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INDIVIDUAL'S INFLUENCE WITHIN MULTI-PERSON
DECISION UNITS

1. Aim of the Study

Analysis and explanation of preference formation has been one of the most dominant areas in marketing research in the near past. Though it is well known that many major consumption and purchasing decisions are results of multi-person purchasing decision processes, most research activities have been devoted to individual decision making.

The purpose of this paper is to demonstrate a new methodology to measure and explain different types of individual's influence on group decisions.

Results of a pilot study based on decision processes run during a computer simulated business game are presented in order to demonstrate the viability of the new concept.

2. Empirical Research of Influence - An Overview

2.1. Research Areas

Group decision making processes are handled within the theory of organizational behavior and the theory of small groups.

In the area of consumer behavior there are research streams circling around reference groups, opinion leaders and normative preference building. Special interest in family decision making during the last years encouraged the development of this new and rather independent research tradition.

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In spite of common fundaments, concepts and research tradition in the area of household decision making and organizational buying behavior developed almost independently. Within the field of industrial marketing the interaction approach focusing on buyer seller-dyads emerged as the last research area dealing with group decision making.

An overview of these different approaches within the research of influence is given in Tab. 1.

2.2. Measuring Influence in the Area of Marketing Research

March's statement in 1955 [9] is still relevant: "One can find few serious attempts in the literature to relate formal definitions of influence either to measurement methods or to the main body of social science theory".

Especially the literature of marketing conveys an image of ad hoc operationalizations with little reference to any theory. General association coefficients, direct questioning methods covering different constructs [10,5] are prevalent.

The examination of the individual's influence as described in literature is almost limited to dyads and takes mostly into account only one side of the process (influencer or influencee). As a further characteristic of this kind of research little reference to specific situations can be found because decisions that have already been taken are studied without any regard to the actual degree of conflict between the decision-parties. Furthermore, the interest is concentrated on the output of the decision rather than on its phases.

The attempts to explain influence mostly use the social theory of power and do not differentiate between power and influence assuming that power is totally exerted.

In the following a conceptual framework to quantify and explain influence is presented.

3. A New Approach to Measure and to Explain Influence

An individual's or a group's influence on an individual or a group is defined as the change in behavior of the other individual or group caused by his acts or preferences resulting from so-

cial interactions and/or the individual's preference before entering the process. Therefore influence can be measured according to what degree a decision-maker succeeds - consciously or unconsciously - in modelling the groups preferences similar to his own preferences.

Any measure of concordance between the individual's and the group's preference at a given point in time, however, is just a raw measure of influence because of not distinguishing between influence and socialisation or chance of internalizing the perceived majority's vote from the beginning (anticipated influence of others).

It is face valid to classify a person as having no - incremental - influence if the group preference is just the average of the individuals' preferences. Vice versa, a decision-maker encouraging the other members of the group to adapt his quite different position should be judged as most influential.

Studies on opinion leaders reveal that persons are opinion leaders only in a few areas of interest. Influence is, however, not only referred to decision objects but to phases of the preference process. As to multiattribute decision models [6,2,11] one can differentiate influence according to the elements of the preference process [13] such as:

- set of perceived decision objects,
- set of relevant attributes,
- perception of objects,
- importance of attributes,
- preferences.

Influence measures taking into account the degree of potential conflict between the group members/preferences etc. at the starting point of a decision process are those shown in Tab. 2: The measurement methodology as far as ranks are concerned follows the Kendall operationalization idea.

3.1. Explaining Influence

Power is defined as an individual's or a group's ability to modify decisions of individuals or a group [5,3,1].

Power emerges in the course of interactions between individuals on the basis of perceived and evaluated possession of power

Comparison of different approaches

Research streams	Main issues	Response variables
Small groups	explanation of group decisions processes	group performance
Organizational behavior	description of group decisions, outputs	adaptation-rate, information search behavior
Normative decision theory	prescription of group decisions, outputs	group preference
Consumer behavior	explanation, prediction of individuals, decision processes	individual's attitude, preference, behavior
Household decision making	description of family decisions, outputs	individual's preference, behavior
Power distribution in marketing channels	explanation of dyadic power relations	output of bargaining, bargaining behavior

bases (competence, social status, ability to punish etc.). This power forms a potential, which enables the powerful person more or less to succeed with his own interests by using his means of power if necessary. Means of power are indicators of exerting power; they are referring to knowledge, reward power, emotional warmth etc. With their help the powerful individual activates or satisfies respectively motives (wishes) directed to him. We define influence as the result of actually exerted power. By using all means of power a powerful person transforms his power into the maximum of possible influence (Fig. 1).

of multi-person decision modeling

Stimulus variables	Data collection	Typical results
intrapersonal, group, context variables	observational experiments	the more group cohesiveness the more non-task oriented behavior
role, position, type of organization, type of purchase, decision phase	non experimental direct questioning	scientists and managers have more perceived influence on vendor selection decisions than purchasing agents
individual's preference, utilities	experimental questioning, mathematical aggregation	Pareto-optimal group resolutions
individual's perception, weight of attribute, preferences of relevant others, product category, degree of risk	questioning	opinion-leaders, relevant others provide information and product evaluation criteria
roles, life-cycle stages, age classes, time of marriage, product categories, decision phases	non experimental direct questioning	husband decides where to buy an automobile, wife decides where to buy a furniture
power, sources of power, role, personality trait, type of organization	role playing experiments, direct questioning	referent/expert power increases seller's credibility

It has already been mentioned that influence is not just measured for the overall result of a decision process but to all its elements, too. A model to explain the influence element-specifically is:

$$e_{jk} = q_0 + \sum_l q_{kl} (m_{jl} - \frac{1}{I} \sum_l m_{il}),$$

where:

- j - relevant individual,
- k - index for decision elements,
- I - index for power factors,

Table 2

Types of influence and their measurement

Decision element	Measurement approach	Operationalization ($i=1, \dots, j, \dots, I$ - individuals; g - group $s=1, \dots, S$ - objects)
Relevant set of objects	weighted concordance of sets	$e_j = \frac{1}{S(I-1)} \sum_s d_{js} \cdot \sum_i b_{ijs}$
Relevant set of attributes		x_i - vector of relevant set with $x_{is} = \begin{cases} 1, & \text{if } s \text{ is relevant for } i \\ 0, & \text{else} \end{cases}$ d_j - vector of concordant cases between j and g with $d_{js} = \begin{cases} 1, & \text{if } x_{js} = x_{gs} \\ 0, & \text{else} \end{cases}$ b_{ij} - vector of discordant cases between i and j with $b_{ijs} = \begin{cases} 1, & \text{if } x_{is} \neq x_{js} \\ 0, & \text{else} \end{cases}$
Perception of objects		$e_j = \frac{1}{\binom{S}{2} (I-1)} \sum_s \sum_{s'} c_{jss'} \sum_i e_{ijss'}$
Weights of attributes		y_i - vector of ranks (objects are to be ordered according to ranks of group) with $y_{is} \in \{1, \dots, S\}; y_{is} \neq y_{is'}, \forall ss'$
Preference		c_j - vector of concordant cases with $c_{jss'} = \begin{cases} 1, & \text{if } y_{is} < y_{is'} \\ 0, & \text{else} \end{cases}$ e_{ij} - vector of discordant cases between i and j with $e_{ijss'} = \begin{cases} 1, & \text{if } c_{iss'} \neq c_{jss} \\ 0, & \text{else} \end{cases}$

m - power factor,

q_{kl} - importance of power factor l for decision element k .

q_{kl} refers to both the motivation of the person exerting power and that of the receiver of power, i.e. the willingness to get influenced and the willingness to influence.

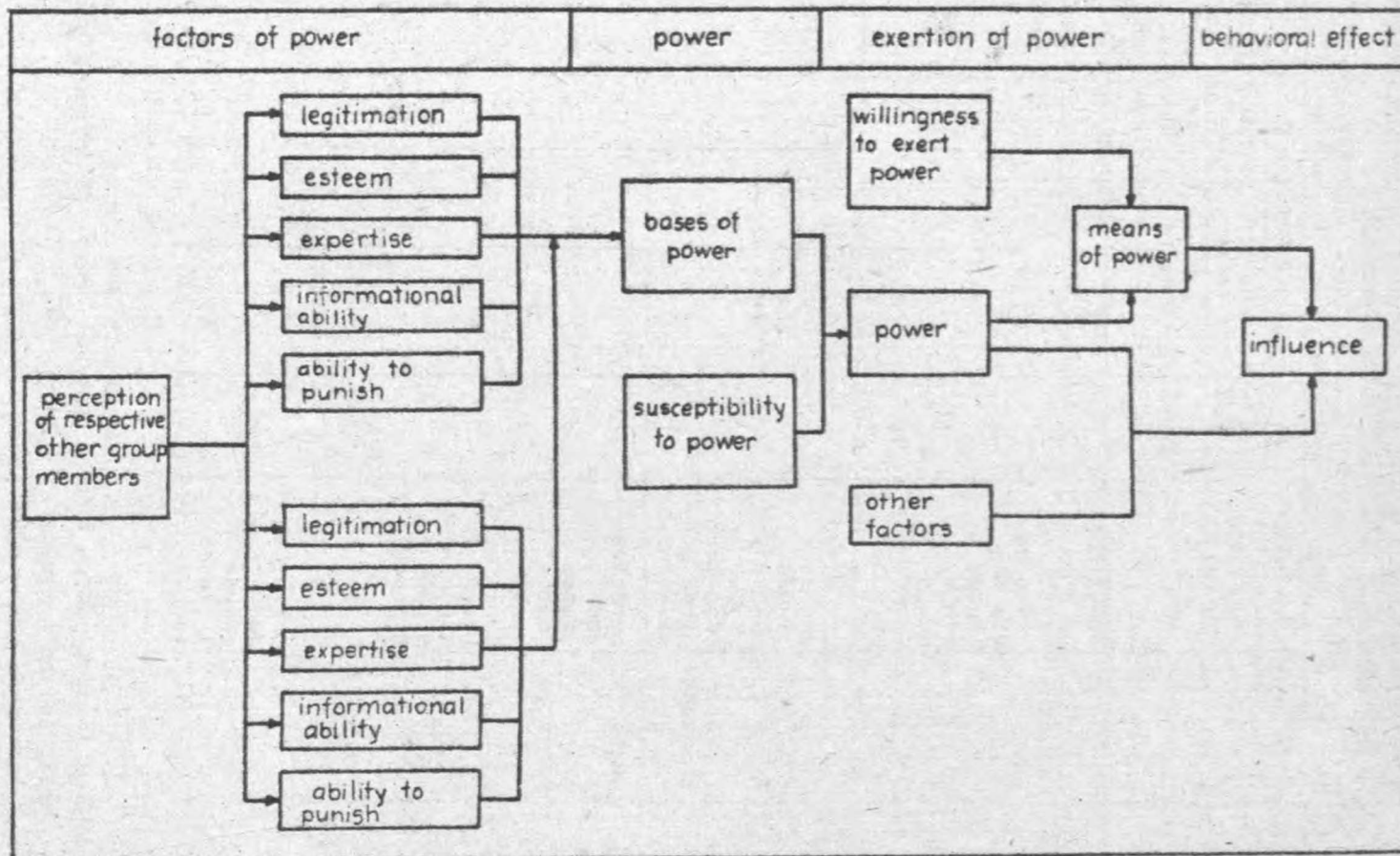


Fig. 1. The process of influence

Table 3

Operationalization of power and respective hypothesis

Bases of power	Variables describing the power	Operationalization of bases of power	Types of influence				
			hypothesized effect of effect	hypothesized effect referred to (x : high effect)			
				set of objects	set of attributes	perception	attribute weights
Legitimate power	demographic	position	+	x	x		
		status: measured via age, income, etc. power exerting person	+	x			
		perceived and assigned sympathy	+				x
Reference power	socio-emotional	perceived group cohesiveness	-				x
Expert power	cognitive	perceived and assigned competence	+			x	
Informational power	psychological	perceived and assigned eloquence	+			x	
Coercive power		perceived and assigned aggressiveness	+				

Table 3 gives the power factors actually used in an empirical study as well as the effects as hypothesized.

4. Goals and Main Results of a Pilot Study

The purpose of the pilot study has been

- to examine the structure of influence within an industrial decision unit,
- to test the ability of the model to explain influence,
- to reveal differences between preference and perception - related influence grades with regard to the power factors.

Respondents were students taking the roles of managers in a computer simulated business game. The design of the study is shown in Tab. 4.

Table 4

Design of the pilot study

Data collection	individual preferences (u_{is}) of relevant strategies	
	individual perception (p_{is}) of relevant strategies	
	bases of power (m_{il})	
	group preferences (u_{gs}) group perceptions (p_{gs})	
Data analysis	measuring influence* (1) $u_{gs} = \alpha_0 + \sum_i \alpha_{iu} u_{is}$; (2) $p_{gs} = \alpha_0 + \sum_i \alpha_{ip} p_{is}$ (3) $u_{gs} = \alpha_0 + \sum_i \alpha_{iu} u_{is} + \sum_i \alpha_{iu} - q_{is}$ $q_{is} = \begin{cases} 1, & \text{if } u_{is} = 0 \\ 0, & \text{else} \end{cases}$	
	explaining influence (4) $\alpha_{ju} = \delta_0 + \sum_l \delta_{ul} (m_{jl} - \frac{1}{I} \sum_l m_{il})$ $i \neq j$ (5) $\alpha_{jp} = \delta_0 + \sum_l \delta_{pl} (m_{il} - \frac{1}{I} \sum_l m_{il})$ $i \neq j$	

* It has to be mentioned that the preferences of an individual's irrelevant alternatives are set equal to zero without regard to the interval type of scale.

Regressions were run, where the individuals' preferences (perceptions) were used as independent variables, group preferences (perceptions) as criterion variables and regression coefficients as influence measures. Models (1) and (3) in Tab. 5 differ as regards the mode they consider irrelevant strategies. Coefficient α_{iu}^- can be therefore interpreted as prevention influence in contrast to assertion influence (α_{iu}^+).

The internal validity of the model is increased significantly in four out of ten cases when prevention influence is added. We conclude that there are "blockers" besides promoters [14]. Table 6 shows the fact that most persons are partly promoters and partly blockers as regards some elements of the decision.

Table 5

Incremental explanatory power of model 3
compared to model 1

Group	R^2_{adj}		
	model (1)	model (3)	R^2
1	0.86051	0.97156	0.1111*
2	0.95509	0.99773	0.0426**
3	-0.18879	-0.07550	0.1103
4	0.96871	0.98569	0.0188
5	0.69423	0.71214	0.0779
6	0.42833	0.80199	0.3737
7	0.20706	0.23009	0.0230
8	0.43019	0.93845	0.5083
9	0.85629	0.93127	0.0750**
10	0.36244	0.89772	0.5510*

* $\alpha < 0.05$.

** $\alpha < 0.01$.

By judging persons ranked first or second as an influencer and an individual ranked third or fourth as an influencer, controller and marketing manager were to be found the blockers just as the director seemed to be the promotor in most of the cases.

The fact that marketing managers were the most influential persons as regards perception supports Witte's hypothesis, that expert power without legitimate power hardly ever succeeds [14].

Table 6

Relative frequencies of rank of influence

Position	Influence rank												Σ		
	1st			2nd			3rd			4th					
	prefer- ence		per- cep- tion	prefer- ence		per- cep- tion	prefer- ence		per- cep- tion	prefer- ence		per- cep- tion	prefer- ence		per- cep- tion
	a	p		a	p		a	p		a	p		a	p	
Director	50	20	33	20	30	22	20	20	17	10	30	28	100	100	100
Control- ler	0	20	12	30	50	22	30	10	35	40	20	32	100	100	100
Produc- tion manager	50	10	15	10	0	28	30	60	33	10	30	23	100	100	100
Marketing manager	0	50	40	40	20	28	20	10	15	40	20	17	100	100	100
Σ	100	100	100	100	100	100	100	100	100	100	100	100	-	-	-

Note: a - assertion influence; p - prevention influence.

The final selection of the factors explaining influence out of an extended set of variables was done via regression. Internal validity, however, was weak (Tab. 7).

T a b l e 7

Rank order importance of factors explaining influence

Object of influence	Rank of importance				
	1st	2nd	3rd	4th	5th
Preference	sociability	involvement	competence	sympathy	dominance
Perception	dominance	sympathy	involvement	competence	sociability

5. Limitations of the Research and Further Studies

The main reasons for the poor results may be found in an inappropriate operationalization of the theoretical constructs and in estimation problems (type of scale, multicollinearity) [8]. Further on, the fact that the evaluation tasks were not connected with any consequences for the members of the business game may lead to a weak external validity.

It can be stated, however, that in contrast to prevalent notions influence obviously is a multidimensional construct and that according to the various types of influence the bases of power motivate the persons concerned in different ways. The main study underway will be run with real managers.

Bibliography

- [1] Cartwright D., Zander A., Group Dynamics-Research and Theory, New York 1968.
- [2] Choffray J.M., Lilien G.L., Assessing Response to Industrial Marketing Strategy, "Journal of Marketing", April 1978, p. 20-31.
- [3] Dahl R.A., The Concept of Power, "Behavioral Science" 1957, No. 2, p. 201-215.

- [4] D a v i s H.L., Measurement of Husband-Wife Influence in Consumer Purchase Decisions, "Journal of Marketing Research", August 1971, p. 305-312.
- [5] D o l b e r g R., Theorie der Macht, Wien 1934.
- [6] G r e e n P.E., W i n d Y., Multiattribute Decisions in Marketing: A Measurement Approach, Hinsdale 1973.
- [7] K a t z E., L a z a r s f e l d P.F., Personal Influence, New York-London 1964.
- [8] K r i s h n a m u r t h i L., Joint Decision Making: Modeling Issues and Predictive Testing, Paper Presented at the 4th ORSA/TIMES Special Interest Conference on Market Measurement and Analysis March 1982, Philadelphia-Penn 1982.
- [9] M a r c h J.G., An Introduction to the Theory and Measurement of Influence, "The American Political Science Review" 1955, No. 48, p. 431-451.
- [10] M a r c h J.G., Influence Measurement in Experimental and Semi-Experimental Groups, "Sociometry" 1956, No. 19, p. 260-271.
- [11] P a y n e J.W., Task Complexity and Contingent Processing in Decision Making: An Information Search and Protocol Analysis, "Organizational behaviour and Human Performance" 1976, p. 366-387.
- [12] R o b e r t s o n T.S., M y e r s J.H., Personality Correlates of Opinion Leadership and Innovative Buying Behaviour, "Journal of Marketing Research" 1969, No. 6, p. 164-168.
- [13] T h o m a s L., Der Einfluss von Kindern auf die Produktpräferenzen ihrer Mütter, Berlin 1983.
- [14] W i t t e E., Organisation für Innovationsentscheidungen-Das Promotorenmodell, Göttingen 1973.

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ROLA JEDNOSTEK WEWNĄTRZ WIELOOSOBOWYCH GRUP DECYZYJNYCH

Jedną z dominujących dziedzin badań marketingowych jest analiza i wyjaśnianie preferencji. Mimo iż podstawowe decyzje dotyczące konsumpcji oraz zakupów są efektem grupowych procesów decyzyjnych, to większość dotychczasowych badań w zakresie zachowania się konsumenta dotyczyła jednostek.

Dziedzinami badań zajmującymi się podejmowaniem decyzji przez

zespoły wieloosobowe są m.in.: teoria zachowań wewnątrzorganizacyjnych i teoria małych grup. W odniesieniu do pomiaru wpływu jednostki na podejmowanie decyzji słusznym wydaje się nadal stwierdzenie March'a, iż "w literaturze naukowej można znaleźć niewiele poważnych prób wiązania koncepcji wpływu z teorią nauk społecznych".

Na bazie społecznej teorii przewagi oraz wieloczynnikowej teorii preferencji, artykuł ten stanowi próbę nowego podejścia służącego pomiarowi i wyjaśnieniu wpływu jednostki na decyzje podejmowane w ramach grupy wieloosobowej.

W celu dokonania testu prezentowanej koncepcji oraz operacjonalizacji nowego podejścia przeprowadzono badanie pilotażowe oparte na symulacyjnej grze komputerowej. Dalsze badania z tej problematyki znajdują się w trakcie realizacji.