
NEW TECHNOLOGIES AND INNOVATIONS IN MARKETING:
CONSUMER BEHAVIOUR OF CHILDREN IN RELATION
TO THE TIME SPENT ON THE INTERNET AND TO AGE

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Abstract

The paper focuses on the use of new technologies and innovations in marketing. The aim is to evaluate the consumer behaviour of children in relation to the time spent on the Internet and age, and that in the context of children's wellbeing and quality of life. Questionnaires were distributed to the parents of children aged 6 to 13. They were approached in toy stores. Regression models were used to test the hypotheses. Based on the results, it was possible to prove a statistically significant relationship between the time spent on the Internet by children and the number of online purchases of parents based on their children's request. Also, it was possible to confirm an existing relationship between the growing age of children and the growing preference for digital toys over traditional and mechanical toys. Research limitations are mainly associated with the research sample and the formulation of questions in the questionnaire. The implications of the study show that companies should consider the age of children in their marketing communication, as their consumer preferences change very quickly. In the context of new technologies and innovations in marketing communication parents should monitor not only how much time their children spend on the Internet, but also the content they watch, and should guide them accordingly. The paper contributes to the evaluation of innovations in marketing in our digital age and their effect on the consumer behaviour of children and their quality of life. It opens up new questions and possible research directions.

Keywords: new technologies, consumer behaviour of children, internet marketing, innovations in marketing communication

JEL Classification: D12, O33, M31

Introduction and theoretical background

Today's society is very focused on consumerism and consumption, and this also applies to children. Because of their relative economic dependence on their parents and their vulnerability, they become one of the most desirable targets for innovative marketing campaigns. This is especially so due to more accessible new technologies and the Internet. The child as a consumer becomes part of the overall marketing mix, where the goal is to create a feeling of desire and satisfaction with a specific product. The advertising industry is so huge today that there are even professions whose task is to study the effects of advertising on viewers and create the perfect advertisement that would completely convince even a person who would not need the thing at all to buy a product or service.

In recent years, there has been growing concern about marketing to children and its possible impact on their development, wellbeing, and quality of life. Several studies deal with the quality of life and human well-being (Králiková et al., 2021). Various authors have explored the ways in which advertising can shape children's play and preferences, and the possible negative consequences of children's consumerism and materialism. They investigated the ethical side of advertising, as well as the commercial side. There are several studies that have addressed topics similar to the one addressed in this article. We will discuss their content and findings in the following parts.

The American Psychological Association (APA) published under the authorship of Wilcox et al. (2004) the Report of the APA Task Force on Advertising and Children. The report summarizes research on advertising and children, including the ways in which advertising can influence children's preferences and behaviour, as well as the potential negative effects of advertising on children. Some interesting findings regarding advertising and children include: (i) children's exposure to advertising is higher during the holidays. The study found that children's exposure to advertising increased by 60% during the holiday season compared to the rest of the year; (ii) advertising can influence how children perceive gender roles. Research has found that gendered advertising can reinforce stereotypes and limit children's perceptions of what is appropriate for their gender; (iii) advertisements often emphasize entertainment and excitement rather than educational benefits.

Other researchers Robinson et al. (2001) investigated the impact of marketing communication and advertising on children's play and toy preference. The authors argue that advertising plays a significant role in shaping children's play and toy preferences, and that this can have negative consequences on children's development and well-being. They suggest that parents, educators, and policy makers should be more aware of the impact of advertising on children and should take steps to limit it. Children's consumption and the rise of the toy industry were also addressed by Williams (2006) and by Smit and Smit (2016), whose article provides a historical overview of the toy industry with a focus on its growth and development over time. The author argues that the rise of childhood consumerism has been a key driver of the growth

of the toy industry, and that this has had both positive and negative consequences on children and families. Toys and gender issues in early childhood education and care is addressed in the article by Ramdaeni et al. (2020), in which they explore the ways in which toys are gendered and how this can affect children's attitudes and behaviour. The author argues that educators and caregivers should be more aware of the ways in which gendered toys can limit children's play and learning opportunities and should work to provide children with a wider variety of toys and play experiences.

Marketing to children in general and its consequences on child development was addressed by Calvert (2008), where the author investigated the ways in which marketing to children can affect their cognitive, emotional, and social development. The author suggests that marketers become more aware of the potential negative effects of their advertising on children and take steps to promote healthier, developmentally more appropriate products and messages. Different research focusing on marketing strategies targeting children, but from the point of view of the interests of marketers and businesses, was also carried out by Sharma and Dasgupta (2009). They have developed a planning framework that emphasizes the direction and focus of marketing strategies, taking into consideration the level of interest and impact on children. Calvert (2008) in her other study also says that newer marketing approaches have led to online advertising and to so-called stealth marketing techniques, such as embedding products in the program content in films, online, and in video games. All these marketing strategies, make children younger than eight especially vulnerable because they lack the cognitive skills to understand the persuasive intent of television and online advertisements. The new stealth techniques can also undermine the consumer defences even of older children and adolescents.

Although there is no single definition of consumer behaviour, those that have been employed seem to entail similar characteristics (Valkenburg & Cantor, 2001). A consumer is able to (1) feel wants and preferences, (2) search to fulfil them, (3) make a choice and a purchase, and (4) evaluate the product and its alternatives (Mowen & Minor, 1998). The study of Valkenburg and Cantor (2001) says that the development of consumer behaviour occurs in four phases, and that in each phase, one of the four characteristics of consumer behaviour emerges in the following way: infants and toddlers (under 2 years of age) begin to feel desires and preferences; pre-schoolers (under 5 years of age) start nagging and negotiating; early elementary schoolers (under 8 years of age) experience consumer adventure and their first purchase; later elementary schoolers (up to approximately 12 years of age) already feel conformity and fastidiousness.

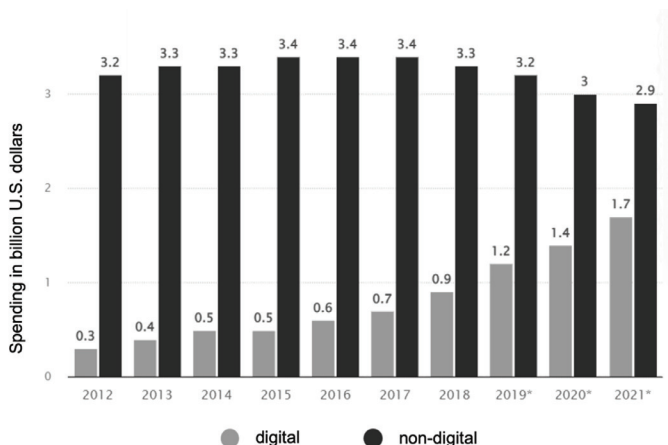
The mentioned phases led the authors of this study to examine the research sample (described later in the methodology section) of children over 5 years of age (children in the 3rd and 4th phase). Also, the authors Gelman and Echelbarger (2019) have found in their study that children over the age of 5 can accurately report on their spending orientation, that these feelings accord with parent reports, and that these feelings have predictive utility. The aim of this study is to evaluate children's consumer behaviour in relation to age and the time spent on the Internet.

Overall, scientific studies and theses suggest that marketing to children can have both positive and negative effects on children's development, and that marketers, educators, caregivers, and policy makers should be more aware of the potential effects of advertising on children and take action to promote healthier, more developmentally appropriate messages and products.

Choosing the right combination of the elements of the marketing mix is not random (Mohammadi & Sohrabi, 2018). Marketers must be well informed about

the challenges and opportunities that accompany each element of the mix. In innovative companies, the communication policy should be part of a valid marketing strategy coordinated with other marketing activities (Džupka et al. 2016, Suhányi et al. 2021). As with traditional media formats, digital advertising to children should be legal, fair, and truthful, while ensuring data protection and privacy in relation to children’s personal information at the same time. In Figure 1, the development of advertising spending for children worldwide can be seen in the period between 2012 and 2021.

Figure 1: Global Children’s Advertising Spending 2012-2021 by Format



Source: based on the data from Statista, 2023

Lascu et al. (2013) describe how online marketing differs from traditional media: children actively search for content and can interact with websites for several minutes instead of just engaging in passive exposure to advertising. This interaction worries policymakers. Kasser and Linn (2016) argue that advertising itself harms children, since it focuses on emotions and not intellect. It teaches children not to choose products based on the actual value of the product, undermines critical thinking, and encourages impulse buying. It turns out that companies began spending much more on marketing to children (Kasser & Linn 2016, Schwartz, 1999, Horovitz, 2006). The sophistication of marketing efforts has also increased. For instance, today marketers employ what they call a “360-degree strategy” aimed at surrounding children with messages about brands and products on television sets, tablets, cell phones, and computers (Montgomery & Chester, 2009), as well as on “wearable” technologies (Gaudiosi, 2015).

Material and methods

The questionnaire method was used to collect the data necessary for the research. The questionnaire was designed based on our findings from the literature review, scientific papers, and the theoretical framework of the issue. The data collected

through the questionnaire were analysed using a combination of mathematical and statistical methods, namely regression analysis and analysed in the Statistica 13 software.

The questionnaire consisted of two parts. The first part was focused on collecting demographic information about the research sample, such as age and gender of parents and children. The second part of the questionnaire focused on marketing communication tools used to target children, parents' opinions, and children's behaviour. Overall, the methodology used in this research aimed to provide a comprehensive understanding of the topic by collecting both quantitative and qualitative data using a structured questionnaire.

The target group for this study was parents of children of early school age, namely children aged 6 to 13 who are currently attending primary school. In this age category, children become interested in various products and services intended for them (see the four phases of development of consumer behaviour described in the first chapter of this study), and therefore they become a valuable target group for many companies. The sample of respondents was selected randomly from the target population, respondents were approached in toy stores in order to obtain relevant answers.

The research sample consisted of a total of 132 respondents – parents, of which 103 were women and 29 were men aged 27 to 48. The questions included in the survey were designed to gather information on the factors that influence parents' purchasing decisions for their children, as well as their perceptions of the various brands and products marketed to this age group. The collection of primary data was carried out in March 2023. The data collected in the survey will be used to better understand the needs and preferences of this target group and to evaluate consumer behaviour.

For this study, the answers to the questions were selected from the conducted survey, which are in accordance with the established aim of this study: The aim of the study is to evaluate the consumer behaviour of the child in relation to age and time spent on the Internet.

In order to fulfil the aim, the following two hypotheses were established:

H1: There is a statistically significant relationship between the time spent on the Internet by children and the online purchases of parents based on their children's request.

To verify the hypothesis in question, a linear regression model was established, in which:

- the dependent variable was "Number of online purchases" expressed as the number of purchases on the Internet made by parents based on requests to buy a product by a child over the past three months.
- the independent variable was "Time spent on the internet" that the child spends daily on the Internet based on the parents' statement.

H2: There is a statistically significant relationship between the age of the child and the preference between analogue or digital toys.

To verify the hypothesis in question, a linear regression model was established, in which:

- the dependent variable was the "Preference of analogue or digital toys" that was expressed using a semantic differential scale. The lowest value on the scale was the child's preference for analogue toys, and the highest value was the preference for only digital toys. The meaning of an analogue toy in the context of the conducted research was a traditional or mechanical toy that does not use digital technology when a child plays with it.
- the independent variable was the "Age" of the child.

Results

Analysis of the relationship between the time spent on the Internet and the online purchases of parents based on children's request

The next section tests hypothesis 1 using regression analysis. The model of the linear regression has the following form:

$$\begin{aligned}
 \text{Number_of_Online_Purchases}_i &= f(\text{Time_Spent_on_theInternet}_i) \\
 \text{Number_of_Online_Purchases}_i &= f(+)
 \end{aligned}
 \tag{1}$$

Which means that we assume that more time spent by children on the Internet will be accompanied by a higher number of online purchases of parents based on their children's request.

Table 1: Summary output of the regression model with a dependent variable: Number of online purchases

Summary Output	
Regression Statistics	
Multiple R	0.78099674
R Square	0.60995590
Adjusted R Square	0.60695556
Standard Error	2.32911896
<i>p</i>	2.35E-28
Observations	132

Source: own processing

As shown (Table 1), the correlation coefficient is equal to 0.78099674, which indicates that there is a high degree of intensity of dependence between the variables. The value of the coefficient of determination is at the level of 0.60995590 indicating that the selected regression line explains the variability of the number of online purchases of parents based on children's request to approximately 61%. The remaining part is an unexplained variability, influence of random variables, and other unspecified influences.

Table 2: Regression summary for the dependent variable

N=132	b*	Std. Err. (of b*)	Coefficients (b)	Standard Error (of b)	t Stat (130)	p-Value
Intercept			3.411840	0.387544	8.80375	0.000000
Time Spent on theInternet	0.780997	0.054775	0.036772	0.002579	14.25818	0.000000

Source: own processing

The results of the regression summary (Table 2) show that it is possible to assume the presence of a link between the time spent on the Internet by children and the online purchases of parents based on children's request. The model indicates a positive relationship between the variables, with a p-value much lower than the set level of 0.05. The regression function in this case has the form:

$$\text{Number_of_Online_Purchases}_i = 3.41184 + 0.036772 \times \text{Time_Spent_on_theInternet}_i \quad (2)$$

Testing of the suitability of the used model by the ANOVA method is presented in Table 3. The null hypothesis is tested, which states that the regression model which was chosen to explain the relationship was not suitable (the alternative hypothesis states the opposite). To evaluate this statement, the F test was used, the p-value of which was lower than 0.05 (the chosen level of significance α). The null hypothesis was rejected, which means that the model was chosen correctly.

Table 3: Testing the suitability of the proposed model – Analysis of Variance

ANOVA					
	Sums of (Squares)	df	Mean (Squares)	F	Significance F (p-value)
Regression	1102.837	1	1102.837	203.2957	0.000000
Residual	705.223	130	5.425		
Total	1808.061				

Source: own processing

Based on the results of the analysis, Hypothesis H1 can be confirmed. It is possible to conclude that an increase in the time spent on the Internet by children will be accompanied by an increase in online purchases of parents based on children’s request.

Analysis of the relationship between the child’s age and the preference of analogue/digital toy

The next section tests hypothesis 2 using regression analysis. The model of the linear regression has the following form:

$$\begin{aligned} \text{Preference_of_Analogue_or_Digital_Toyi} &= f(\text{Age_of_Childi}) \\ \text{Preference_of_Analogue_or_Digital_Toyi} &= f(+) \end{aligned} \quad (3)$$

Which means we assume that the older the children, the higher the preference for digital toys.

Table 4: Summary output of the regression model with a dependent variable: Preference of analogue/digital toy

Summary Output	
Regression Statistics	
Multiple R	0.88774566
R Square	0.78809236
Adjusted R Square	0.78646230
Standard Error	1.27733227
<i>p</i>	1.40E-45
Observations	132

Source: own processing

Even in the case of examining the variables for hypothesis 2, the correlation coefficient indicates a high degree of intensity (Table 4), its value reached the level of 0.88774566 in this case. The value of the coefficient of determination is at the level of 0.78809236 indicating that the selected regression line explains the variability of the preference between analogue and digital toys to approximately 79 %. The remaining part is an unexplained variability, influence of random variables, and other unspecified influences.

Table 5: Regression summary for the dependent variable

N=132	b*	Std. Err. (of b*)	Coefficients (b)	Standard Error (of b)	t Stat (130)	p-Value
Intercept			-2.71215	0.388688	-6.97771	0.000000
Age_of_Child	0.887746	0.040374	0.96864	0.044053	21.98806	0.000000

Source: own processing

Based on the results showed in the Table 5 it can be assumed that there is an existing relationship between children’s age and their preference for analogue or digital toys. The model indicates a positive relationship between the variables in the case of digital toys, with a p-value much lower than the set level of 0.05. The regression function in this case has the form:

$$Preference_of_Analogue_or_Digital_Toyi = -2.71215 + 0.96864 \times Age_of_Childi \quad (4)$$

The ANOVA method was used to test the suitability of the used model also in the case of this regression model (Table 6). The null hypothesis is tested, which states that the chosen regression model was not suitable (the alternative hypothesis states the opposite). To evaluate this statement, the F test was used, the p-value of which was lower than 0.05 (the chosen level of significance). The null hypothesis was rejected, which means that the model was chosen correctly.

Table 6: Testing the suitability of the proposed model – Analysis of Variance

ANOVA					
	Sums of (Squares)	df	Mean (Squares)	F	Significance F (p-value)
Regression	788.827	1	788.8267	483.4748	0.000000
Residual	212.105	130	1.6316		
Total	1000.932				

Source: own processing

It is possible to conclude from the results that children’s level of preference between analogue and digital toys depends on their age. These results can be useful for toy companies in setting out their marketing mix components and especially in marketing campaigns that try to increase the sales of different types of toys (analogue and digital) for children.

Discussion

Nowadays, children are exposed to a number of modern technologies that significantly change their daily life and influence their behaviour. Such technologies include mobile phones, tablets, and computers with Internet connection, which have become an integral part of life for many children. As part of the questionnaire survey in our research, we also found out how much time children spend on the Internet. It turned out that up to 53% of children spend more than an hour a day on the Internet. These values show a significant impact of modern technologies on children's lives; therefore, it is important to examine their impact on children in various aspects.

According to data from 2021, almost 53% of global advertising spending goes to Internet advertising (Dentsu, 2022). The current trend shows that children's interaction with digital media is increasing, thus it can be expected that the proportion of advertisements aimed at children on the Internet will also increase.

The questionnaire survey also showed that television is still the dominant medium for advertising to children. More than 70% of children between the ages of 6 and 13 still watch television, and almost all of them encounter advertising. The Internet comes second, where ads appear in a variety of forms, including banners, videos, pop-ups, and social media.

The stated findings are also supported by the results of several studies. A recent study of Ferrara et al. (2023) shows a constant increase of smartphone and tablet use by children over time, and that also with an impact on the quality of sleep and the practice of physical activity. There are several studies focused upon school-aged children's Internet use (Sebre et al., 2023, Domoff et al., 2020, Wichstrøm et al., 2019; Wu et al., 2021). A research study by Valcke et al. (2011) investigated their unsafe Internet behaviour in relation to the increasing trend of Internet use by children. They concluded that there is no noticeable trend of improvement in this area and that parental control hardly increases, and hardly seems to impact the level of unsafe Internet behaviour.

In view of the mentioned trends, this study investigated the assumption whether it would be possible to confirm the relationship between the time spent on the Internet by children and the online purchases of parents based on children's request. Based on the data collected, it was possible to confirm a significant relationship. It could be concluded that the time spent on the Internet by the children is probably a significant predictor of their consumer behaviour and it has an effect on the customer behaviour of parents as well. In the interpretation of the results, it is also necessary to take into account the fact that the customer behaviour of parents can be influenced by their personality characteristics, not only by the consumer behaviour of the child. The result could also be related to the limitations of the research itself, such as the size of the sample of respondents, the wording of the question in the questionnaire, the subjectivity of the parent's view of their child's behaviour.

Another researched area was the relationship between the children's age and their preference for either analogue or digital toys. A child's consumer behaviour develops and changes over time. Changes in children's consumer behaviour are also addressed in studies by authors Valkenburg & Cantor (2001) and Gelman & Echelbarger (2019). A statistically significant relationship between the age of the child and the preference between analogue or digital toys was confirmed. Research has shown that the older children are, the more they prefer digital toys to traditional and mechanical toys, which do not use digital technology in their operation. The significance of the toy industry in the consumer behaviour of children is underlined by several researches mentioned in the introduction part of this article and also by the results of another

question in the questionnaire survey examined in this research. The respondents were questioned about the most frequently requested products by their children, where toys were the most frequent answer (39%), followed by sweets (22%). Young children are most influenced by the visual appeal of products, while older children are more influenced by social factors and need products that express their identity. General facts about how children grow, and change can influence their consumer behaviour. For example, as children grow up, their interests and preferences may change, which may affect their demand for certain products. Theories such as the cognitive development theory (Martin et al., 2002) also point out that children at different ages are at different stages of cognitive development, which can affect their ability to understand and respond to different stimuli.

In view of the implications of the study results, it is important that marketing activities aimed at children are guided by ethical principles and follow the rules and regulations that are established to protect children from harmful content and manipulation. There are many marketing tools that can include attractive brands, entertaining ads, games and competitions, but they must be used with care and to provide added value for children.

In general, children and parents are attracted to advertising that has a creative approach and contains elements that are close to them or related to their interests and needs. Parents also consider what they can afford from an income perspective (Suhányiová & Suhányi, 2017). For example, advertising that uses fun characters, attractive colours and music can be effective in reaching children. On the other hand, parents are usually interested in information about a product or service and how it could help their children. Parents should be careful not only in relation to the time that children spend on the Internet, but also monitor the content they watch and actively guide them.

An important factor is the way the advertisement communicates with the target group. For example, interactive ads that include contests, games, and apps can be effective in capturing the attention of children, while informational ads that include detailed information about a product or service can be effective in capturing the attention of parents. It is important to realize that children are a vulnerable group, and their protection should always be a priority when developing marketing strategies and tools.

Conclusion

Marketing communication plays a key role in the life of any business, as it can affect the total amount of sales of goods and services. When looking for a target group, children are often seen as an easy target for marketing campaigns, especially in today's age of the Internet and digitization. It is also due to their economic dependence on their parents and their relatively easy influence. Marketing campaigns try to create in children a feeling of desire for a particular product in order to influence their consumer behaviour.

The article mainly examined the relationship between the time children spend on the Internet and the online purchases of parents based on children's request, as well as the relationship between the child's age and the preference for analogue or digital toys. Based on the results, it was possible to confirm statistically significant relationships in both mentioned cases. The first relationship predicts that the time spent on the Internet by the children is probably a significant predictor of children's consumer behaviour and it has an effect on the customer behaviour of the parents,

when examining the number online purchases. At the same time, the study showed an interesting result regarding the consumer behaviour of children in the toy industry. Toys are the most frequently requested products by the children, and there is a statistically significant relationship between the age of children and their preference for digital toys over traditional and mechanical toys.

The implications of the study show that parents should monitor not only how much time their children spend on the Internet, but also the content they watch and guide them accordingly. When setting up their offer and marketing communication, companies should also consider the age of children, as their consumer preferences change very quickly during their childhood.

The limitations of this study result from the sample of respondents questioned at the given time in toy stores. As well as from the possible subjective assessment of the behaviour of the children by their parents since the respondents were the parents of the children.

Further research in the given area should be aimed at confirming the results of this study on a larger research sample, at using research methods that could eliminate the subjective view of parents on their children (observation, experiment), at using secondary data on online shopping, and at identifying other factors that could significantly influence the consumer behaviour of children.

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