

QUANTIFYING MESSAGE CONSISTENCY IN INTEGRATED MARKETING COMMUNICATION – CHEAP TALK MODEL APPLICATION

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ABSTRACT

This paper presents an abstract piece of communication, which can address certain characteristic of the decision-making in the marketing communication process, emphasis on the message consistency. The goal is to quantify the message consistency term and to determine the allowed deviation of the messages within the integrated marketing communication framework using game theory. The implementation of the groups of integrated marketing communication into an existing game theory model, Cheap talk, provides preliminary results in the form of the quantified theoretical model of integrated marketing communication. The results will point out that communication has a low tolerance for the mistakes.

1. INTRODUCTION

The communication is present and inevitable phenomena present at all living beings. Due to its complexity and overall pervasion of human activities, often it is a subject of multidisciplinary and interdisciplinary researches. From the economic point of view, research of communication has significantly contributed to understanding economic agents' behaviors and market interactions. One of the possible interactions is B2C communication, which will be analyzed in this paper from the marketing communication perspective.

Marketing communication is mostly based on persuasion and encouraging the customer to engage in purchase or to change the attitude. The development of the marketing communication has reached its peak in integrated marketing communication. The marketing science continues its development towards quantification of established mechanisms and concepts, which points out the necessity for quantitative theoretic models, like the one, which will be offered in this paper. Integrated marketing communication implies pervasion of the groups of marketing communication with the aim of achieving consistency of the sent messages. Most of previous quantitative researches were based on statistical data. The model provided in this paper presents analysis of marketing communication and the consistency of the message from a different perspective. The integrated marketing communication shall be connected to the communication theory, and will be implemented in game theory signal model, emphasis on the consistency of the marketing message.

This paper will consolidate and describe groups of marketing communications, emphasis on the messages and their consistency within and among the groups of marketing communication. The research subject is consistency of message from the aspect of integrated marketing communication. The research goal is to demonstrate that Cheap talk model can be used to quantify the marketing messages consistency, hence to determine eligible deviation between messages regarding to the customers' attitudes. The implementation of the messages of the integrated marketing communication into adapted game theory signal Cheap talk model will provide mathematical confirmation of the importance of the consistent company communication. In addition, it will explain quantitative interlink of the customers' attitudes and trustworthiness of the messages. The model will precisely define allowed deviations in the message content in each stage of the communication regarding to previous messages and to customers' attitudes. This is the first paper that presents application of Cheap talk model to integrated marketing communication.

The rest of the paper is structured as follows. Conceptual framework will provide overview of general communication theory, marketing communication and integrated marketing communication assumptions, emphasis on the message formulation in the last part. Used data has been gathered from secondary sources and presented by description. Methodology chapter explains the game theory assumptions and defining the model. The results chapter shows the application of the Cheap talk model using modeling method and mathematical method. Discussion considers analysis, conclusions, implications and restrictions of the findings.

2. CONCEPTUAL FRAMEWORK

The widest concept of the communication has defined Rot (1982) as an “interaction between entities, which is accomplished by signs”. Communication defined as that extends to other living beings, not just humans. Burgoon et al (1994) define communication as a symbolic behavior, which occurs between two or more participants, it is characterized as process, transactional, affective, and it is a purposeful, goal – oriented behavior that can have instrumental or consummation conclusion. This comprehensive definition enables further analysis of the communication. Communication is a process, hence its characteristics are that it occurs constantly and repeatedly, so it has to be broken down to smaller units, which can be observed. Thereat, the conventional wisdom is that the process^a of an individual communication is consisted of the message, communicators (the sender and the receiver), communication medium, communication channel, code, communication noise^b, feedback^c and context (Pennington, 2001).

The message aspects are: content (information), self-declaration (what sender says of himself), relation (opinion of the receiver) and appeal (what sender encourages receiver to do). From the stated it can be concluded that each messages contains several parts^d. The term of “symbolic behavior” regards to the message as a set of symbols and its transfer, which can unroll various kinds, levels and forms of communication^e. Given the number of the participants, it can be intrapersonal, interpersonal, group communication, public communication and mass communication. It has already been stated that communication is purposeful and goal – oriented behavior and those goals can be revelation of the information, establishing relation, helping, persuasion and entertainment. Regarding the communication functions, there are different authors’ opinions, but most of them concur that communication is informative, educative, persuasive and recreational. Based on the share of the individual functions in the communication process, communication outcomes can be instrumental or consumeristic (Pennington, 2001.). Communication is considered successful when receiver interprets the message as the sender intended to. Precise communication model was created by Burgoon et al (1994). It is a matrix, with the intention to communicate on its abscissa and observation of the communication on the ordinate. In cross section possible outcomes occur: communication, attempt to communicate, attributed communication and behavior. From the

^a The process denotes the dynamics of the communication and the difficulties in determining its beginning and the end.

^b The noise or the hum represents all the distractions that interferes the communication. They can occur at the formatting the message, while transferring the message or at receiving the message.

^c They use to determine if the message is received and accepted.

^d For example, the promotional slogan of the Snickers: “You’re not yourself when you’re hungry” contains four messages. Those messages can be interpreted as follows. The content: you are acting weird, probably because you are hungry; self - declaration: you are annoying me; relation: I cannot believe you are doing this; appeal: eat something and make it stop.

^e The basic division of the communication is made by the role of the language: verbal, non - verbal and para - verbal. The divisions according the other criteria are auditory - verbal, visual, tactile, taste and smell communications; signaling and symbolic; indirect and direct; written and oral; etc.

psychology of communication perspective, there are behavioristic^f and cognitivist models^g, and they have in common the orientation on the receiver. Cognitivist models found their application within marketing communication where their development continues in specific manner.

Marketing communication is a form of communication, which satisfies previously stated definitions and has all the communication elements, and includes transfer and sharing of the meaning between the customer and the seller, whether as it was an individual or a company, as well as between an individual and a company (Ferrel, Hartline, 2011: 291). The specific of the marketing communication is that it is within the function of the marketing concept, which purpose is to bring company closer to the customer. The customer has to be in the center of the attention when forming the message. Regarding that most of the customers do not make the purchase decision immediately, marketing communication has to be shaped such that it encourages the customer and enables gathering and adjusting to information. It is the same process that Lavidge – Steiner model describes through the stages of awareness, knowing, liking, preference, conviction and purchase.^h

The communicators in marketing communication are company, media, distributors, sales, sales representatives and customers. The carriers of marketing communication are the product, the price, promotion, company location and design, advertising, publicity, personal sales, sales promotion and others. Even though they are often misplaced, communicators are persons or groups of persons and communication carrier are the means used to achieve the transferⁱ. This paper emphasis the communicator carriers and the communication types.

The message sent out for the marketing purpose has to be carefully composed in order to transfer the suitable information of the product (content), about the company (self-declaration), relation to the customer (relation) and the appeal for the action (appeal). Each marketing message should more or less appeal to the purchase, but there is one other important reason for the marketing communication, and that is a possibility of attitude adaption. Attitudes are learned and relatively permanent relations toward something or someone. After exposure to the new information, the customer pays attention to the information, understands it and chooses whether to retain the information and adjust the attitude or not. If the receiver is non – consumer, attitude change is necessary condition for

^f S-R models, stimulant – reaction. The stimulant is a message and reaction is behavior. The organism or the individual is treated as a black box

^g S – O – R model, stimulant – organism– reaction. The models are focused on the psychological processes, which occurred influenced by the message, and the result is behavior.

^h Marketing communication implies that the action is the purchase. Another important model, which points out the need for harmonization of the attitudes and behavior, is Festinger's model of cognitive dissonance (1957). The model starts out by observing a difference between the attitudes and behavior, which results in dissonance, which is unpleasant for an individual. The individual wants to achieve the harmony. This model can explain the missing link between the last stage and the stage before in the Lavidge – Steiner model in order to illustrate reality more convincingly. After the receiver reached the level of conviction (to the moment where he could change the attitude), an inside conflict occurs between the new attitude and the existing behavior. The solution for that conflict is to replace the existing product with the new one, and achieve harmony with the new attitude.

ⁱ For example, the product cannot be the communicator, but it is a message carrier, and the message is composed of the product characteristics.

the purchase. This process is relevant both for gaining new customers and for retaining the permanent ones.

Discussions of the messages in marketing communication often refer to composing messages in an advert. Although it is an important field, if the companies do not direct their attention to all the types and forms of communication, can result in sending the inconsistent message which leads to the customer distrust. Everything that a company, its employees and intermediaries do is interconnected and communicates a certain message to the customers. The need for the consistency in the communication leads to the integrated marketing communication.

According to the Ferrel and Hartline, integrated marketing communication implies strategic, coordinated and controlled use of multiple communication channels and creation of consistent message, which ensures the reliance of the existing customers, as well as potential customers. The integrated marketing communication implies holistic approach to overall, individual and each communication of the individual to the company and vice versa (Ferrel, Hartline, 2011). According to the American Association of Advertising Agencies, integrated marketing communication is the “concept of planning marketing communication, which, recognizes and uses the values and the role of the communication disciplines as advertising, direct sales, sales promotion, public relations, and combines and coordinates those disciplines in order to assure clean, consistent and maximal communication affect (Belch, Belch, 1997.:9).

The pillar of the integrated marketing communication is transfer of the consistent and uniformed message through all the elements of the promotion. Given the trends of focusing on the individual buyers, power transfer to the buyers, differentiation and selection of the products and fragmentation of the media and the audience, the promotion program has to be integrated and focused (Ferrel, Hartline, 2011).

There are different views at the forms and systematization of the integrated marketing communication that arise from entanglement and interconnection of individual forms of marketing activities. In addition, different forms of marketing communication can use same communication channels, but the communication goals can be different. Therefore, the phrase communication mix^j has been formed and it implies the use of different forms of marketing communication.

The elements of the marketing communication mix can differ according to different authors. According to Sudar and Keller, communication activities can be divided to primarily and borderline. The primarily activities regard to advertising, sales promotions, personal sales, public relations and publicity. The secondary or borderline activities are design, package, services for the customers and mouth-to-mouth promotion. According to G. E. Belch and M. A. Belch communication, mix is composed of advertising, direct marketing, sales promotion, publicity, public relations and personal sales. T. Kesić says that there are

^j Different name for the communication mix occurs in the communication theory and it is called communication campaign, which aim is to “generate specific outcomes at relatively large number of individuals in defined time and through the organized set of communication activities. (Littlejohn, Foss, 2009: 87)

two groups of communication forms, of which first is composed of advertising, direct advertising and sales promotion, while second consists of public relations, publicity institutional advertising and sponsorships. The criteria for such division is the directness of the communication, immediacy of the effects and the time necessary for the desired results.

According to Hartline and Ferrell, integrated marketing communication involves four main groups of communication, which are advertising, personal sales, public relations and sales promotion. The advertising involves all printed publications, emissions, on line interaction, wireless communication and direct marketing. Personal sales is consisted of account management, prospecting and after- sales service. Public relations involve publicity, press releases and newsletters. Sales promotions involve promotion oriented to the customer and the trade promotion. All stated communication mixes follow the classical concise reaction model AIDA: attention, interest, desire, action, according to Ferrel and Hartline. While choosing the promotion activity, it is important to keep in mind, which goals have to be achieved. If long or short-term effects should be achieved, is it a product promotion or product characteristic promotion, what is the life circle stage of the product, is it important to promote the image, purpose or the mission of the company, who are the buyers and which communication channel can reach them effectively. While composing the model, the Ferrel and Hartline's communication mix will be used, because the communication types are divided into fewer groups, which facilitates implementation in the model.^k

The advertising is a type of marketing communication, which implies sender is paying for the purpose of product/ service presentation and achieving economic goals. Given the significant budget requirements, its specifications rise a lot of interest. Although, there is no quantitative method that can precisely define optimal expenses, most authors agree that it is minor damage to define to big rather than too small budget. Advertising trough the TV channels represents the most popular form of advertising, but is also the most expensive one and many small companies cannot afford it. For such companies' creativity is crucial. The researches (Ferrel, Hartline, 2011: 296, 298) show the reorientation toward the new media such as social networks, reality shows, new cable programs, mobile applications, telemarketing, search engines, e-mailing, sponsorships, specialized web sites or blogs, while use of classical media like radio and newspapers significantly declines^l. The advantages of the advertising are the flexibility and possibility of reaching either the wide audiences or narrow targeted segment. Institutional advertising and product advertising is the main advertising division according to Ferrel, Hartline (2011:299). Institutional advertising has a goal to transfer a message about the company's image, idea, culture, purpose and mission. Such advertising has long-term effects of maintaining the positive opinion of the customers about the company by the customers and stakeholders. Product advertising is oriented towards image promotion, benefits, characteristics and ways of product use. The goal is to raise attention and create the interest of the customer. „Neutral“ promotion of the new

^k Besides that, four groups facilitate implementation into four-stage model. In addition, the same number has the AIDA model, which will enable comparison and widen the interpretation.

^l Some of the stated forms can be found in some literature included into the group of direct marketing.

product and its benefits leads to the market expansion, which benefits to all manufactures of similar products. Opposite is the “competitive” advertising which represents controversial type of the advertising, which use the comparison of own product to competitor’s, according to Ferrel and Hartline (2011). Regarding on the laws in each country, the advert can use specific competitor’s name or has to use “the other” product which will not remind to any specific product.

Measuring the advertising effectiveness can be performed by pretest, posttest, and evaluation during the advertising or the combination of stated. The pretest is usually conducted as a panel research and existing and potential buyers are asked to grade the advertising. During the advertising, companies can trace customers’ reactions to the messages, respectively the number of purchases, visits to the web sites of the company, using the information call number or coupon use. The posttest depends on the measurement of the goal. It can be conducted by measuring the attitudes and customer satisfaction, satisfaction with the product use, or measuring the market share. This kind of testing have a problem in determining impacts and causal relations of other communication efforts. That diminishes the possibility of determination of specific influences of advertising to the market changes.

The public relations use for the communication with customers, stakeholders and employees. It implies the systematic efforts of encouraging positive interest for the company and its products. The most common goal is promotion of company, image and ideas, and strengthening mutual understanding. It can be achieved using press releases, sponsored articles, articles about the technical characteristics for the customers, articles about researches or company’s status for the stakeholders, press conferences, event sponsoring, placing the product into a TV program, and employee relations (Ferrel, Hartline, 2011: 304 - 308). Besides that, the efforts are pointed to non – paid releases in media through launching the stories about the company^m. All the public relation activities are interlinked and help to generate strong messages for the public. According to this division, public relation consider both paid and non-paid advertising. The significance of the public relations also lies within the effective response to negative public information about the company or a product.

Sales promotion represent a communication form, which encourages the purchase, and is consistent and complements other forms of marketing communication. The sales promotions can be oriented towards the intermediaries or customers. When oriented to customers, they represent an effective way of introducing new products to the market or promoting established brands. When oriented to intermediaries, they are conducted through the rewards for the increase in turnover or sales on specific locations. The sales promotions can be enforced in the forms of coupons, rebate, samples, loyalty program, and promotion at the purchase location, rewards, competitions, prize games and direct mail. Trade promotion based on the intermediaries can imply lower prices for higher quantity, price reduction proportional to total quantity bought, rewards for the special sales efforts, free goods, trainings, participating in promotional costs, sales initiatives or sales contest with rewards (Ferrel, Hartline, 2011).

^m According to the Ferrel and Hartline division, the public relations and the publicity are combined into one group.

Personal sales is a form of marketing communication, with purpose to inform the buyer, to draw attention, create interest and desire and to convince him to buy the product. The personal sale is the most complex relation with the customer. The advantage of such communication is the possibility of precision and direct contact with the customer providing the insight into customer's attitudes, needs and desires. The downside of this communication are high expenses per the contact. The goals of personal sales can be various, but always aligned with the integrated marketing communication strategy. In general, personal sales are used to find, inform, convince and retain the customer. In addition, it can contain the elements of customer service, such as after sale service and the prospecting and creating a database. Training sales representatives is crucial in this communication activity, and its importance rises with the complexity of the product.

Sales management determines the goals for the sales force, determinates its size, controls, and evaluates the achievements. According to that, necessary sale forces is determined and the next step is the recruiting and training sale representatives. Recruiting process should be performed carefully, because the chosen person represents the company, furthermore, the company invests a notably amount in each representative. Recruiting should be a continuous process. One of the impact tools can also be a system of compensations, which can be set as a fixed salary, provision or combination of those two. Fixed salary does not stimulate additional efforts, but offers security. Provision is very stimulating so it can lead to very aggressive sales. The combination of those two has shown best results (Ferrel, Hartline, 2011). The control and the evaluation is conducted with comparison of sale goals with realization, for each representative and for overall achievements of the sale force. To do that, performance standards have to be defined.

The message has to be memorable and quality, and communicated by suitable channel for the targeted audience. Creative messages are "key for socially reasonable information consumers, as well as the theoretical contribution for the message development, because the theory provides to the communicators the information about the message structure, argument type, appeal choice, repetition and the choice of source and communication channel" (Littejohn, Foss, 2009: 89).

There is no such thing as a universal formula for composing communication messages applicable for each situation. That is why teams of experts are assigned to this issue. Basic predisposition for composing a message and suitable channel choice is quality research of customer attitudes, market segmentation, and message testing. Customer has to stay in the focus of the communication activities.

Basic contribution for composing messages provided social cognitive theory and the extended parallel process model. Fundamental idea of the "social cognitive theory is that people learn trough their observation and future expected outcomes in similar situations" (Littlejohn, Foss, 2009: 89). This theory provided communicators key backup in the fact that people learn based on their observations hence people could be influenced. According to the same theory, people will more easily accept the influence of the communicator with who

they can relate. The determinants of the socially cognitivist theory about the learning by observation can be effectively used while creating messages using communication mix.

The model of extended parallel processing relates to the question of the component of fear at the message effectiveness. The fear appears in persuasive messages, with the purpose to scare people with the consequences, which can provoke immediate behaviorⁿ or the absence of the desired reaction^o. It is generally accepted to use when promoting health or environment preservation, but such form of communication is still under theoretical examination due to ethical implications (Littejohn, Foss: 2009). However, showing unwanted consequences is not rare in practice.

3. METHODOLOGY

The analyzed groups of integrated marketing communication will be implemented in the game theory model in order to achieve mathematical confirmation of the importance of the message consistency, and to explain the interlinkage of the customer attitude change and message credibility. This is the first paper that presents application of cheap talk model to integrated marketing communication. The model will combine two existing models, game theory cheap talk and Ferrel and Hartline's groups of integrated marketing communication into a new model, which will precisely define, allowed deviation in message content regarding to messages from the previous stages and regarding to the customer's attitudes. Prior to Cheap talk model application, relevant game theory presumptions overview will be provided.

Game theory is a mathematical discipline, which started to grow intensively in the middle of twentieth century. The game theory addresses the situations of conflict between two or more participants – players, which is strictly regulated with rules and the outcome depends on the actions of all participants. The rules define player's behavior. There are various types of games, however in order to observe them from the game theory perspective must be true that there are minimum two players in the game, there exists such choice of actions where strategy is relevant, the outcome depends on the chosen strategies of all players hence strategic interaction. Key game elements are players^p, complete description of possible strategies^q, information that is available to the players when making a choice, description of the consequences and payoffs for each player (for each possible combination of actions that players could have taken during the game) and the description of the preferences of each players regarding the payoff. Strategy is an extensive plan of actions,

ⁿ For example, the situation where the smoker continues to smoke, regardless to the information.

^o For example, if the voter votes for anyone except the communicator of the message.

^p Minimally two, as previously stated they could be individuals, coalitions, companies, parties, institutions, countries, etc.

^q Hence, the set of strategies or all possible actions; an individual strategy includes a certain number of actions. The game begins such that one or more players chooses between specified alternatives: after the choice has been assigned to the first move, the result is a certain situation, which determines who makes the next choice, and which alternatives are still open. Each move in the game determinates the payoff.

rules for decision - making or set of instructions, which players should respect considering all available information about the game. Strategies include answer for each opponent's action in any moment of the game.

There are games of complete and incomplete information. The players have complete information if all the game factors are considered general knowledge, which means that the player is familiar with the strategies and payoffs of all players, as well as the time intervals of actions and other players (<http://www.gametheory.net/dictionary>). The game situation is always visible for all players. The players have incomplete information in the situation, where they are familiar only with their own situation, and they can only assess other player's situations. Often is used the term imperfect information, because implies that the player cannot determine previously played actions with certainty, but uses probabilities and beliefs on previously played and possible actions while choosing next move (<http://www.gametheory.net/dictionary>).

The rationality is another game theory assumption and relates to the belief that the players will take actions, which lead to the payoff maximization within the given game framework (<http://www.gametheory.net/dictionary>). It is based on the logical conclusions and parsing of the game (the procedure of examining the possibilities and evaluate chances of both sides in a certain situation).

The game theory can be divided into cooperative games (which implies cooperation which is secured with the external boundaries, but also has a possibility to change rules during the game and usually can be only qualitatively described) and non-cooperative games (has a fixed set of rules and can be mathematically described).

Another game theory division is to static and dynamic games. Static games are the ones where players simultaneously choose actions, and dynamic games are the ones where actions are being played in certain sequences.

„Cheap talk“ game^f is dynamic game of incomplete information and belongs to subgroup of the signaling games^g. In this model, messages can directly influence the payoff, if based on their influence receiver changes the belief of the sender. In order the message can be considered informative, has to satisfy several conditions. Necessary condition in the „Cheap talk“ game is that the different senders have different preferences about the receiver's actions. Second necessary condition is that receiver has different preferences of his own actions, regarding to the type of the senders. The third necessary condition is that the receiver's preferences about the actions are not completely opposite to sender's preferences (Gibbons, 2002).

Given that Cheap talk model is a signaling game, equilibrium is achieved using Perfect Bayesian Equilibrium. Perfect Bayesian Equilibrium occurs if and only if this set of

^f Following the example of the “Cheap talk “ game (Gibbons, 1992: 183 - 207)

^g Signaling games are dynamic games of incomplete information, and they contain and describe the communication of the sender and the signals he sends, and the receiver who estimates the received signals and assess the next move.

terms is met: 1. in each information set, the player has to have a certain belief on which nod has been reached within the information set; 2. given the player's rationality, strategies have to be consistently rational, hence the player's action has to be optimal regarding to his belief of other player's strategy and type; 3. in the information set at the equilibrium path the beliefs are determined by Bayesian rule and equilibrium player's moves; 4. in the information set out of the equilibrium path, the beliefs are defined by Bayesian rule and equilibrium player's moves, hence possible but not probable.

The "Cheap talk" model is a theoretical communication model within the game theory framework. Given that it has been explained that marketing communication satisfies basic principles of the communication theory, it is possible to implement it in the model. Previously to parameter inclusion, it is necessary to define them, so that following the example of the "Cheap talk" model can be created the marketing communication model.

The sender of the message^t is a company and the receiver is a customer. The marketing communication carriers are the forms of marketing communication and different groups of integrated marketing communication will occur in the different stages. The customer will not face all the forms of marketing communication at once. Let the process^u be defined such that the customer will face one form from each group of integrated marketing communication at the time. For example, the customer will first get the message from advertising, in the second stage will receive the public relations message, in the third stage will receive sales promotion message, and in the fourth stage will receive a personal sales message^v. It is also necessary to determine the type of the sender. Given the model restrictions, extreme types will be defined as "low trustworthy" and "high trustworthy"^w. The first condition is that the different senders have different preferences about the receiver's actions, which in this case denotes the fact that the different companies have different target groups hence different companies prefer different customers' reactions. According to the second condition, the receivers will have different preferences, regarding the sender's type, which in this model means that the customer's reactions will be different whether they assess that they are receiving the message from trustworthy or non-trustworthy company. The third condition is that the receiver's preferences on the actions are not completely opposite to sender's preferences, and that means that the receiver is not completely opposite of buying a product (or creating a positive attitude towards the company). Cheap talk model can provide deviation calculation for infinitely number of iterations, but in this model, there will be considered only four stages of the game.

The parameter is introduced according to Crawford and Sobel model (Gibbons, 1992: 212 - 218), which measures allowed message deviation regarding the customer's attitudes. The parameter will be used to explain the deviation of the messages that company

^t In this model, the message will be treated as one notice (the difference has been previously explained).

^u Which will be spread out by stages.

^v The forms of the marketing communication will be randomly chosen from the groups of marketing communication (in reality it is hard to predict which message by which channel the customer will receive first).

^w Namely, the "high trustworthiness" type is a leader in its branch, familiar name, invests in research and development, employs the teams of experts, has defined goals, vision and mission, and offers quality product with quality aftersales service. The "lower" type is the opposite of the first one.

sends to the customers regarding to previously sent messages. It is general knowledge that similar persons, institutions or companies, with similar personalities and attitudes will more easily communicate and establish cooperation^x. The parameter will answer the question how much exactly persons, companies or institutions have to have similar interests in order to continue the communication. The original model will be used and applied to observed situation.

Let the company type is uniformly distributed between 0 and 1, $T = [0, 1]$, $p(t) = 1$, $\forall t \in T$. The space of all possible messages is equal to the space of the types of the companies $M = T$. Interval of actions^y is given within $0 \leq a \leq 1$, $A = [0, 1]$. The customer's payoff function^z is

$$u_k = - (a - t)^2,$$

moreover, the function of the company payoff is

$$u_p = -[a - (t + b)]^2.$$

If the company's type is t , the customer's optimal action is $a = t$, but the optimal action of the company is $a = t + b$. accordingly, different company types have different preferences on customer's actions, and the preferences of the customers and the company are not completely opposite. The closer the parameter b ($b > 0$) gets to the zero, the similarity in the interests of company and the customer is higher.

The space of the company interval is divided into n parts: $[0, x_1)$, $[x_1, x_2)$, ..., $[x_{n-1}, 1]$, given that, each type within each interval emits the same message, respectively the types in the different intervals send out mutually different messages. Regarding the parameter b , there is a limited number of the intervals which can occur in the equilibrium, denoted with $n^*(b)$, and the partial equilibrium can occur for^{aa} $n=1, \dots, n^*(b)$.

The observed game is set of four stages. Let the all types of the companies in the interval $[0, x_1)$ send unique message, and all the company's types in the interval $[x_1, 1]$ send other message. After the customer receives the message from the company type $[0, x_1)$, he will believe that the type is uniformly distributed on the interval $[0, x_1)$, so the optimal customer action will be $\frac{x_1}{2}$. After the customer receiver the message from the company type

^x Besides drawing the attention, the company will try to achieve liking or sympathy at the customer.

^y $A = [a_1, a_n]$

^z It is supposed that the maximum payoff will be achieved by lowering the communication expenses.

^{aa} Decreasing b , affects the rise of $n^*(b)$, hence, the more the interests are aligned, the more times they will interact. $n^*(b)$ is set for all $b > 0$, but approaches infinity, as b approaches 0. Perfect communication can be achieved if the players are perfectly harmonized, almost identical.

$[x_1, 1]$, his optimal action shall be $\frac{x_1+1}{2}$. In order that company chooses the type $[0, x_1)$ and willing to send the message accordingly to the type, it must be true that both types prefer the customer's lower action $\frac{x_1}{2}$, over the higher action^{bb} $\frac{x_1+1}{2}$; and vice versa for the type $[x_1, 1]$. Given the company preferences are distributed symmetrically around the optimal actions, the customer type t will prefer $\frac{x_1}{2}$ over the action $\frac{x_1+1}{2}$ if the median (Figure 1) between those two actions crosses over the optimal action type $t: t + b$. Hence, the customer prefers $\frac{x_1+1}{2}$ if $t + b$ does not crosses to the median. For starters, the equilibrium of a two-stage game will be established, as in the original "Cheap talk" game (Gibbons, 1992: 212 - 218). x_1 has to be the type t whose optimal action $t + b$ is equal to the median between those two actions:

$$x_1 + b = \frac{1}{2} \left[\frac{x_1}{2} + \frac{x_1 + 1}{2} \right],$$

Respectively,

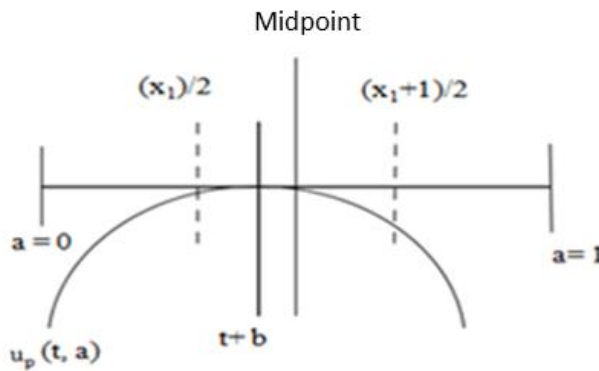
$$x_1 = \frac{1}{2} - 2b.$$

Conclusion 1: Given the possible space of the company type $T = [0, 1]$, $x_1 > 0$, the game equilibrium for the two stage game exists only if $b < \frac{1}{4}$. For $b \geq \frac{1}{4}$, the company's and customer's interests are to different and further communication cannot be established. The game ends for them.

In order to define the $n -$ stage game, it is necessary to iterate the game n times. The choice of higher company type $[x_1, 1]$ in each stage is $4b$ longer than the choice of lower type of company, $[0, x_1)$. Given the company type t , its optimal action is $t + b$; it crosses over the customer's action for b . If the two borderline company types have the same length, the borderline type would have preferred the higher action.

^{bb} The second customer's action implies higher demands from the customer towards the company.

FIGURE 1: Median of optimal actions based on the sender's type in the "Cheap talk" game



Source: Gibbons, 1992: 214

The only situation where the company types would be indifferent between the choices is if the higher type was longer than the choice of the lower in each stage. If a choice of the company $[x_{k-1}, x_k)$ in each stage would have the length^{cc} c , then the optimal customer's reaction is $\frac{x_k + x_{k-1}}{2}$ or $\frac{c}{2} + b$, which is below the optimal action for borderline type x_k , $x_k + b$. In order to company type x_k would be indifferent in choosing $[x_{k-1}, x_k)$ and $[x_k, x_{k+1})$, the customer optimal action should be $\frac{c}{2} + b$ above the optimal action for x_k , hence: $\frac{x_k + x_{k+1}}{2} - (x_k + b) = \frac{c}{2} + b$, which is $x_{k+1} - x_k = c + 4b$. According to that, each future choice is $4b$ longer than the previous one. If the length of the first choice is d , the length of the next one is^{dd} $d + 4b$, and so forth. Reaching the n -th stage denotes the end, with $t = 1$, so it has to be true that the solution is the same as the one in the "Cheap talk" game,

$$d + (d + 4b) + \dots + [d + (n-1)4b] = 1. \quad 1 + 2 + \dots + (n-1) = \frac{n(n-1)}{2}, \text{ follows}$$

$$n \cdot d + n(n-1) \cdot 2b = 1$$

First step has to be bigger than zero, so the highest number of the actions is $n^*(b)$, with the highest value where is true $2nb(n-1) < 1$. Using the square formula, we get:

$$n^*(b) \leq \frac{1}{2} \left[1 + \sqrt{1 + \frac{2}{b}} \right].$$

^{cc} $x_k - x_{k-1} = c$
^{dd} $a_n = a_1 + (n-1)d$

Conclusion 2: According to the Cheap talk model, if one wants to calculate the deviation in company's and customer's interests denoted by parameter b , should implement the required number of stages of the game.

4. RESULTS

In order to facilitate the calculation of the parameter, the inequality will be rewritten:

$$b \leq \frac{2}{(2n^*(b)-1)^2 - 1}. \quad (1)$$

At the first stage, the company communicates with the customer using some form of marketing communication. Let it be one of the marketing communication activity from the advertising group. The message that the company sends out is equal to the company type, $M = T$. When solving the inequality (1) it can be concluded that in the first stage the communication can be any kind^{ee}, but that can be misinterpreted. Namely, people tend to be exposed to various kinds of communications, and after the first conscious contact decide on continuing the communication^{ff}. In this stage, it is important to achieve the attention, which is equal to the first stage of the AIDA model.

Let the second stage communication between the company and the customer performs by a certain activity from public relation group. The customer, at this stage, pays more attention to the content and checks its alignment to: 1. previous company's messages, 2. own attitudes, needs or interests. Implementing the stage number in the inequality (1), the parameter of allowed deviation is calculated. According to the parameter, the customer will allow the deviation $b \leq 0.25$, which can also be expressed as the percentage, 25%. If the deviation exceeds the given restriction, the receiver ends the communication. If the parameter is within the boundaries, it can be presumed that the company managed to raise an interest at the customer.^{gg}

Let the third stage communication between company and the customer contains an activity from the group of sales promotion. At the beginning of the third stage, the company has the information of the second stage outcome. The company should use that information to define the message more precisely. At the same time that means that, the message has to be consistent to the previous message. In addition, the adjustment can occur from the

^{ee} When stage number implemented in formula results in $b \leq \frac{2}{0}$

^{ff} Receiving information can also be passively or non- consciously. If the customer decides to end communication after the very first message (for instance, if individual chooses after first watching of the advert on the TV to change the channel at each future occurrence of that advert) it is related to one of the elements on which the first impression is based on – previous experience or stereotypes. However, that communication can also be observed, only as the n -th stage of the game, which has previously started.

^{gg} Like the second stage in the AIDA model

customer, by changing the attitudes toward the company or the product. In this stage, the customer observes both the message and the company, and estimates the alignment to his own attitudes and desires. The communication will continue only if the deviation is $b \leq 0.08333$, hence less than 8.333%. If the deviation is within the parameter boundaries, it can be considered that the desire has been arisen at the customer.^{hh}

Let the communication in the fourth stage is conducted by an activity from the personal salesⁱⁱ. Following the trend of the previous stages, the company has to send out the message, which will be adjusted to the attitudes and interests of the customer and consistent to previous messages at the same time^{jj}. In addition, the customer can also adjust his own attitudes to the messages. In this stage, the boundary parameter is $b \leq 0.04106$. If the company's message has been consistent to the customer's attitudes or the customer adjusted his attitudes, the communication continues. If the message deviates from the customer's attitudes beyond the parameter boundaries, the communication ends.

Given the model presumptions, if the game successfully reached the end of the fourth stage, the observed game ends with the positive payoffs for both customer and the company^{kk}.

Conclusion 3: The Cheap talk application to integrated marketing communication shows that the positive payoff – which is purchase – would occur if at least one of the necessary conditions has been met:

1. Compatibility of the message to the customer's attitudes within the boundaries of the parameter^{ll}, or
2. Customer's attitude adjustment to the company's message within the boundaries of the parameter^{mmm}.

This applied Cheap talk model presents an abstract piece of real communication that can address certain characteristic of the decision-making in the marketing communication process, emphasis on the message consistency. In order to satisfy the game framework, four - stage model has been developed, which shows marketing communication in specific order. It is possible for a customer "C" that a beginning communication appears just as in this model. However, in reality it is not likely that the communication will occur in suggested order. Given that, any communication form can occur in each stage of the communication model. It means that the company should pay as much as attention to any message, as it would for a last stage message. In addition, communication activities from this model could iterate, so a

^{hh} Like the third stage in the AIDA model

ⁱⁱ Provided stage could be divided into two stages because the visit to the sales location also contains the message, but for the sake of simplicity, this will be left out.

^{jj} If the communication evolved to this stage of the game, it means that the message is more precise, hence consistent and coherent.

^{kk} Only if the communication has not been terminated before.

^{ll} It is consistent to a sociologically- cognitivist theory

^{mmm} It is consistent with the Lavidge-Steiner and Festinger model

four – stage model would be derived with one iteration, or n- stage model with multiple iterations^{mn}. It should be considered that the marketing communication stages could randomly change their order of communication to the receiver. Moreover, various forms of marketing communication can be interlinked. The model points put both the adjustment the message by the company and the possibility of attitude change at the customer. After a certain number of interaction iteration, a customer can be considered a loyal customer^{oo}. It is necessary to notice that this communication has a low tolerance for the mistakes.

5. CONCLUSION

The integrated marketing communication considers a mix of the communication activities, and conceptually denotes holistic approach to company – customer communication. It is intuitively clear that the messages should be mutually consistent^{pp} and that there should be their compatibility with the customer attitudes and needs^{qq}. The implementation of the groups of integrated marketing communication into an existing game theory model provides preliminary results in the form of the theoretical model of integrated marketing communication. Given that applied Cheap talk model presents reality caricature, it has its application limits. The limits of this model relate to the chosen division of the integrated marketing communication in the model. The given limitation has been diminished with the fact that chosen division contains most of the forms of marketing communication and that those forms are chosen randomly in each stage. In addition, limitation is a model, which observes only two players. Therefore, if this model would be used in practice, it would be more precisely, although not completely accurate to use attitude values for the average customer of the targeted market segment.

The modeling research goal was to determine that the Cheap talk model can be applied to integrated marketing communication in order to quantify the message consistency term and to determine the allowed deviation of the messages within the integrated marketing communication framework. The model shows precise determination of allowed deviation in content of messages of groups of marketing communication within each stage regarding both to previous messages and to customer's attitudes. It can be concluded that the obtained results provide mathematical support for the importance of the message consistency, and explain interlink between the customers' attitudes and message credibility. Furthermore, such applied Cheap talk model can be used as mathematical description of the relation between consistent messages and their impact on the receiver's attitude change.

^{mn} In order to calculate allowed deviation it necessary to implement the stage number in the inequality

^{oo} According to the model, namely the bounding parameter, it could be concluded that the customer becomes a loyal customer (meaning that he continues to communicate to the company, has a positive attitude and will repeat the shopping) much sooner than previously thought.

^{pp} The anti – example provides clearer insight: the source that emits contradictory messages will be denounced as a fraud.

^{qq} The attitudes and needs are often used as a phrase, because the both categories denote outcome for the company. If the messages are compatible to the attitudes and there is a need, purchase occurs. If messages align to the attitudes, but there is no current need, the individual is company's sympathizer – eventually when the need occurs the purchase will occur as well.

The given results are consistent and provide additional confirmation to the previous marketing researches on message consistency, as well as social – cognitive theory, which is widely used for message formulation. Therefore, this model provides a theoretical contribution to the marketing communication, which enables further quantitative researches aiming for defining precise instructions for message specifications. In addition, this paper represents theoretical framework for development of marketing communication assessment tool. The results could have practical implications if the companies would use them for comparison of the targeted segment attitudes to messages in the process of message formulation and message pre - testing and post - testing.

REFERENCES

- Belch, G.E., Belch, M.A.** (1997.): „Advertising and Promotion“, McGraw-Hill,
- Burgoon M., Hunsaker F. G., Dawson E. J.** (1994.): „Human communication“, Sage, Thousand Oaks,
- Ferrell O. C., Hartline M. D.** (2011.): „Marketing strategy“, South- Western Cengage Learning,
- Fudenberg D., Tirole J.** (2000.): "Game theory", Cambridge, London,
- Gibbons R.** (1992.): "Game theory for applied economists ", Princeton university Press, New Jersey,
- Jain S. C.** (1999.): „Marketing planning and strategy“, Cengage South-Western,
- Kelman, H.C.** (1971): "Processes of Opinion Change", Public Opinion Quarterly 25, Spring,
- Kesić, T.** (2003.): „Integrirana marketinška komunikacija“, Opinio, Zagreb,
- Lavidge, R.J., Steiner, G.A.** (1961): “A model for predictive measurements of advertising effectiveness”, Journal of Marketing, 1961, 59-62.
- Littlejohn S. W., Foss K. A.** (2009.): „Encyclopedia of communication theory“, Sage Publications, Thousand Oaks,
- Pennington, D. C.** (2001.) „Osnove socijalne psihologije“, Naklada slap, Jastrebarsko,
- Rathus, S. A.** (2001.): „Temelji psihologije“ Naklada Slap, Jastrebarsko,
- Rasmusen E. B.,** (2006.): "Games and information", IV. Edition, Blackwell publishers, Oxford,
- Rot N.** (1982): „Znakovi i značenja“, Nolit, Beograd,
- Sudar, J., Keler, G.** (1991.): „Promocija“, Informator, Zagreb,
- www.gametheory.net/dictionary