139-156). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

LIEBERMAN, M.D. 2000. Intuition: A social cognitive neuro science approach. *Psychological Bulletin*, 126, 109-137.

LUPIA, A., MCCUBBINS, M.D. & POPKIN, S.L 2000. *Elements of Reason*. Cambridge University Press.

MARCH, J.G. (1978). Bounded rationality, ambiguity and the engineering of choice. *The Bell Journal of Economics*, 9, 587-608.

MARKUS, H. & ZAJONC, R.B. (1985). The Cognitive Perspective in Social Psychology. [In] G. Lindzey & E. Aronson (Eds.), *The Handbook of Social Psychology* (137-230), New York: Random House.

MCCULLAGH, P. 1980. Regression models for ordinal data. *Journal of the Royal Statistical Society, series B,* 2, 109-142.

MINTZBERG, H., RAISINGHANI, D. & THEORET, A. 1976. The structure of unstructured decision processes. *Administrative Science Quarterly,* 21, 246-275.

MUTHUKRISHNAN, A.V. & KARDES, F.R. 2001. Persistent preferences for product attributes: the effects of initial choice context and uninformative experience. *Journal of Consumer Research,* 28, 89-104.

OSBECK, L.M. 2001. Direct apprehension and social construction: revisiting the concept of intuition. *Journal of Theoretical and Philosophical Psychology*, 21, 118-13

PEARSON, K. 1913. Note on the surface of constant association. *Biometrika,* 9, 534-537.

PERLOW, L.A., OKHUYSEN, G.A. & REPENNING, N.P. 2002. The speed trap: exploring the relationship between decision making and temporal context. *Academy of Management Journal*, 45, 931-955.

PLACKETT, R.L. 1965. A class of bivariate distributions. *Journal of American Statistical Association,* 60, 516-522.

PORTER, M.E. 1985. *Competitive Advantage*. New York: Free Press.

PRIETULA, M.J. & SIMON, H.A. 1989. The experts in your midst. *Harvard Business Review*, 67, 120-124.

RUBINSTEIN, A. (1998) *Modeling bounded rationality,* The MIT Press, Cambridge, Massachusetts.

SHIRLEY, D.A. & LANGAN-FOX, J. 1996. Intuition: a review of the literature. *Psychological Reports*, 79, 563-584.

SIMON, H.A. 1987. Making management decisions: the role of intuition and emotion. *Academy of Management Executive*, February, 57-64.

STARBUCK, W.H. (1985). Acting First and Thinking Later: Theory Versus Reality in Strategic Change. In Pennings. J.M. (Ed.), *Organizational Strategy and Change* (336-372), San Francisco: Jossey-Bias.

STEVENS, S.S. (1951). Mathematics, measurement and psychophysics. In S.S. Stevens (Ed.) *Handbook of Experimental Psychology*. New York, Wiley.

TARKA, P. (2017). *Determinants of The Marketing Research Effectiveness*. Poznan Economics University Press (*in press*).

TVERSKY, A. & KAHNEMAN, D. 1983. Extensional versus intuitive reasoning: the conjunction fallacy in probability judgment. *Psychological Review*, 90, 293-315.

VAUGHAN, F.E. 1979. *Awakening Intuition*. New York: Double Day.

VRIEND, N.J. (1996). Rational behavior and economic theory. *Journal of Economic Behavior & Organization,* 29, 263-285.

WILD, K. W. 1938. *Intuition*. Cambridge University Press.