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## Innovative methods of managing consumer behaviour in the economy of impressions, or the experience economy

**Abstract.** In the conditions of digital marketing development, the main problem of the development of enterprise business is management of consumer behaviour in the online environment. Enterprises should find new ways to attract and retain the attention of users. The purpose of the article is to develop recommendations for managing consumer behaviour in the economy of impressions, or the experience economy based on personalisation. The following research methods are used: analysis and synthesis, logical generalisation, abstract logic and the hypothetic-deductive method. The article formulates a hypothesis based on the phenomenon of the dependence of a person's emotional response on the phase of his/her biological rhythm already in use in the practice of communication management and psychology. To partially confirm the hypothesis, a pilot experiment was prepared and conducted on the basis of the social network Facebook in 2017. The respondents were presented with an advertising multimedia product with a subsequent assessment of the emotional state. The received statistical results confirm the accepted hypothesis. Based on the hypothetic-deductive method, recommendations for managing consumer behaviour in the economy of impressions have been developed. The essence of recommendations is reduced to how to take into account the phases of human biological rhythms, as well as the choice of intellectual and emotional filling of the multimedia advertising product. Taking into account the personalisation processes, the models of users' perception of advertising are modified. The process of users' perception of the content, its impressions and emotions lie in interrelation with its biological rhythms. If the developer knows the data about the activity of the emotional and intellectual biorhythms of the user, it becomes possible to control impressions, passing the relevant content in the most favourable periods for perception. Practical application of the proposed recommendations will be useful for companies that carry out advertising activities in social networks that implement contextual advertising and direct marketing.

**Keywords:** Impressions; Experience; Economy of Impressions; Experience Economy; Personalisation; Theory of Human Biological Cycles; Management; Emotional and Intellectual Content

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**Інноваційні методи управління поведінкою споживачів в економіці вражень****Анотація**

У статті сформульовано гіпотезу про управління споживачькою поведінкою з використанням мультимедійної продукції для реклами, що враховує біологічні цикли людини для реалізації неявної персоналізації. На цій основі розроблено рекомендації щодо управління споживчою поведінкою в економіці вражень. Модифіковано моделі сприйняття реклами з урахуванням процесів персоналізації. Процес сприйняття користувачами контенту, їх враження та емоції залежать від взаємозв'язку з їхніми біологічними ритмами. Якщо розробник має дані про активність емоційних й інтелектуальних біоритмів користувача, стає можливим керувати враженнями, передаючи відповідний контент у найбільш сприятливі періоди для сприйняття. Практичне застосування запропонованих рекомендацій буде корисним для компаній, які здійснюють рекламну діяльність у соціальних мережах, реалізують контекстну рекламу та прямий маркетинг.

**Ключові слова:** враження; персоналізація; теорія біологічних циклів людини; управління; емоційний та інтелектуальний контент.

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**Инновационные методы управления потребительским поведением в экономике впечатлений****Аннотация**

В статье сформулирована гипотеза об управлении потребительским поведением с использованием мультимедийного продукта для рекламы, учитывающего биологические циклы человека для реализации неявной персонализации. На этой основе разработаны рекомендации по управлению потребительским поведением в экономике впечатлений. Модифицированы модели восприятия рекламы с учетом процессов персонализации.

**Ключевые слова:** впечатления; персонализация; теория биологических циклов человека; управление; эмоциональный и интеллектуальный контент.

**1. Introduction**

In modern conditions, users are accustomed to the availability of a continuous updatable flow of information on the network. In such conditions, attracting and retaining attention becomes more difficult (R. Čiarnienė & G. Stankevičiūtė, 2015) [1]. An urgent task is to manage consumer behaviour online. According to B. Pine (1999) and A. Rao (2016), the solution of this problem lies in the emotional sphere [12; 6]. The impact on the emotional sphere reveals the concept of the economy of impressions, or the experience economy (the original term has been introduced by B. J. Pine & J. H. Gilmore). With the development of computer technology, the space of options to influence the user's impressions is becoming ever wider. As E. Schmidt (2004) notes, the greatest impressions of users can be achieved by personalising a multimedia product [2]. Personalisation implies the adaptation of a multimedia product to the lifestyle, interests, habits and values of each individual person (Antoniuk, 2016).

The problem at the present stage is the absence of methodological recommendations for managing the impressions of users of a multimedia product used to advertise and promote goods or services on the basis of personalisation in the modern scientific literature. The actual task is to search for the existing personalisation tools and their application in the development of multimedia products. In our opinion, it is advisable to apply the concept of human biorhythms to develop recommendations for managing the user's experiences. The concept of human biorhythms will allow us to consider the user's attention in terms of the periodicity of the intensity of attention, which should be taken into account by the developer of the multimedia product in order to generate stronger impressions from the user's interaction with the product.

**2. Brief Literature Review**

The study of personalisation in the context of computer technology was done by E. Schmidt (2004) [2], S. Galehbkhtari and T. Hasangholi Pouryasouri (2015) [3], and N. Antoniuk (2016) [11]; in the field of consumer behaviour management and the creation of the brand - by R. Werner (2010) [7], B. Marianne (2010) [5], and A. Rao (2016) [6]. Works related to managing attention of consumers are presented by M. Yusufcan (2012) [4], D. Hassoun (2012) [8], X. Gabaix (2014) [9] and J. Ketcham (2015) [10]. The theory of biorhythms was developed in 1974 by G. Svoboda, V. Fliess and F. Telcher. The modern development of the theory applicable to management is presented in the works by H. Vaizivedast (2013) [15], H. Safarzadeh, F. Haghshenas Kashani, and M. E. Sabaghi Nadooshan (2014) [14] and others. Nevertheless, most studies do not take into account biological cycles of a person in the process of perceiving advertising as an instrument of implicit personalisation.

**3. The purpose** of the article is to develop recommendations for managing consumer behaviour in the economy of impressions based on personalisation.

**4. Results**

In conditions of information noise, the effect of attention deficit of the user is created. To maintain the company's image in the network, it is necessary to create and distribute promotional multimedia products that can attract and retain the attention of potential consumers, since lots of them search for the information on the product on the Internet. In addition, attention is a limited resource. If a user views the site while studying the properties of the product, then this process takes all his attention in a unit of time. Today, to maintain the competitiveness of multimedia products, it is not enough just to meet the expectations of the user, it is necessary to create impressions. In our opinion, the processes of perception of a multimedia product can be divided into main and supporting types (Figure 1).

Stage 1 - capture of attention. The user's attention is captured on the basis of 3 types of information contained in a multimedia product. This classification was proposed by A. Macedonian (2011) in the work «Psychoeconomics of attention». Information about the form is all that a person sees, that is, information forms are created as a result of processing sensory data by the user. Information about the content is a semantic content load. Moreover, it should be noted that its perception depends on the level of development of the human intellect, its values and previous experience of cognition. Stimulus information is information about the feelings and emotions experienced by the user in the process of perception.

Stage 2 - retention of attention. If the three information components cause a negative evaluation by the user, there is a loss of the user's attention and a transition to other information stimuli. In the case of a positive evaluation, the user

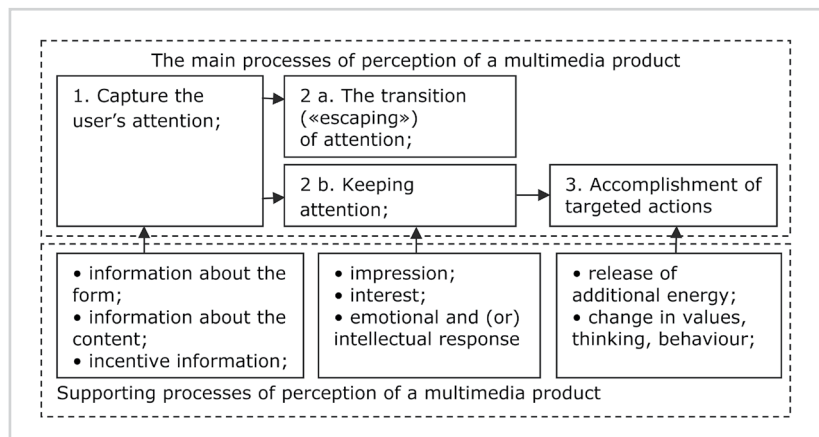


Fig. 1: **Processes of perception of a multimedia advertising product by the user**  
Source: Compiled by the authors based on [12; 17]

experiences an emotional and/or intellectual response, which helps to keep his/her attention.

Stage 3 - implementation of targeted actions. As a result of attention, the user releases free energy which is directed towards achieving the goals[17]. Goals are formed by the developer of the multimedia product Purchase, distribution of content among the user's friends, popularisation of the product image (likes, reviews, etc.), subscription to the company's news, etc. can be among the possible goals. The efficiency of the perception process is understood as the user's fulfillment of targeted actions laid down by the developer.

The process of perception of information is based on the consumer's value system, as well as his/her interests, habits, previous experience. One of the approaches that takes into account the interests of users is personalisation. Based on the analysis of lifestyle, interests and daily activity, computer technologies are able to organically adapt to the user's requests and be of use. According to N. Antoniuk (2016), personalisation should anticipate the consumer's creative imaginations and experience, promote efficiency and organisation. According to the marketing research in the field of e-commerce by R. Bez (2016), sites that implement personalisation tools made a profit by 30% higher than before the implementation. We have considered the main types of personalisation in multimedia products (Table 1).

As noted by M. Goldhaber (1997) [18], a person's attention has its own dynamics. If there is a certain dynamics, then it is advisable to consider it in the process of developing and transferring the content of a multimedia product. In our opinion, an implicit personalisation tool can be attributed to the use of the theory of biorhythms to determine the time for delivering messages to the user. The theory of biorhythms implies that human behaviour depends on biological cycles that affect its ability in three areas: mental, physical and emotional activity. There are three cycles: a 23-day physical cycle, a 28-day emotional cycle and a 33-day intellectual cycle. These three cycles begin at birth and progress sinusoidally throughout life. It is assumed that the level of human capabilities in each of these areas can be predicted.

The application of the theory of biorhythms to various fields of activity is given in studies by E. Zarein, V. Rabani, F. Said (2014) who consider the theory of biorhythms applicable to the behaviour of personnel. H. Vaizivedast, A. Alzadeh and A. Deghan (2013) apply the theory of biorhythms to assess the quality of decisions of managers in the field of investment projects. They argue that the level of education and emotional intelligence contribute to making effective decisions. M. Minarova, D. Mala and M. Sedliacikova (2015) [19] as well as G. Drozdovski (2016) in their empirical studies for Slovakia and Poland respectively prove the influence of the emotional aspect of the competence of personnel on the adoption of managerial decisions.

Based on the analysis of the latest publications of foreign authors, we can conclude that the theory of biorhythms is useful in explaining the decision-making of users in the process of interacting with content in the network. Having identified the user's biorhythms based on his/her personal data in social networks, we can foresee his/her reaction to the content provided.

There are many websites for calculating a person's biorhythms online, based on the date of his birth. When entering the initial data, individual for each user, the system calculates the human biorhythms. An example of calculating biorhythms is shown in Figure 2.

As noted by E. Pariser (2011), for the purpose of personalisation, the social network Facebook changes the user's content based on the collection of data on interests, like and share, i.e. based on the decision of the Facebook information

Tab. 1: Types of personalisation in multimedia products

View	Characteristic	Examples
Implicit	Personalisation is carried out by the information system automatically based on an analysis of the user's behaviour	The offer of goods on the basis of the pages viewed; keep cached of the goods you like; software products (for example, WEB-CRM);
Obvious	The information system is changed by the user via using the capabilities provided by the system;	Functions of sorting goods by price, size, colour, originality, etc.

Source: Compiled by the authors based on [15; 17]

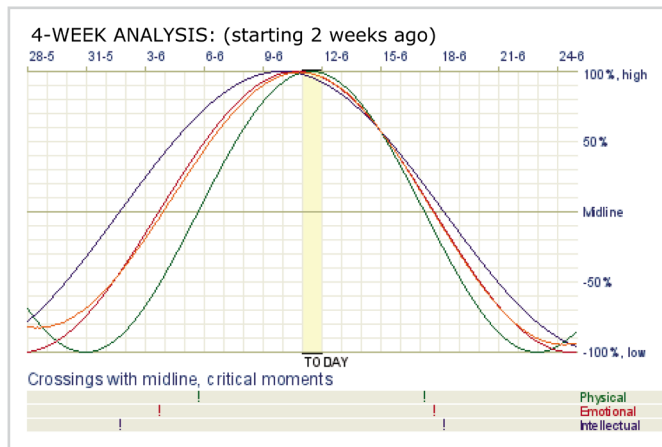


Fig. 2: Example of calculation of human biorhythms

Source: Compiled by the authors based on [15]

system regarding what the user thinks and what he wants to see. If it is possible to analyse the interests of users in social networks, then it is also possible to take into account their biorhythms based on the date of birth specified by users in social networks during registration. This will also take into account their susceptibility in choosing the time of message transmission, for example, in conditions of paid advertising. This idea has not yet been implemented in software, but it is promising, from the point of view of control of the user's experience, as well as his/her motivation during interaction with the content.

The ongoing research hypothesis is the dependence of the emotional and intellectual reaction of a person on the phase of his biorhythm. For partial verification of the hypothesis, the authors have carried out a pilot study during the week. As a research platform, we chose the social network Facebook. The study involved 79 respondents who are members of the Group of The Department of Management of Foreign Economic Affairs and Finance (National Technical University «Kharkiv Polytechnic Institute»). The group includes teachers and students of the Department. In the formed groups, the respondents were asked to evaluate the advertising post, which had the goal of causing an emotional response. The day of the emotional cycle of the respondents was determined in the Biorhythm Expert program on the basis of the initial date of birth of the participants indicated in the questionnaire. For our evaluation, we chose an advertising banner about the dangers of smoking, which, according to the research of Details, a news resource, is among the top ten most creative banners in 2017.

In the comments under the post, the respondents were asked to put estimates: 1 - the advertising post made an impression (positive assessment); 0 - the advertising post did not cause any special emotions (neutral evaluation). The estimation of the results was carried out on the basis of Formula 1 and Formula 2:

$$Qp = \sum_{i=1,14} Ppi ; \tag{1}$$

$$Qn = \sum_{i=15,28} Pni ; \tag{2}$$

where  $P_{pi}$ ,  $P_{ni}$  - the number of respondents who demonstrated a positive ( $P_{pi}$ ) and a neutral ( $P_{ni}$ ) emotional reaction to the submitted advertising product, located in the  $i$ -th day of the emotional cycle;

$i$  - the values of the coefficient correspond to the phases of the rise and fall of the emotional cycle of human; from the 1<sup>st</sup> day to the 14<sup>th</sup> day - the rising phase, from the 15<sup>th</sup> day to the 28<sup>th</sup> day - the falling phase;

$Q_p$  - the total number of respondents who demonstrated a positive emotional reaction to the presented advertising product;

$Q_n$  - the total number of respondents who demonstrated a neutral emotional reaction to the presented advertising product.

The conducted evaluation of the results has revealed the dependence of positive emotional responses of the respondents on the advertising in the positive phase of emotional biorhythm. The values of the control indicators were:

$$Q_p = 54.51 \text{ (69\%);}$$

$$Q_n = 24.49 \text{ (31\%).}$$

The obtained results of the pilot study confirm the statistical significance of the accepted hypothesis. Characteristics of human biological cycles are shown in Table 2.

As can be seen from Figure 2, the sinusoids of biorhythms of different areas - psychological, intellectual and physical - do not always reach a simultaneous peak. It is necessary to prioritise areas to apply for managing the user's impressions.

The physical biorhythm is the least priority, as it is coordinated with the physical activity of a person, which is not significant in the perception of content. The choice between the intellectual biorhythm and the emotional biorhythm depends on the type of content. If the developer of the multimedia product forms certain content aimed at activating cognitive processes, then it is advisable to focus on the intellectual biorhythm. In the case where the content is aimed at the formation of vivid impressions and emotional response, one should be guided by emotional biorhythm. Let us consider the differences between the emotional and intellectual content (Table 3).

In our opinion, the AIDA and ACCA models of advertising perception should be modified taking into account the personalization process. This process involves 3 stages: 1 - identification of the user's state (determination of the biorhythm phase); 2 - choice of the moment when the content is delivered (during the periods of biorhythm rise); 3 - choice of the type of content (intellectual or emotional). In a modified form, the formulas take the form of PAIDA and PACCA. Let us consider these stages in more detail.

Stage 1. The starting point for entering data into the information system is the user's date of birth. After that, the system should calculate the user's biorhythms and group the users: the 1<sup>st</sup> group of users in the activity phase of the intellectual biorhythm (from 0 and above); the 2<sup>nd</sup> group of users in the activity phase of the emotional biorhythm (from 0 and above).

Stage 2. Determining the moment of the user's content submission in groups 1 and 2.

Tab. 2: Characteristics of biological cycles

Cycle	Characteristics	Peak	Recession
Physical	This cycle affects the physical sensation of a person. It includes the energy level of activity and the general physical state. It influences coordination, strength, endurance, resistance to the disease.	Persons feel a surge of energy to work on projects that require physical strength and endurance.	There is an outflow of energy, drowsiness and retardation. Unwillingness to start new affairs related to physical efforts.
Emotional	The cycle regulates the nervous system. It affects emotional states such as love and hate, optimism and pessimism, passion and cold, depression and high spirits.	New ideas come to persons, they easily create and create new ones and are overwhelmed with love for peace and environment. Open to dialogue. Ready for new beginnings.	Persons is not inclined to work together, he is irritated. Negative thinking related to things in life. Not ready for new beginnings.
Intellectual	This cycle occurs in the brain. It affects the memory of memory, the speed of learning new things, the ability to think logically and the accuracy of calculations.	Persons are open to accept and understand new ideas, theories and approaches.	Persons experience difficulties in perceiving new ideas and concepts.

Source: Compiled by the authors based on [14-15]

Tab. 3: Differences between the emotional and intellectual content

Options	Intellectual content	Emotional content
Goal	Activation of cognitive processes; orientation on rational thinking and logic	Activation of emotional processes; orientation on emotions, intuition
The visual part	Text, presentations, graphs, diagrams, tables and charts;	Pictures, infographic, videos, photos and audio clips (images are 2 times faster to cause interest, emotions, surprise)
Receptions	Argumentation and proof	suggestion and involvement;
Period of interaction with the content	Long (the person needs time to understand the essence of the content)	Short (the person needs 3 seconds in order for the content to evoke emotions)
Formulas of advertising circulation	ACCA: Attention (attention) → Comprehension (comprehension) → Conviction (persuasion) → Action (action)	AIDA: Attention → Interest → Desire → Action (action)

Source: Compiled by the authors based on [12; 18; 20]

Stage 3. After grouping the users, the developer selects an appropriate content type for the different groups. For the first group of users, it is recommended to supply intellectual content in the intellectual biorhythm activity phase. For the second one - to deliver emotional content in the emotional biorhythm activity phase. Then, it is essential to configure auto-posting during the activity periods of the users' biorhythms in the selected groups. It is not recommended to deliver the target content in the falling phase of the emotional and intellectual biorhythms. We present in Figure 3 the sequence of managing the impressions of the multimedia product user based on personalisation.

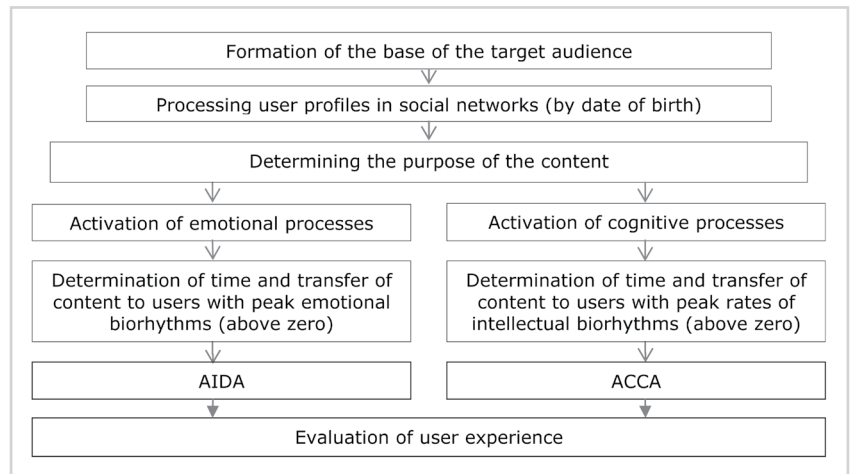


Fig. 3: Sequence of management of impressions of the user of a multimedia product on the basis of personalisation

Source: Compiled by the authors based on [12; 18; 20; 22]

Any management process involves planning, organizing, motivating and controlling functions. Planning includes all the preparatory stages from the definition of the target audience to the determination of the user's biorhythms. Organisation consists in preparing software for the implementation of plans. Motivation means systematisation of the content and transfer to the user at peak moments of biorhythms. Control involves evaluating impressions. The development of methodological support for the evaluation of impressions requires further research.

### 5. Conclusions

Based on the pilot study, the hypothesis of a relationship between the user experience and the phase of his/her biological cycle has been proved. The article develops recommendations for managing user experience based on personalisation. The management recommendations are based on the modified models of perception of the advertising product PASSA

and PAIDA, taking into account the personalisation process. The authors of the article suggested a sequence of the processes of controlling the user's impressions with respect to human biorhythms. The use of recommendations will allow determining the time of the transfer of the content to the user in the most favourable periods of perception of emotional and intellectual content, in accordance with the phases of the activity of the emotional and intellectual biorhythms.

Choosing the optimal time for the transfer of the content will enhance user experience, which will bring the user closer to the targeted actions of the multimedia product planned by the developer to advertise and promote the product or service.

Further research by the authors consists in evaluating the impressions of users of online stores to prove the hypothesis about the existence of the relationship between impressions and phases of human biorhythms.

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### Key activities:

- Organizing and holding of interactive workshops, roundtables, presentations
- Preparing of analytical materials, political and economical forecasts, commentaries and other intellectual products
- Organizing of study visits for state executives and business structures to states with stable democracy
- Realizing of public relations for organizations, companies, cities, regions
- Advisory work on current and strategic economical and political issues
- Publishing of research books (IST prepared and published 15 monographs)
- Publishing of The «Economical Annals-XXI» Journal
- Forming and supporting of IST's Internet holding (57 websites)
- Holding of on-line Internet conferences and polls etc.

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