

PRICE SENSITIVITY OF STUDENTS TO THEIR FAVORITE APPLICATIONS AND PROGRAMS

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Purpose: The aim of the article is to determine the price sensitivity of students to their favorite applications and programs.

Design/methodology/approach: The main research problem is: What is the price sensitivity of students to their favorite applications and programs? The study was conducted using the quantitative method, the survey technique on students in Krakow (Poland) in May and June 2023. The research sample was 424 people.

Findings: Every second student would not give up Messenger if it was paid at an affordable price, every third from Instagram and Spotify, every fourth from YouTube, and every fifth from TikTok. They would be less willing to pay, for example, for Facebook. Every third student would be willing to pay up to PLN 20 per month for their favorite application or program (above this amount, they would rather not use it than pay). Every fifth respondent indicated PLN 30 per month as the upper limit. The vast majority of students (71%) declared that if the respondents' favorite application or program was paid at an affordable price, they would continue to use it. One in four respondents said they would look for a replacement (25%).

Research limitations/implications: Studying price sensitivity in the new technologies sector is a complex problem and the research presented in this work covers only selected aspects in this field.

Practical implications: The research results show young people's declarations of price changes in the new technologies sector. Could raising the prices of their favorite apps cause them to use them less? The new technologies sector can use the research results to set prices for selected applications or programs.

Social implications: The research conclusions can be used to determine whether price manipulation for new technologies can result in less use of them by young people, and thus have a positive social effect.

Originality/value: The study provides insights into the willingness of students to pay for these services and identifies specific preferences and behaviors regarding the use of paid and free versions of applications. The research results can be used by owners of online platforms, marketers, educators and students.

Keywords: price elasticity of demand, consumer price sensitivity, willingness to pay, new technologies, social media.

Category of the paper: research paper.

1. Introduction

Currently, there is a strong development of various types of mobile and web applications (including social media, such as TikTok, Instagram), streaming platforms (e.g. Netflix, Spotify), artificial intelligence tools (e.g. Chat-GPT) and computer programs (e.g. Photoshop, MS Office) in the sector of new technologies that have a very large impact on the functioning of socio-economic life. This impact can be perceived both in positive aspects (e.g. unlimited access to knowledge, the possibility of real-time contact with any user connected to the Internet, the possibility of using music and film resources legally without having to download them from the Internet, support in creative processes and many others) and negative ones (e.g. addiction to these platforms, isolation of especially young people, depression, screen fatigue, threats related to cybercrime and many others). Considering these negative aspects in particular, it is worth examining various possibilities that would serve to limit the use of such platforms, especially among young people. Price could be some kind of barrier.

The aim of the research is to determine the price sensitivity of students to their favorite applications and programs. The implementation of this goal will allow to answer the question of what price of these platforms could be a barrier for young people to use them. The study provides insights into the willingness of students to pay for these services and identifies specific preferences and behaviors regarding the use of paid and free versions of applications.

The main research problem is: What is the price sensitivity of students to their favorite applications and programs? As a hypothesis, it was assumed that the surveyed students have purchased paid versions of their favorite applications and programs, such as Netflix, Spotify or YouTube. In the case of free applications or programs they use, such as TikTok or Instagram, they would not give them up if the price was affordable.

2. Consumer price sensitivity to selected applications and programs in theoretical approach

The price elasticity of demand is the ratio of the relative change in demand for a given good to the relative change in its price (Begg, Fisher, Vernasca, Dornbusch, 2014; Samuelson, Nordhaus, 2008). Flexibility examines the reactions of consumers to changes in the price of a specific one good, assuming *ceteris paribus* for the other determinants. It can be calculated according to the following formula (Perloff, 2007):

$$E = \frac{\Delta Q/Q}{\Delta P/P}, \quad (1)$$

where:

E – price elasticity of demand,

Q – the amount of demand,

P – the price of the good.

When a 1% change in price causes a change in demand of more than 1%, the demand for a good is said to be elastic with respect to price. However, when this change is less than 1%, we are dealing with demand inelastic with respect to price. An exceptional situation is created by demand with unit elasticity when the percentage change in the quantity of the good and its price are the same. The lower the negative values of the price elasticity, the more elastic the demand, reaching the limit value equal to -1 (perfectly elastic demand). When the price elasticity is zero, there is rigid demand. Income elasticity, on the other hand, means the percentage change in the quantity of the good demanded, taking into account the percentage change in income, assuming that other factors (e.g. price) are constant (Samuelson, Nordhaus, 2008).

The subject of research for the purposes of this article is the price sensitivity of students to selected services from the new technology sector: mobile and web applications (including social media, such as TikTok, Instagram), streaming platforms (eg. Netflix, Spotify), artificial intelligence tools (e.g. Chat-GPT) and computer programs (e.g. Photoshop, MS Office). The creators of these services (applications or programs) shape their business models and thus the prices of these services in different ways. Generally, however, one can indicate (Doligalski, et al., 2014; Michalak, 2016; Waliński, 2013; Wierzbiński, 2016):

- Free model, based on an advertising system (eg Facebook, Instagram, TikTok) - services are free for registered users; prices are for advertising (e.g. if users want to reach a wider or specific audience, they must purchase ads); most social media is based on this model;
- Freemium model (e.g. Spotify, LinkedIn, YouTube) - in this model, the basic functions of the platform are free, but if the user wants to unlock its full capabilities or additional options, he should purchase the premium version of the platform; this model also includes Chat-GPT, the older versions of which are free, and the latest one is paid;
- Subscription model (e.g. Netflix) - in this case, the user must purchase a paid subscription to use any of the platform's functions.

There are many factors influencing the price elasticity of demand (Moroz, 2005; Samuelson, Nordhaus, Varian, 1995; Wachowiak et al., 2006). Referring them to the new technology sector, one can indicate:

- Poor availability of substitutes – although the aforementioned platforms have competition (even compete with each other), each of them has unique features, specific functions, target groups, which result in a rather low propensity of users to completely replace one platform with another; rather, users use these applications simultaneously (according to the Digital 2023 Poland Report (2023) average number of social platforms used by users each month is 6.2).

- Free or relatively low prices in relation to the average income (e.g. the basic Netflix package costs PLN 29.99 per month, and sharing an account with a person from another household - PLN 9.99) – this contributes to relatively low price sensitivity.
- The need to use platforms due to the fulfillment of various types of needs by these platforms (the need to belong to a group, the need for contacts, building relationships, self-presentation, entertainment and others). Additionally, many of these platforms can be used for professional and/or commercial purposes. This definitely reduces the price sensitivity of consumers.
- Relatively high brand loyalty – users become attached to particular platforms and their brands (on average they spend 2h02M on these applications every day (Digital 2023 Poland, 2023)).
- Age matters – especially young people seem to become increasingly dependent on this type of platforms (Kanwal, Pitafi, Akhtar, Irfan, 2019), so they may be less sensitive to price changes than older people.
- There are several studies on the extent to which these platforms are addictive to users (see, for example, Tutgun-Ünal, 2020; Brooks, Wang, Schneider, 2020).

To sum up, there are strong reasons to assume that the market of the above-mentioned services from the new technology sector is characterized by low elasticity of demand.

3. Methods

The aim of the research is to determine the price sensitivity of students to their favorite applications and programs. The main research problem is: What is the price sensitivity of students to their favorite applications and programs?

The following research questions were formulated that detail the main problem:

- What are the favorite applications and programs of the surveyed students?
- Which of these applications and programs do respondents use for profit?
- Would respondents give up using their favorite applications and programs if they were paid?
- What is the upper price barrier of respondents' favorite application or program, above which they would rather not use that application or program than pay for it?
- What respondents have purchased paid versions of applications or programs?

As a hypothesis, it was assumed that the surveyed students have purchased paid versions of their favorite applications and programs, such as Netflix, Spotify or YouTube. In the case of free applications or programs they use, such as TikTok or Instagram, they would not give them up if the price was affordable.

The study was conducted using the quantitative method, a survey technique on students in Krakow (Poland) in May and June 2023. The research sample was 424 people. In the group of respondents, 71.7% were women and 28.3% - men. These were mainly people aged 20 (37.7%) and 21 (24%). The remaining persons were aged 19 (16%), 24 or older (10.4%), 22 (8%) or 23 (3.8%). Nearly 40% of the respondents live in a provincial capital, and 35% - in the countryside. The remaining people live in a city with the rights of a commune (14.6%) or a poviast city (10.8%). Slightly more than half of the surveyed students declared that they worked for money (55.2%).

From the point of view of the purpose of the research, data on the average monthly disposable income of the surveyed students (Figure 1) and average monthly savings after taking into account all expenses are also important (Figure 2).

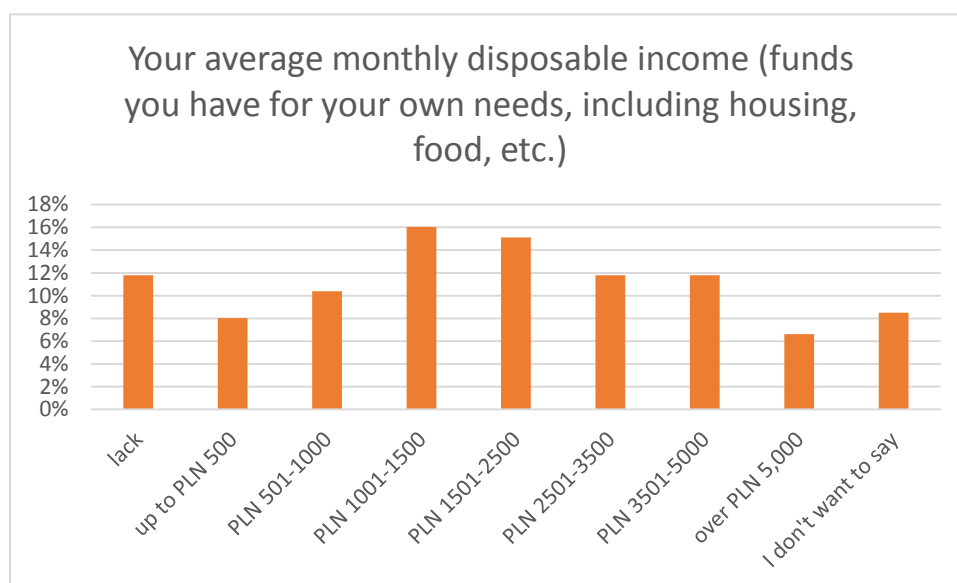


Figure 1. Respondents' average monthly disposable income (funds they have for own needs, including housing, food, etc.).

Source: own.

The level of disposable income of the surveyed students varies and ranges from PLN 0 (12%) to PLN 3500-5000 (11.8%) or more (6.6%). The largest percentage of students declared a disposable income of PLN 1001-1500 (16%) or PLN 1501-2500 (15%). It is worth comparing it to the average monthly disposable income in 2022 in Poland per capita, which amounted to PLN 2249.79 (Announcement..., 2022). About 61% of students declared income below this level.

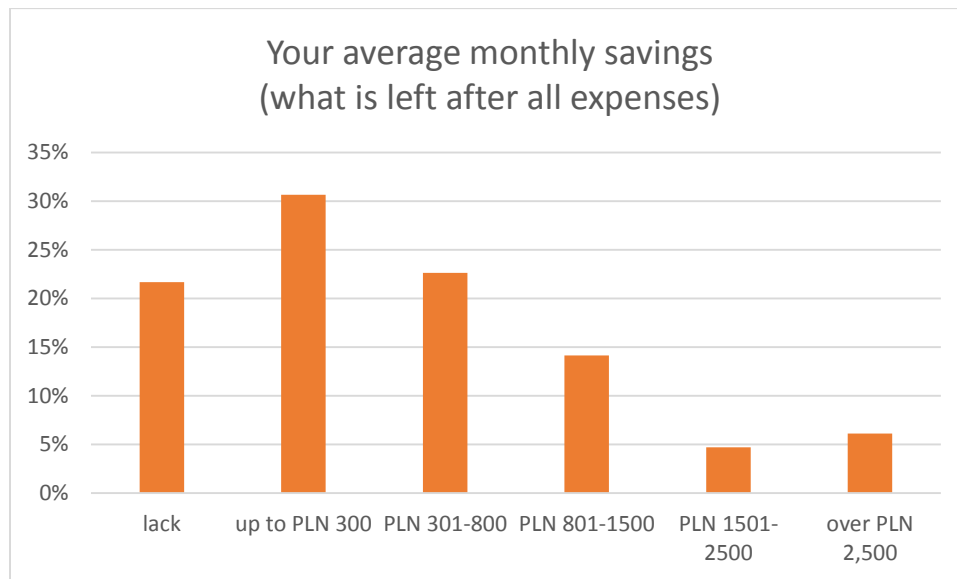


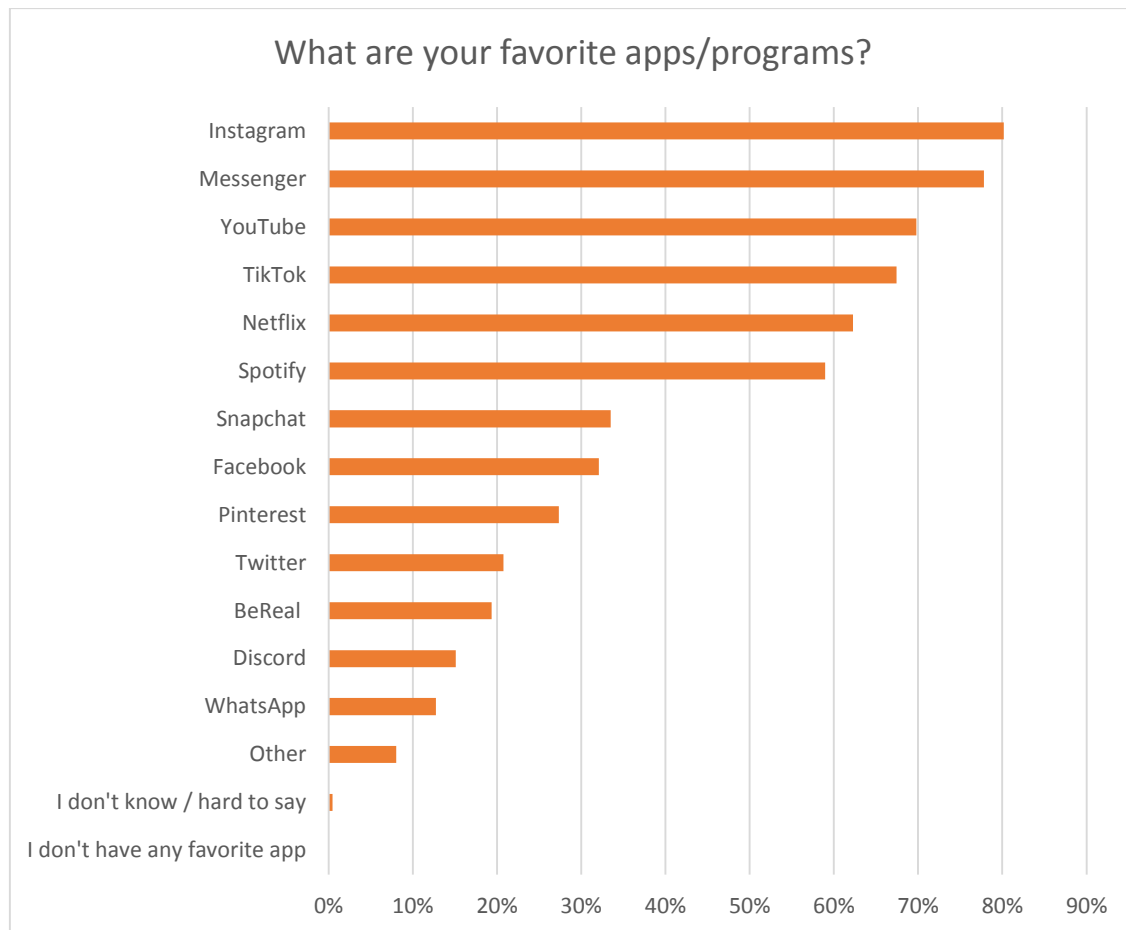
Figure 2. Respondents' average monthly savings (what is left after all expenses).

Source: own.

Monthly average savings of almost every third surveyed student amount to PLN 300 (30.7%). Every fifth respondent has no savings (21.7%) or has savings of PLN 301-800 (22.6%). Comparing this to the average monthly savings of Poles in 2022, which amounted to approx. PLN 830 (Sytuacja farms..., 2022), it should be noted that 75% of respondents have lower than average savings.

4. Findings

When determining the price sensitivity of students to their favorite applications and programs, the first thing to do is to select those applications and programs that are popular with respondents. Therefore, the first research question is: what are the favorite applications and programs of the surveyed students? Data in this area are presented in Figure 3.



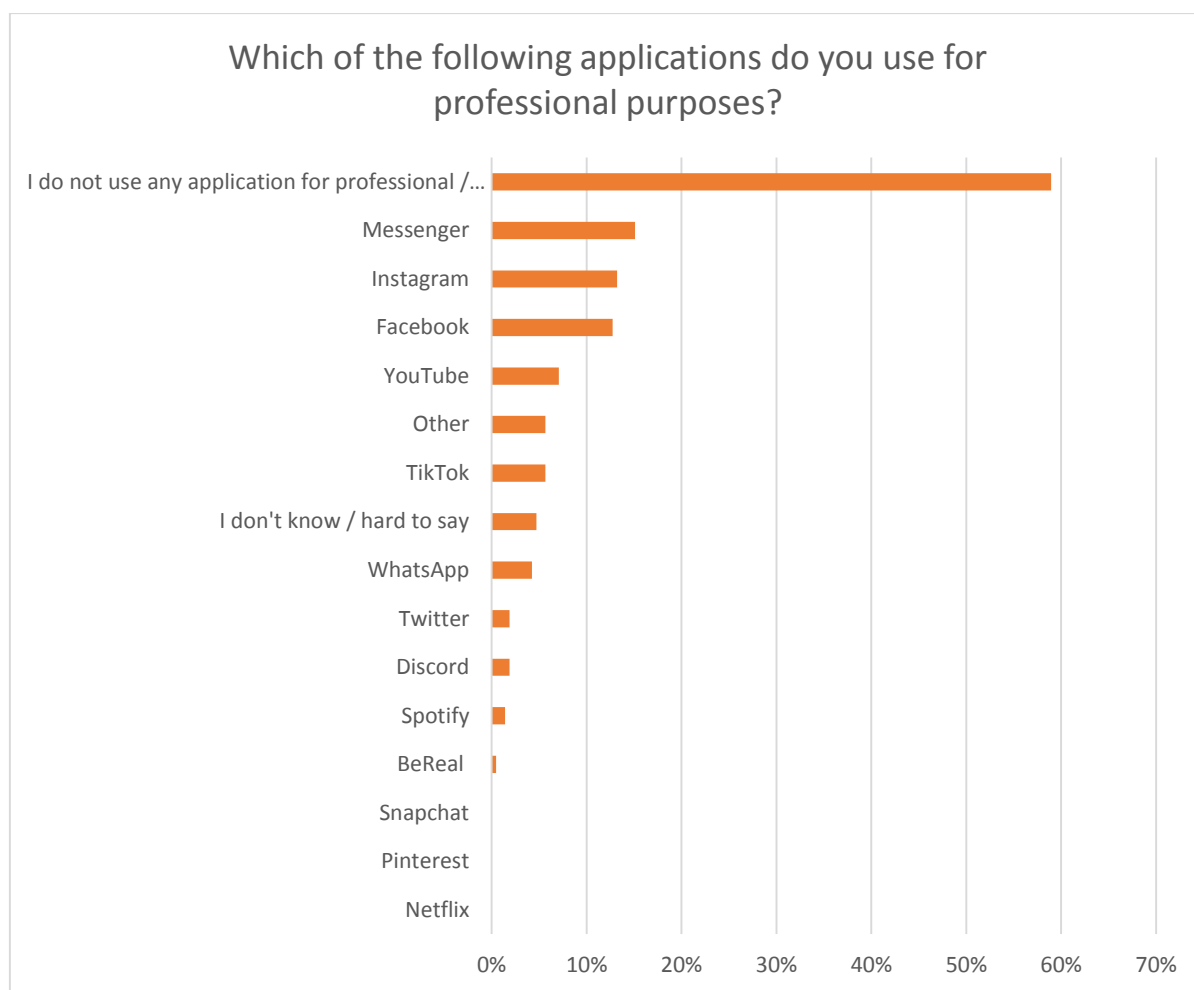
The sum in the graph is greater than 100% because respondents could indicate more than one answer.

Figure 3. Respondents' favorite platforms.

Source: own.

The most popular applications among the respondents are: Instagram (80.2%), Messenger (77.8%), YouTube (69.8%), TikTok (67.5%), Netflix (62.2%) and Spotify (58.9%). Other indications of favorite applications or programs are: Snapchat (33.5%), Facebook (32.1%), Pinterest (27.3%), Twitter (20.8%) and BeReal (19.3%). Some respondents also named Discord (15%), WhatsApp (12.7%) and others (8%) among their favorites.

The second research question was: which of these favorite applications and programs do respondents use for profit? Respondents' responses are summarized in Figure 4.



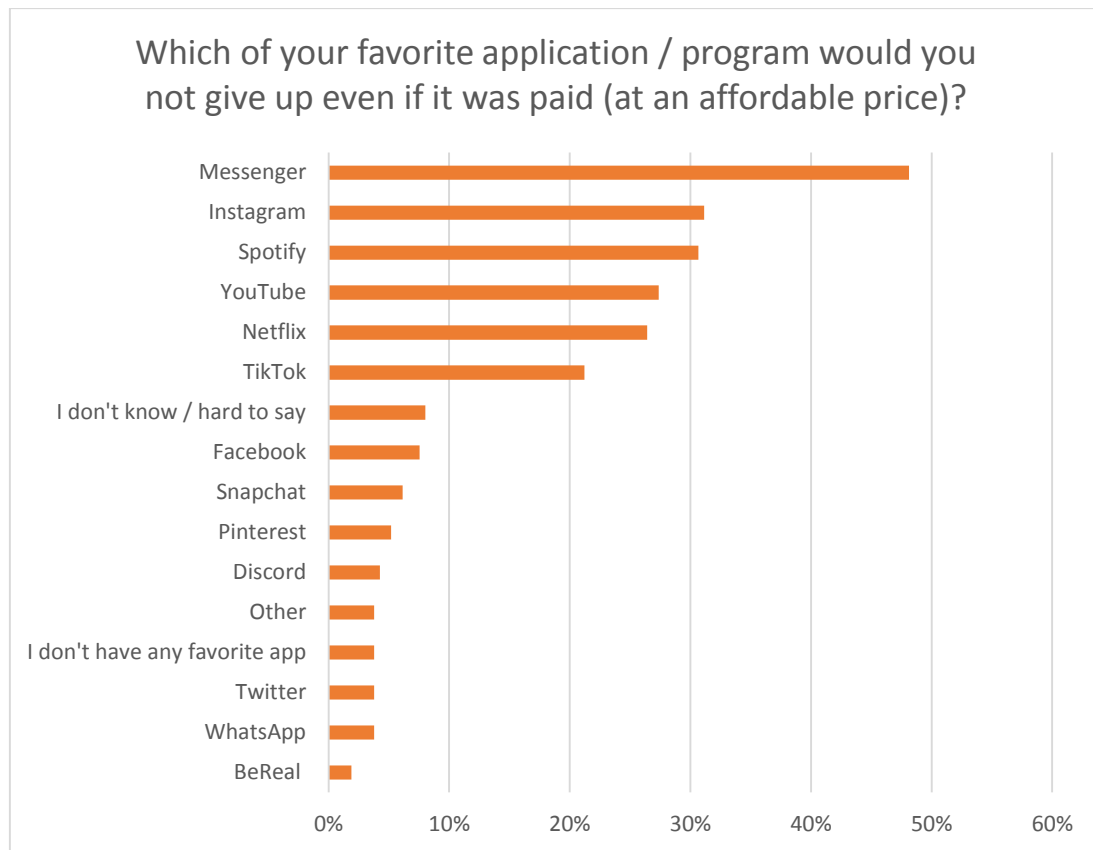
The sum in the graph is greater than 100% because respondents could indicate more than one answer.

Figure 4. Apps used by respondents for professional or commercial purposes.

Source: own.

Nearly 60% of respondents do not use any of these applications or programs for professional or commercial purposes. In addition, 15.1% of respondents declared that they use Messenger for these purposes, 13.2% – Instagram, 12.7% – Facebook, 7% – YouTube, 5.7% – Other, and 5.7% – TikTok. Some people use WhatsApp – 4.7%, Twitter – 1.9%, Discord – 1.9%, Spotify – 1.4% and BeReal – 0.5% for professional or commercial purposes. The price sensitivity of students who use these applications for professional or commercial purposes should be lower.

Most of respondents' favorite apps or programs are free. Some of them (YouTube, Spotify) have voluntary paid versions, while Netflix requires a fee to use it. Price sensitivity reveals a lot when respondents declare whether they would give up using their favorite apps and programs if they were paid at an affordable price (see Figure 5).



The sum in the graph is greater than 100% because respondents could indicate more than one answer.

Figure 5. Respondents' favorite apps/programs that they would not give up even if they were paid (at an affordable price).

Source: own.

According to the respondents' declarations, if their favorite applications were paid, they would not give up: Messenger (48.1%), Instagram (31.1%) and Spotify (30.7%). In addition, respondents would be willing to pay to use YouTube (27.4%), Netflix (26.4%) and TikTok (21.2%). Some would also like to continue using Facebook (7.5%), Snapchat (6.1%), Pinterest (5.2%), Discord (4.2%) and others (3.7%) for a fee. relatively low price sensitivity of the surveyed students. They are willing to pay for the continued use of their favorite applications. It is therefore worth defining the upper price barrier of the respondents' favorite application or program, above which they would rather not use this application or program than pay for it (Figure 6).

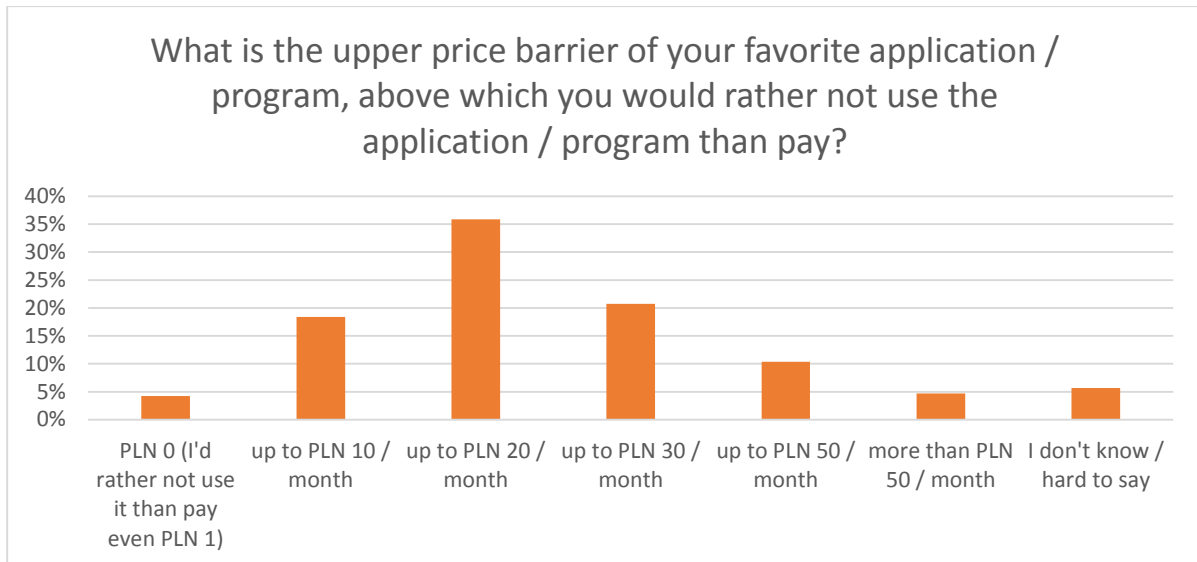


Figure 6. The upper price barrier of respondents' favorite application/program, above which they would rather not use the application / program than pay for it.

Source: own.

Every third student would be willing to pay up to PLN 20 per month for their favorite application or program (35.8%). Above this amount, he would rather not use it than pay. About 20% of the respondents indicated PLN 30 per month as the upper limit, and 18% - PLN 10. Every tenth student declared PLN 50 per month (10.4%). Only 4.2% answered that they would rather not use their favorite platform than pay for it. A similar percentage of respondents indicated that they would be willing to pay more than PLN 50 per month (4.7%). These answers largely show the rather low price sensitivity of students to the use of their favorite platforms. This is also evidenced by the data presented in Figure 7.

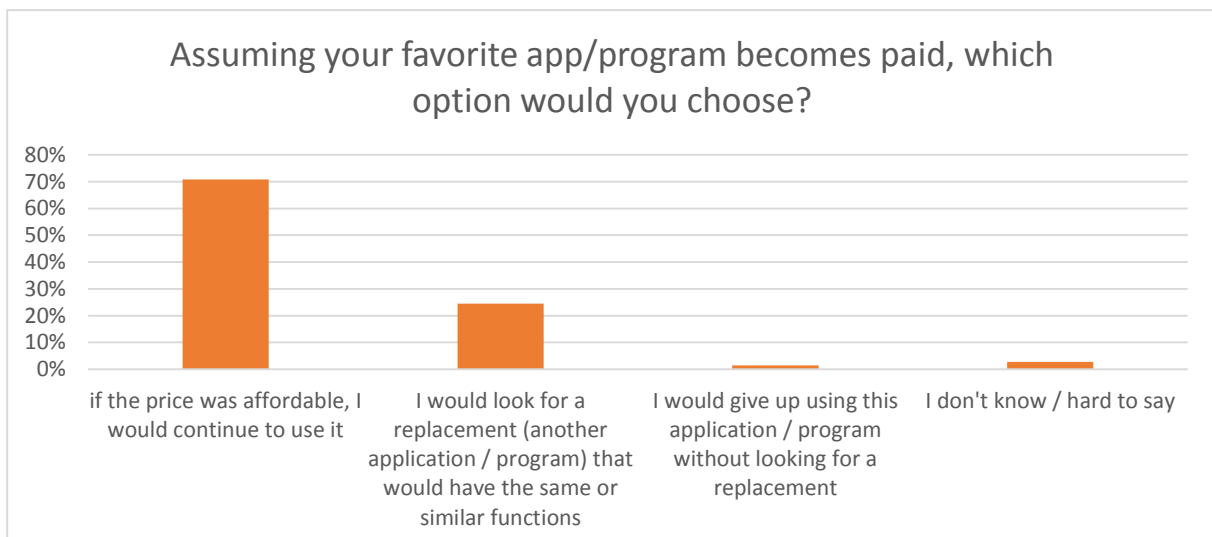
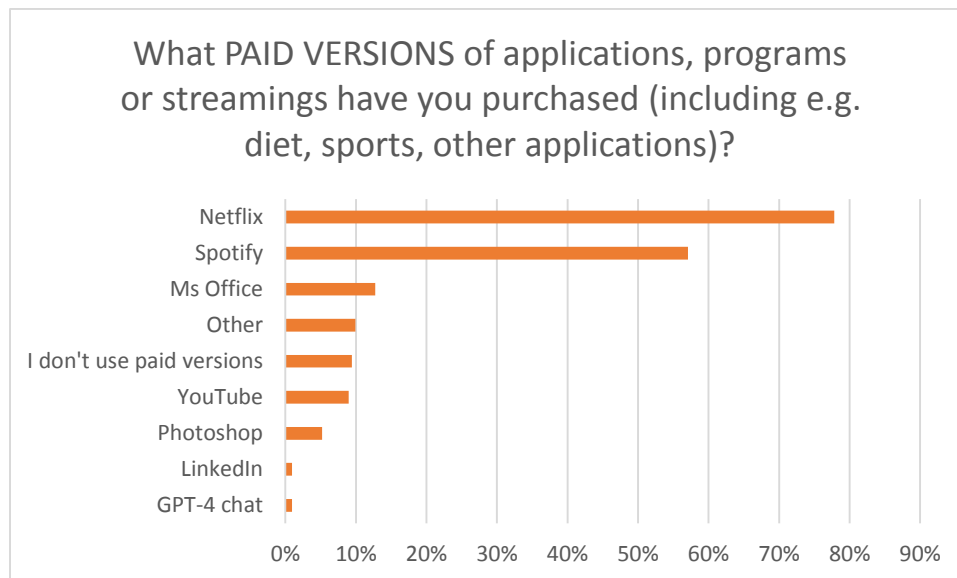


Figure 7. Respondents' declaration when their favorite application / program becomes payable.

Source: own.

The vast majority of students (70.8%) declared that if the respondents' favorite application or program was paid at an affordable price, they would continue to use it. Every fourth respondent said that he would look for a replacement (24.5%). Only 1.4% of respondents said that they would give up using their favorite application, and 2.8% had no opinion.

It is also worth presenting the declarations of the surveyed students regarding which paid applications, programs or streaming services they have purchased (including, for example, diet, sports and other applications). Data in this range are presented in Figure 8.



The sum in the graph is greater than 100% because respondents could indicate more than one answer.

Figure 8. Purchased paid versions of applications, programs or streaming (including e.g. diet, sports, other applications) by respondents.

Source: own.

The vast majority have purchased access to Netflix (77.8%). As mentioned, this app is only available in the paid version. In addition, 57% have a paid version of Spotify. Netflix and Spotify are therefore the two most paid applications by students. Some also have MS Office (12.7%), a paid version of YouTube (8.9%) or Photoshop (5%). Nearly every tenth student stated that she/he did not use paid versions of applications or programs (9.4%).

The respondents were asked how much, on average, they spend per month on the purchase (including subscriptions) of the above-mentioned applications, programs, streamings in total (Figure 9).

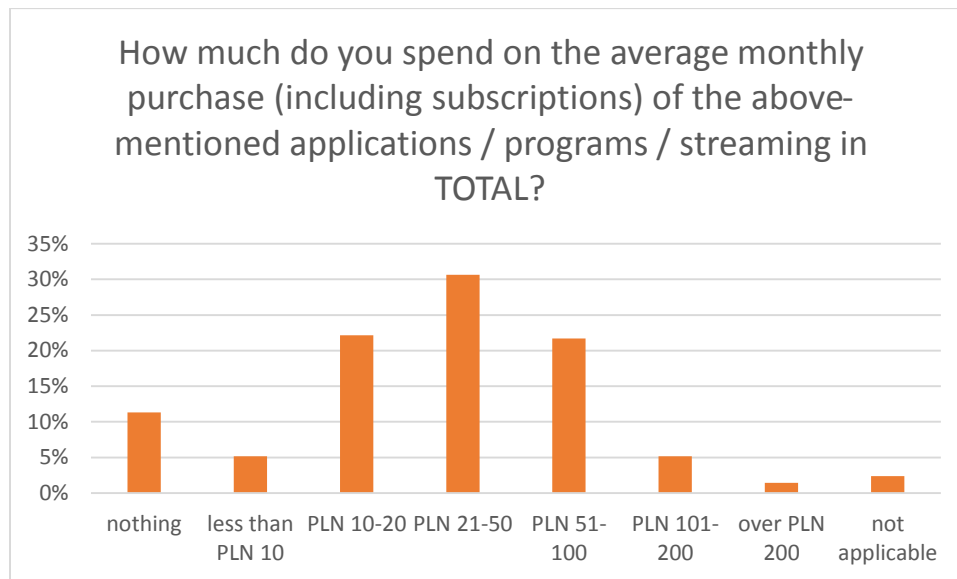


Figure 9. The amount that respondents spend on an average monthly for the purchase (including subscriptions) of the above-mentioned applications/programs/streaming.

Source: own.

According to the declarations of nearly every third student, on average, they spend from PLN 21 to PLN 50 (30.7%) per month on the purchase or subscription of the above-mentioned applications, programs or streaming services. Moreover, 22% spend PLN 10-20, while 21.7% - from PLN 51 to PLN 100. Only one in ten respondents stated that they did not spend any amount (11.3%).

To sum-up, key findings of the research are as follows:

- Every second student would not give up Messenger if it was paid at an affordable price.
- Every third from Instagram and Spotify, every fourth from YouTube, and every fifth from TikTok.
- Every third student would be willing to pay up to PLN 20 per month for their favorite application or program.
- 71% of students declared that if their favorite application or program was paid at an affordable price, they would continue to use it.
- 25% of respondents said they would look for a replacement if their favorite app or program became paid.

Based on the above research results, it should be noted that the price sensitivity of the surveyed students to their favorite applications or programs is rather low and they are willing to pay for using them, as long as the price is affordable.

5. Discussion

In this research, the price sensitivity of students towards their favorite applications and programs in the context of new technologies was established. The study provides insights into the willingness of students to pay for these services and identifies specific preferences and behaviors regarding the use of paid and free versions of applications. Research has shown that the price sensitivity of students to their favorite mobile and web applications or programs is rather low. Paying for their favorite applications would not be a problem if only the price was affordable (up to PLN 20 per month). This means that the price up to this amount would not be a barrier to limiting the use of these applications by young people. The relatively low price sensitivity in this case is influenced, among others, by factors such as: poor availability of substitutes, free or relatively low prices in relation to average income, the need to use platforms due to the fulfillment of various types of needs by these platforms (e.g. 40% of them use them for professional and/or commercial purposes), relatively high brand loyalty and dependence on these platforms, as well as the young age of users (younger people may be less sensitive to price changes than older people). The results of the research show the attachment of students to these applications, which increases the concerns about the risks associated with the use of these platforms (e.g. addiction to these platforms, isolation of young people in particular, depression, screen fatigue, risks associated with cybercrime and many more).

Previously, similar research was conducted on the willingness to pay in the technology sector. For example, Hebly (2012) investigated the willingness to pay for paid Mobile Applications (Paid Apps), especially the importance of antecedents on likelihood to purchase paid Apps. The study of Wang, Chang, Chou & Chen (2013) aims to advance our understanding of the factors that influence the intention to use and willingness to pay for mobile TV apps by triangulating the social cognitive theory, motivation theory and the notion of perceived value. Gundlach & Hofmann (2017) used a choice-based conjoint analysis to investigate whether consumers demonstrate willingness to pay for tablet news apps and whether online advertising is negatively related to consumers' willingness to pay. Furthermore, Furner & Zinko (2018) investigated which factors dispose an individual to be willing to pay for an app.

Price consistently emerges as a significant factor in willingness to pay across all presented studies. While other research focus on broader contexts or specific domains, this article narrows down to a specific demographic (students) and specific applications, providing a nuanced understanding of their preferences and limits. Prior to this research, there was a lack of focused studies on the price sensitivity of young people, specifically students, towards new technologies. This study contributes by addressing this gap and shedding light on the preferences and willingness to pay for various applications. It delves into the practical aspects of consumer behavior.

6. Conclusions

The conclusions drawn from the research emphasize that students exhibit relatively low price sensitivity when it comes to their favorite applications and programs. Affordability seems to be a crucial factor, with a significant proportion expressing a willingness to pay for these services. The findings highlight the attachment of students to these applications and the importance of considering price as a potential barrier to limit their use.

The results confirm the hypothesis that students would be willing to pay for their favorite applications at an affordable price. The hypothesis assumed that students who already purchase paid versions of some applications would not give up using free applications if they were reasonably priced, and this assumption finds support in the survey results.

The research employs a quantitative method, providing statistical insights into the preferences of students. Clear formulation of research questions and a structured methodology contribute to the study's reliability. However some limitations related to the research conducted should be indicated. The research is geographically limited to students in Krakow, Poland, potentially limiting the generalizability of findings to a broader population. The study focuses on a specific demographic (students), limiting the applicability of results to other age groups. The research assumes a willingness to pay based on the affordability of prices, but individual financial situations and priorities may vary.

The study adds to the existing knowledge by providing specific insights into the price sensitivity of students towards new technologies, a topic with limited prior research. Lessons learned include the importance of considering affordability in understanding consumer behavior in the context of technology. The research holds significance for platform owners, marketers, and educators in understanding how price influences students' choices. The information obtained can inform pricing strategies and marketing efforts in the new technologies sector. The results can serve as a basis for further investigations into the evolving dynamics of consumer behavior in the digital era.

Future research could explore in more detail the factors influencing students' decisions to pay for specific applications. Additionally, investigating the long-term effects of increased prices on usage patterns and potential behavioral shifts would contribute to a comprehensive understanding of the dynamics in the new technologies sector.

In conclusion, the study contributes valuable insights despite its limitations, providing a foundation for future research and practical applications in the field of new technologies.

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