

Analysis Of Factors Affecting Internet Consumption Among Upper Secondary Students

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Abstract

This research wants to identify the factors influencing the use of the internet data package for students of the Senior High School level, particularly students with an age range of 14 to 18 years. The result of the research, through a survey of 115 respondents, shows that the use of the data package is on account of academic need, with the greater share being online learning and learning materials. This is evidenced by the fact that 80% of the respondents use the internet for academic-related issues, such as doing homework and holding online classes. While 60% use the consumed quota for entertainment purposes—social media, video streaming, online games, and the like—the remaining ones, 45%, choose a price that fits their budget, based on either offered promos or rates and services. Next, a 40% social influence follows a recommendation from the social environment. Up to 55% of the respondents base their selection and consumption of package data on the technological infrastructure, to mean the availability of digital gadgets and quality network. In such a way, content analysis has been used in this study to discern consumption patterns. Of the test results from this research, it is believed that it will further improve the understanding of trends in using package data for high school students and their associates to improve the availability and quality of Internet services for academic purposes.

Keywords: Internet use, academic needs, learning, data package costs, technological infrastructure.

1. Introduction

In turn, the use of the internet network by students in secondary school influences learning experiences, especially in facilitating access to a wider scope of learning materials. According to the articles reviewed, the internet not only acts to bridge the gap caused by the lack of teaching materials in learning institutions but also fosters collaborative learning among students and teachers. Students use the internet not only for academic but quite extensively for social media also, building the interactions of importance in the learning process (Akpan & Akpan, 2017); Suana et al (2019). Despite the majority of students having good access especially through smartphones, they still face obstacles such as low rates of connection speeds, and also in the relevance of information.

There are also gender differences in the use of the internet, where women show greater device ownership and access, while men use it more for entertainment purposes. Jayadev H. Kadli; Kumba, B.D., and Kanamadi 2010. The awareness of the importance of media literacy itself and training in filtering useful information is another important aspect so that optimal use of the internet can be made by students in the learning process. It is, therefore, important to devise effective teaching strategies with consideration of variation in internet access and use among students.

1.2 Previous research

Despite the challenges of abuse and addiction, internet use among high school students significantly affects learning and social development. In developing countries, research by Akpan & Akpan (2017) shows that internet access overcomes limited learning resources, increasing collaboration between students and lecturers, though poor infrastructure and high costs are obstacles. By contrast, Ramón-Arbués et al. (2021) found a high prevalence of problematic PIU in a sample of Spanish high school students but mainly linked it with factors such as time of internet use, stress, and anxiety. These symptoms of internet addiction have been aggravated through increased consumption via social media in the COVID-19 pandemic, which may be revealed by Gómez-Galán et al. (2020), where addiction to social media is seen to impact negatively on mental health and academic performance.

In Lampung, Indonesia, the pattern of utilization of the internet varies among high school students by gender. For instance, it could be seen that girls utilize more for academic purposes than for entertainment, such as for boys (Supiyanti, Iriyadi, 2022). Also, the research of targets - Sharov et al. (2021) evidences that active use of social networks by students contributes to the development of social skills, while its excessive use leads to problems in mental health and reduces face-to-face interactions. Each of these studies points to the urgent need for educational programs that will be able to promote responsible and balanced use of the internet among students.

1.3 Research purposes

This research aims to:

1. Attempts to find out the factor affecting the consumption level of internet data package amongst High School Students for Academic as well as Non-Academic purposes,
2. Influence of data package availability and access to the internet on Online Learning Effectiveness and Students' Social Interaction,

3. Provide recommendations for policy that ensures responsible use and a balance in data packages by high school students to support the student's academic achievement and mental health.

1.4 Similar research in Indonesia

A number of articles paint a coherent picture of the factors that determine the utilization of internet data packages by upper secondary students, particularly in relation to consumer behavior and digital media dependence. In this regard, Santoso and Prasetyo (2021) have mentioned that when students possess a high level of self-monitoring, they tend to consume more data as they try to follow social trends to avoid "falling behind" on social media. This supports the findings of Nur Rahma (2018), who observed that intense Instagram use can increase consumer behavior among students. The attractive visuals and content encourage them to continue accessing social media, resulting in significantly higher internet data consumption. Moreover, Khairinal et al. (2022) pointed out that social influence, conformity, family, and economic education also shape students' consumptive behavior in terms of data packages, as peer and environmental pressures drive students to stay connected to popular social media.

From a broader perspective, Noviyarto (2017) shows that culture, personality, and psychological factors also play important roles in students' decisions to purchase data packages. For instance, students actively engaged online or from more affluent backgrounds tend to have a larger budget for data packages. Additionally, psychological factors, such as the motivation to stay connected and perceived internet service quality, further shape data consumption patterns. This is echoed by Krisnawati (2016), who noted that media dependence to fulfill information and social needs encourages teenagers to be online more frequently. The need for rapid information and the urge to stay updated with social trends result in high internet use frequency and intensity, consequently increasing data package consumption among students. Collectively, these perspectives underscore that high school students' data package use is shaped by a complex interaction of social, psychological, and cultural factors.

2. Literature Review

The consumption of internet data packages is increasing among students, driven by advancing technology and the growing need for access to digital learning materials. Factors likely influencing this trend include data package costs, network availability, and students' need to access various online platforms to support learning. Ansari and Khan (2020) note that high internet costs limit students' access to social media and learning devices, while discounts and quota subsidies from internet service providers improve access to digital educational resources. These economic factors are key to understanding how students budget for internet needs.

Beyond cost, network quality also significantly impacts data package consumption among students. Wang et al. (2019) indicate that a stable signal and adequate internet speed allow students to maximize online service use. However, in areas with limited network infrastructure, students often face difficulties accessing the internet, affecting their consumption levels. Therefore, service providers are encouraged not only to offer affordable data packages but also to ensure network quality that supports online learning.

Social factors further influence students' data package consumption. According to We et al. (2020), internet use for social media and entertainment, such as video streaming, often increases data consumption. Students use the internet not only for educational purposes but also for connecting with friends, sharing information, and seeking entertainment. Thus, besides economic and technical factors, students' social habits in using the internet should also be considered when analyzing data package consumption levels. The following are some factors that may impact the intensity of internet network use among students.

1. Academic Needs (Access to materials, classes, and assignments):

Online learning positively impacts students' motivation, achievement, and engagement in their academic journey. It provides flexible access to materials and assignments via platforms like SPADA, promoting independent learning, though internet access and quota costs remain challenging (Mandasari, 2020). Academic needs in online learning focus on accessing resources, completing assignments, and attending classes through video conferencing and LMS platforms, which enhance students' academic capabilities.

However, multitasking, especially involving social media, increases cognitive load, reducing task focus and learning effectiveness (Wiradhany & Baumgartner, 2019). Alshantiti et al. (2023) reported that around 48.3% of students believe social media improves their grades by facilitating academic discussions and information sharing among classmates. Additionally, blogs and online forums serve as supplementary learning resources. Abuhassna et al. (2020) emphasized that LMS platforms significantly support academic success, with factors like background, experience, collaboration, and instructor interaction influencing online learning satisfaction. Bloom's taxonomy elements like understanding, application, and analysis also positively contribute to online academic achievement.

2. Frequency and Duration of Use (Academic and entertainment use):

Research shows that the frequency and duration of digital device usage affect students' focus and productivity. McCoy (2020) noted that device use in class, for academic or entertainment purposes, often disrupts focus, with entertainment access motivated by boredom and social connection. This is evident in children and teens who turn to the internet as a stress escape, especially during the pandemic (Dong et al., 2020).

Martínez-Domínguez and Mora-Rivera (2020) highlighted that demographics influence internet use frequency, with younger users leaning towards entertainment and adults towards information and e-commerce. Sha et al. (2019) found that apps like WhatsApp and Facebook increase smartphone usage issues, impacting productivity and well-being. Access factors also matter; users with better devices use the internet more broadly for academics and entertainment (van Deursen & van Dijk, 2019). Camilleri and Falzon (2021) observed that emotional and instrumental motivations, such as seeking information, relaxation, and entertainment, drive regular streaming service use, highlighting emotional motivation, demographics, and device access as key factors in digital usage patterns among students and adolescents.

3. Influence of the Social Environment:

Environmental and social factors significantly motivate internet use for entertainment and social interaction. Ganong and Noel (2019) found that these factors keep people connected online, interacting with their environment. Network access, education, and occupation also shape internet consumption, influencing quota usage for academics and entertainment

(Kusumaningati, 2024). Family relationships and peer influence increase internet use risks, particularly under social pressure from friends online (Sugaya et al., 2019).

This influence extends to the elderly, where internet access and social support help bridge information gaps and boost online engagement (Nguyen & Byeon, 2022). For students, the internet facilitates social media interactions, collaboration, and dynamic learning (Ansari & Khan, 2020). However, problematic behaviors like excessive social media use are often driven by social factors like connectivity and belonging in relationships (Kırcaburun et al., 2019). Overall, strong social interactions and a supportive environment foster online engagement (Chin et al., 2019), underscoring social and environmental factors' role in internet usage behavior.

4. Availability of Technological Infrastructure (Devices and networks):

Technological infrastructure, like devices and networks, significantly impacts internet use, supporting various digital applications and interactions. For instance, 5G technology provides high speed and responsiveness, enabling large data transfer, critical for applications like IoV, which require reliable connectivity for vehicle communication (Storck & Duarte-Figueiredo, 2020). In education, improved access to mobile devices and networks enhances student-teacher interaction, fostering collaborative learning (Ansari & Khan, 2020). This infrastructure also broadens accessibility, linking devices effectively in the digital ecosystem (Lombardi et al., 2021).

Cloud technology, backed by network infrastructure, supports blended learning methodologies, boosting student interaction and collaboration (Spirin et al., 2019). Structured cabling ensures reliable, efficient data communication, supporting various applications and speeding up information transfer in modern network settings (Logeshwaran et al., 2022). For IoT, a reliable network is essential to handle data volume and maintain device connectivity, ensuring optimal performance in interconnected environments (Srinidhi et al., 2019).

5. Costs and Budget (Quota prices, discounts, limited budgets):

Cost and budget greatly influence internet use, especially for students and those with limited budgets. High data costs limit access to educational resources and collaboration, while discounts from service providers encourage more online learning engagement (Ansari & Khan, 2020). Price and discount factors shape internet consumption and accessibility, with budget constraints prompting users to allocate specific amounts for internet expenses, making it easier to manage costs amid price changes (Srinidhi et al., 2019; We et al., 2020). Quotas and discounts also affect the decision to use MEC technologies that enhance data efficiency and influence server choices for data transfer (Mitsis et al., 2019).

Cost constraints dictate access frequency and duration, impacting consumption patterns and access to digital information and services (Wang et al., 2019). Cost considerations also play a role in decisions about sharing personal data, influencing data market participation and information value (Oh et al., 2019). In vehicular network contexts, infrastructure costs, like installing RSUs, are limited by budget, necessitating a balance between costs and service quality (Guerna et al., 2022).

3. Material and Method

3.1 Source Person and Data Collection Technique

The targeted respondents in the research were high school students aged between 14 and 18 years who use cell phones with regular internet use. The chosen respondents have to

hold purchases of at least IDR 50,000 per internet quota transaction, which is a criterion to ensure continuity in accessing the internet and to have enough understanding of the behavior of daily internet usage. The investigation also provided information in the data on the characteristics of respondents by gender and age. The respondents were made up of 52 female students, or 52%, and 48 male students, or 48%, whose ages ranged from 14 to 18 years, where the majority were 15 years old, at 32%, followed by 16-year-olds at 30%.

Data collection in this research used an online form distributed using Google Form. The reason for choosing this is because it is very accessible to the resource persons in upper secondary students, considering that they are presently accustomed to the use of digital devices like cell phones and having regular access to the internet. By using Google Form, it means that the respondents can fill in the questionnaire at any time and anywhere. Moreover, this makes it easier to collect data from them. Another benefit of using Google Forms is that the structured data automatically provides the output, hence, it will be way easier further to process and analyze the data.

3.2 Research Methods

The research methodology to be employed is the content analysis method. Content analysis is a method that is conventionally utilized to trace patterns, themes, or meaning in text, conversation, or other forms of communication in a systematic and objective way. This is widely used in the social sciences thus to analyze qualitative data—such as written texts or survey responses—with the intention of finding certain trends within the data collected. Content analysis allows the researcher to know how people interact, understand, and respond to specific topics or issues that have been gathered through data.

From the above information, the stages of content analysis on the basis of research into the "Levels of Internet Use among High School Students" are as follows:

- 1) Collection of Initial Data:** There is a requirement for the accumulation of data to establish a hypothesis. Jasmine (2014) used the Internet Usage Scale (IUS) to measure students' responses regarding the impact of internet usage on them. Similarly, Tarimo and Kavishe (2017) gathered information through questionnaires from high school students in Tanzania about their internet access and purposes for using it.
- 2) Exploratory Factor Analysis:** This analysis, called factor analysis, identifies patterns or major factors that explain relationships between variables after data collection. Jasmine (2014) conducted an Exploratory Factor Analysis with varimax rotation to reveal the underlying data structure. This highlighted two main factors: "Self-Detachment" and "Usage," which explain the impact of internet use.
- 3) Removal of Redundant Items:** Items deemed irrelevant or redundant after factor analysis are removed, retaining only those uniquely contributing to a specific factor. This step is crucial to ensure the validity of the overall analysis results.
- 4) Identification of Internet Use Purposes:** Studies reveal the main reasons students use the internet, primarily for entertainment, like gaming and music, as found by Tarimo and Kavishe (2017), while only a smaller group used it academically. Yilmaz and Orhan (2010) divided internet use into educational and non-educational categories.
- 5) Measurement of Internet Use Frequency:** The frequency of internet access was assessed to understand students' usage patterns. Mythily et al. (2008) deemed usage over five hours

per day as excessive, linking it to issues like reduced academic performance and social isolation.

6) Evaluation of Internet Access Challenges: Challenges faced by students in accessing the internet were studied, with Tarimo and Kavishe (2017) noting limitations such as slow internet and insufficient data funds that limit academic use.

7) **Conclusions and Recommendations:** Finally, conclusions were drawn and recommendations made. Jasmine (2014) highlighted that internet use affects adolescent social and emotional development differently depending on individual psychological factors. Mythily et al. (2008) recommended strategies like setting time limits on internet use at home and helping parents recognize early signs of excessive usage.

These steps allow content analysis to determine the patterns, purposes, and challenges of internet use among high school students and provide insight into how it has influenced their academic and social lives (Jasmine, 2014; Tarimo & Kavishe, 2017; Mythily et al, 2008; Yilmaz & Orhan, 2010).

4. Result

Based on the results of the survey conducted, various reasons were given by the respondents concerning the use of internet quotas among high school students. Their answers reflected their needs for quotas, ranging from learning activities to entertainment. Through this survey, it has been shown that internet quota is an essential need in daily students' lives, especially in supporting academic and social activities. Other factors that influence quota usage patterns include environmental ones, availability of Wi-Fi, and personal lifestyle of each respondent.

To create a more deep picture, responses of the interviewed were allowed to group by a topic of their quota use. Each topic groups similar responses of the surveyed and outlines different motivations of buying and using quotas. The number of respondents is sorted by frequency of answers, which reflect main trends in quota consumption. It is also hypothesized that this segmentation shall provide a better understanding of quota consumption patterns among students and the factors affecting these patterns. The following are conditions prevalent in the literature as influencing quota usage levels among high school students:

1. Academic Needs (Accessing materials, online classes, assignments).

This is one of the main driving forces that encourages the consumption of large amounts of internet data packages by students, since through it, all students can access learning materials, attend classes, and complete their assignments online. As many educational institutions are making seamless transitions to their digital platforms, students have to connect online to download assignments along with participating in virtual class discussions. This places the internet as a vital ingredient in supporting their academic success, where its quality and affordability is very crucial in assuring the learning process.

From the results of research done, most of the respondents used data packages for academic purposes such as accessing learning materials, online class, and assignments. Some of the responding students said that they purchased data packages to take online classes and to do assignments, while others use them to response to the online needs of learning and to find teaching materials. Meanwhile, some of them use data packages to access learning materials through applications and prepare presentations for their assignments. Examples of answers from respondents include "To take online classes and do assignments" (Respondent 2) and

"Access learning materials in learning applications" (Respondent 33). On the whole, about 80% of total respondents stated that academic needs were the main factor which drove them to purchase and use data packages.

2. Frequency and Duration of Use (Academic and entertainment use).

Frequency and duration of using the internet vary between academic and entertaining purposes. Students use high-intensity internet for accessing learning materials such as e-books, e-learning platforms, and online journals to increase the time spent on the network. On the other hand, the duration of usage for entertainment purposes, such as social media, video streaming, and playing online games, also demonstrates high records, especially outside study hours. The frequency of internet use for academic purposes is more concentrated during peak periods, such as examination periods or major assignment needs, while entertainment use is spread out more evenly across the day. These differences show that both aspects are essential to understand when measuring the overall students' consumption of the internet.

Results showed that 60% of the respondents claimed the frequency and length of time they used the internet were important features in choosing which package to purchase. Many respondents mentioned that daily internet usage was quite high, which was the main reason they chose a greater quota data package. According to Respondent 9, "Daily internet usage is quite high." Some other respondents use the internet not only for academics but also to spend their time on entertaining things. According to Respondent 10, "I often use the internet for entertainment and academics." Some of them mentioned long duration for use, especially for studying, which influences their need for a higher data quota. According to Respondent 38, "The duration of use for studying is quite long." Generally, using the internet regularly and for a longer time has been the main reason for encouraging respondents to buy a higher data package.

3. Environmental and social influences.

The environmental and social variables strongly influence an individual's behavior in regard to decision-making processes and interaction with other people. A friendly environment, along with positive social interactions, enhances both an individual's work ability and psychological state. On the other hand, less-than-ideal working conditions combined with negative social interactions breeds stress and lowered motivation. It also shows that family, friends, and community play a big role in shaping the habits and views that one holds of the world surrounding him. Therefore, creating a healthy social environment cannot be ignored in improving the quality of people's lives.

It follows from the research that the social factors of choosing a data package, such as recommendations from friends or family, influenced about 40% of the respondents. Some of them mentioned recommendations from friends, for example, Respondent 16 stated, "Following friend recommendations on data packages," while Respondent 20 said, "My friends also use the same data package." To Respondent 29, the influence of friends was an important consideration in choosing the data package: "I am influenced by friends to choose a data package." Other than this, the surrounding environment influences respondents in choosing, as stated by Respondent 37: "The surrounding environment influences my choices of data packages." Not only this, but recommendations from the family are taken into account, so says Respondent 55: "Recommendations from the family." Thus, social surroundings both from

friends and family are an important consideration for some respondents in deciding on the purchase of data packages.

4. Availability of technology infrastructure (Devices and networks).

Further, availability of technological infrastructure such as digital devices and internet networks guarantees students access to electronic educational resources. Good infrastructure enables students to access different digital learning platforms with greater ease and speed. This study has established that students become more active in the use of digital devices in their learning activities than in areas where the infrastructure is poor. Also, the quality of devices used in the process-laptops or smartphones-will, too, play a major role in the effectiveness of online learning. This limited availability of stable devices and networks can act as a major hindrance in adopting technology-based education in many regions.

It can be seen from this research that about 55% perceive the availability of technological infrastructure as the number one factor in using data packages. Besides, the access to supporting devices like smartphones and laptops with credibility and good network quality is a key question taken into consideration by the largest number of respondents. For instance, Respondent 1 felt that "Signal quality and Wi-Fi access matter a lot," while for Respondent 19, it was "Access to supported devices and a strong signal." Besides, a number of respondents recognized network quality, for example, the statement of Respondent 30: "The importance of network quality in data usage." Other respondents, such as Respondent 50, mentioned that good technological infrastructure in terms of signal and Wi-Fi is very important, while for Respondent 61, supporting devices like laptops and smartphones played a major role in their subscribing to a data plan. In general, the availability of technological devices and good networks has been the driving force for the respondents to use the internet.

5. Costs and Budget : Quota Prices, Discounts, Limited Budget.

The research findings show that costs and budgets, which include the quota prices, discounts, and limitations of a budget, contribute greatly to influencing internet consumption among students. High quota prices render students unable to access internet services freely, including those that support online learning. Conversely, discounts issued by internet service providers encourage students to increase data packages and be more willing to participate in digital education activities. In addition, limited budgets drive students to make wise decisions when it comes to the management of data consumption. This, therefore, calls for critical attention to pricing strategies and incentives by the internet service providers as a factor facilitating access to internet-based education.

The research outcome shows that cost and budget considerations are the main factors influencing the choice of respondents in buying data packages, as many as 45% state that they chose a data package that fitted their budget. Many respondents pointed out the importance of choosing an affordable data package, with Respondent 4 stating, "Choosing a data package that suits your budget," the same as with Respondent 23, who said, "Affordable costs are the main factor." Aside from that, some of the respondents consider the fact whether there is a discount or not, or low price, as according to Respondent 15, "Given more priority are discounted or low-priced data packages." In general, the price variable is really considered by the respondents in deciding on their data package choice.

5. Discussion

Antecedents to their choice of a data package include such factors as limited costs and budgets, availability of technological infrastructure like network quality and access to digital devices, and the social environment through friends and family. These intercorrelate with one another in bringing about different data consumption patterns among students. Critical analysis is discussed for each factor that influences internet data consumption among students in return to the effectiveness of learning and a balanced life between academic and entertainment activities.

1. Academic Needs: Accessing class materials, classes conducted online, assignments.

In the modern digital era, students' academic needs are increasingly pegged on stable and reasonably priced internet access. After all, access to learning materials, online classes, and online assignment submissions are tenets of academic success. It is, thus, relevant to understand how quota availability, data package prices, and incentive policies from the internet service providers' side influence the ability of students to meet their academic needs.

In this regard, the findings from the study support the prior studies that identified academic needs for accessing learning materials, attending classes online, and submitting assignments as the key motivators for the students' use of the internet and data packages. In this study, most of the respondents reported using data packages for academic purposes such as taking an online class, finishing assignments, and accessing learning materials through a learning application. Evidence from Wiradhany and Baumgartner (2019) suggests that students often multitask between academic activities and the use of digital media; for example, communicating via instant messaging applications while looking for information for assignments. Therefore, access to the internet for effective online learning has become an important need in times of COVID-19, where favorite platforms like Zoom, Google Classroom, and PDF have gained significance as far as academic performance, active participation in online discussion, or completion of academic assignments is concerned (Sundari 2022; Alshantqi et al. 2023).

Previous literature also addresses the flexibility provided by the online learning environment, such that students can access resources and collaborate with their peers more flexibly, using such flexibility as a promoter of engagement and academic success. While internet use among students for academic motivations may improve motivation and ultimately enhance their ability to learn more effectively, Alshantqi et al. (2023) state that the utilization of social media for non-academic purposes leads to an inability to concentrate. Besides, the technical problems involve the low speed of connection and data packet charges, which are also major issues in online learning environments. As a result, quality, as well as affordable, access to the internet will be needed for successful online learning and improvement in students' academic performance.

2. Frequency and Duration of Use: For academic and entertainment purposes.

With increased access, the frequency and duration of internet use by students are no longer confined to academic needs, but extended to reach even the field of entertainment. Accessing study materials, joining online classes, or doing assignments through the internet has to compete with digital entertainment like social media, streaming, and online games. This paper discusses balance between academic and entertainment needs as a determinant of students' internet usage behavior in relation to their learning productivity.

These findings add to the weight from previous studies that established frequency and duration of internet use by students as a significant determinants in the level of their need for data quota, especially since this use is not restricted to academic needs alone but extends to entertainment as well. It is revealed that roughly 60% of the respondents mentioned that the intensity of daily internet use would drive the decision to purchase a package with a big quota for its quota, be it to access learning or entertainment activities. This agrees with McCoy, 2020, who identified that students are likely to switch between academic and non-academic activities such as social media and playing games, averaging 19.4% of class time on entertainment activities.

The latter authors found that, with the COVID-19 pandemic, daily internet use greatly increased for both entertainment and academics due to social isolation and studying at home. Martínez-Domínguez and Mora-Rivera show that in rural areas, students mostly use high-intensity internet for entertainment purposes during the whole day, but at some point in time, for instance before the exams, academic needs become a priority. Other factors that influence the pattern of internet use include material access, where students with better devices have been known to use more time on both academics and entertainment. Also, multitasking between academic and entertainment activities with the use of communication applications such as WhatsApp extends duration: Sha et al., 2019, while streaming services provide considerable emotional gratification and relaxation, especially outside study hours (Camilleri & Falzon, 2021). The findings also indicate that the frequency and duration of using the internet both for various academic and entertaining needs, as well as technology access and availability factors, influence the need for larger data packages for students in the future.

3. Environmental and social influences.

The environmental and social variables serve as a chief determinant of internet usage behavior. The supportive motivation from the family and friends and availability of adequate internet facilities may significantly influence how students use technology to learn effectively. Conversely, social pressure and trends in the social environment can enable internet use that is more recreational or non-academic oriented. The discussion will consider how the environmental and social influences culminate into the pattern of use of the internet among students, and what the consequences thereof are on performance.

The results of this study show that social factors in decision-making for students in choosing data packages, such as recommendations from friends and family, are considerably significant, where about 40% of respondents admit to being influenced by the social environment in being able to determine choices. While some stated that they subscribed to the current data package due to recommendations from their friends, others asserted that this decision was influenced by the environment and family. Indeed, such findings confirm previous studies indicating that individual behavior is considerably influenced by social and environmental factors in most living areas. Such strategies, for example, include the case where Nguyen and Byeon, 2022 established that family and friends' social support played a large part in helping elderly groups adapt to technology, hence fused how social support helps in overcoming information gaps. The finding is similar to that of the study by Sugaya et al. (2019), which reveals the potency of supportive family environmental conditions in mitigating

the risk of behavioral disorders in children and adolescents, including within the context of internet addiction.

A good social environment creates the opportunity for better decision-making in the use of technology, also concerning purchasing data packages. Social influence can also be seen in decision making, relative to learning and collaboration. In a study, Ansari and Khan (2020) found that recommendations from friends and family significantly enhance students' intentions to engage in collaborative learning through social media, which in turn has a positive effect on improving their academic performance. Indeed, Kircaburun et al. (2019) support this finding when they Bestrect that a lack of social support may provoke problematic online behavior, such as excessive use of social media and cyberbullying. Also, Chin et al. (2019) added that social recommendations also play an important role in adopting new technologies such as IoTs, where the acknowledgement of an individual to use smart devices is based on the social influence resulting from family and friends. The results of the study, therefore, reinforce the view that social factors, whether in the form of direct support or by recommendations, play a very important role in personal decision-making processes, especially for decision-making on the choice of data packages as well as the use of other technologies.

4. Availability of Technology Infrastructure Devices - networks.

Sufficient access to electronic devices and a stable internet network is one of the technological infrastructures that support students in carrying out their academic activities in the digital era. In the absence of access to devices such as laptops or smartphones connected with a reliable internet network, students will be at risk due to difficulties in following online classes, accessing learning materials, and completing assignments. The following discussion will shed light on the important role that technological infrastructure plays in supporting access to education and its availability in determining students' academic outcomes.

The findings of this study affirm the results of previous studies that the availability of technological infrastructure, such as the quality of digital devices and internet networks, is becoming an important factor in the use of data packages by students to support academic needs, as well as other online activities. As many as 55% of the respondents answered that "influential criteria: access to devices, such as smartphones and laptops, as well as a stable signal and network quality, influenced their decision to a great degree while using data packages.". This was pointed out by the respondents, who reacted that good network quality and the quality of devices support this; it was also supported in the study of Chin et al. (2019), as he said that an adequate technological infrastructure allows them to make more optimal use of modern communication technology.

In the context of online learning, the existence of infrastructure like 5G or high-quality networks contributes to students connecting better with learning platforms, teachers, and sharing materials, which can be smoother than usual, turning out effectively for their academic success. This is supported by literature from Storck & Duarte-Figueiredo, 2020, and Spirin et al., 2019. Furthermore, previous research also finds that limited technological infrastructure can lead to a leading digital divide, especially where network access is poor, and has led to actual causes of the limited access of students to online educational resources (Ansari & Khan, 2020; Logeshwaran et al., 2022). In fact, this is supported by Srinidhi et al. (2019) when emphasizing that network quality, such as 5G and LoRaWAN, is at the basis of managing high pressure on data traffic resulting out of IoT-based devices use and relevant to support online

learning. This further consolidates the fact that a good return on investment in supportive infrastructure, such as access to devices and good quality signals, is important in the optimization of technology-based learning for better performance and enhanced learning amongst students in this digital era.

5. Costs and Budget: Quotation prices, discounts, limited budget.

In this case, one of the most important considerations in the use of the internet by students is budget and cost, especially about price quotes and discount policies, which contribute to limitations on budgets. The high price of quotas could limit the students' access to online learning materials, while discounts can be given by an internet network provider to necessitate an increase in data usage. We discuss in this discussion how these factors influence students' decisions in managing their budget for academic and daily digital needs.

The findings of this research indicate that the major factors for choosing a data package by the respondents are cost and budget issues by about 45% of the respondents, who choose an affordable data package within their budgets. Accordingly, respondents preferred data plans that offered either discounted or low prices, which also again confirms our previous research findings about the relationship between discount price and availability, and students' access to internet services in online learning contexts. Kas, 2024; Ansari & Khan, 2020 found that budget-friendly data packages or concessions provided by internet service providers encourage students to be more engaged in online learning activities, while a limited budget is usually the main obstacle to digital educational resources.

Besides, Mitsis et al. (2019) and Srinidhi et al. (2019) claim that competitive pricing strategies-for example, discounts-will increase the consumption of data among students to be more active in digital education. The approach is somewhat like that followed in network slicing in telecommunications systems where the optimization of resources is based on price with an aim to increase engagement without necessarily sacrificing profitability. This again finds agreement with Oh et al. (2019), who noted that the discount of services can promote internet service accessibility for students and enhance learning through increased online engagement. An affordable pricing strategy, therefore, with incentives in forms of discounts, aims to extend access not only to internet-based education but also to the network's social benefits through improved efficiency in data usage.

6. Conclusion, Implication, and Recommendation

The survey clearest indicates that internet data features prominently both academically and recreationally in the daily lives of high school students. Factors that might explain the relationship between internet data usage are also there, such as academic needs, where a majority of the respondents, 80%, use data for accessing educational materials, attending online classes, and doing assignments. Frequency and duration of internet usage is another major factor, as 60% of the respondents acknowledge that their pattern of internet usage both for studies and entertainment motivates them to purchase larger data packages. Social influences, such as friend and family recommendations, affect about 40% of the respondents in their purchase decisions for data, whereas 55% show concern about network quality and device availability. Cost and budget also feature, as 45% said the price of the data package will play an important role in choosing one that fits within their budget.

In theory, this research will contribute to the literature on the role of the Internet to support digital education through the discovery of digital consumption patterns, social influence on consumer behavior, and the relationship between technological infrastructure and the technology adoption phenomenon. The managerial contributions in the form of academic-specific data packages will be created; package development based on usage frequency; reference-based promotions; improvements in technological infrastructure; affordable pricing; and in partnership with educational institutions.

Limitations include the respondent pool being restricted to high school students only, a survey method which may not be as comprehensive in investigating the deeper motivations of participants, and limited influence from outside factors. Hence, some recommendations for further studies will involve an expanded population of respondents, qualitative methodology, comparative studies between regions, socio-political analysis of government policies, and longitudinal studies to trace changes in internet consumption patterns over time. Future research will provide full insight into students' data usage and fully streamline its usage to assist them more effectively in academics.

8. References.

- Abuhassna, H., Al-Rahmi, W. M., Yahya, N., Zakaria, M. A. Z. M., Kosnin, A. B. M., & Darwish, M. (2020). Development of a new model on utilizing online learning platforms to improve students' academic achievements and satisfaction. *International Journal of Educational Technology in Higher Education*, 17(1). <https://doi.org/10.1186/s41239-020-00216-z>
- Akpan, I. J., & Akpan, A. A. (2017). the Impact of Internet Use on Students' Learning Outcomes in Higher Education in Developing Countries. *International Journal of Education Research*, 12(1), 45–55.
- Alshanqiti, A., Alharbi, O. A., Ismaeel, D. M., & Abuanq, L. (2023). Social Media Usage and Academic Performance Among Medical Students in Medina, Saudi Arabia. *Advances in Medical Education and Practice*, 14, 1401–1412. <https://doi.org/10.2147/AMEP.S434150>
- Ansari, J. A. N., & Khan, N. A. (2020). Exploring the role of social media in collaborative learning the new domain of learning. *Smart Learning Environments*, 7(1). <https://doi.org/10.1186/s40561-020-00118-7>
- Bernard R. McCoy. (2020). Gen Z and Digital Distractions in the Classroom: Student Classroom Use of Digital Devices for Non-Class Related Purposes. *Journalism and Mass Communications*, 1–34.
- Camilleri, M. A., & Falzon, L. (2021). Understanding motivations to use online streaming services: integrating the technology acceptance model (TAM) and the uses and gratifications theory (UGT). *Spanish Journal of Marketing - ESIC*, 25(2), 217–238. <https://doi.org/10.1108/SJME-04-2020-0074>
- Chin, J., Callaghan, V., & Ben Allouch, S. (2019). The Internet-of-Things: Reflections on the past, present and future from a user-centered and smart environment perspective. *Journal of Ambient Intelligence and Smart Environments*, 11(1), 45–69.

<https://doi.org/10.3233/AIS-180506>

- Dong, H., Yang, F., Lu, X., & Hao, W. (2020). Internet Addiction and Related Psychological Factors Among Children and Adolescents in China During the Coronavirus Disease 2019 (COVID-19) Epidemic. *Frontiers in Psychiatry*, *11*(September), 1–9. <https://doi.org/10.3389/fpsy.2020.00751>
- Ganong, P., & Noel, P. (2019). Consumer spending during unemployment: Positive and normative implications. *American Economic Review*, *109*(7), 2383–2424. <https://doi.org/10.1257/aer.20170537>
- Gómez-Galán, J., Martínez-López, J. Á., Lázaro-Pérez, C., & Sánchez-Serrano, J. L. S. (2020). Social networks consumption and addiction in college students during the COVID-19 pandemic: Educational approach to responsible use. *Sustainability (Switzerland)*, *12*(18), 1–17. <https://doi.org/10.3390/su12187737>
- Guerna, A., Bitam, S., & Calafate, C. T. (2022). Roadside Unit Deployment in Internet of Vehicles Systems: A Survey. *Sensors*, *22*(9), 1–31. <https://doi.org/10.3390/s22093190>
- Jayadev H. Kadli; Kumba, B.D. and Kanamadi, S. (2010). Students Perspectives on Internet Usage: A Case Study. *Information Studies*, *16*(2), 121–130.
- Kırcaburun, K., Kokkinos, C. M., Demetrovics, Z., Király, O., Griffiths, M. D., & Çolak, T. S. (2019). Problematic Online Behaviors among Adolescents and Emerging Adults: Associations between Cyberbullying Perpetration, Problematic Social Media Use, and Psychosocial Factors. *International Journal of Mental Health and Addiction*, *17*(4), 891–908. <https://doi.org/10.1007/s11469-018-9894-8>
- Kochhar, S., Singh, K., Pani, P., & Kansal, S. (2013). Knowledge and Usage of Internet among different professional students in India. *Journal of Education and General Studies*, *2*(7), 233–238.
- Kusumaningati, I. D. (2024). ANALYSIS OF NETWORK RATES ACCESSED TO CASH. In ... *Sustainable Development Journal*. journal.shantibhuana.ac.id. <https://journal.shantibhuana.ac.id/index.php/msd/article/download/844/370>
- Logeshwaran, J., Ramkumar, M., Kiruthiga, T., & Ravi, S. P. (2022). the Role of Integrated Structured Cabling System (Iscs) for Reliable Bandwidth Optimization in High Speed Communication Network. *ICTACT Journal on Communication Technology*, *13*(1), 2635–2639. <https://doi.org/10.21917/ijct.2022.0389>
- Lombardi, M., Pascale, F., & Santaniello, D. (2021). Internet of things: A general overview between architectures, protocols and applications. *Information (Switzerland)*, *12*(2), 1–21. <https://doi.org/10.3390/info12020087>
- Mandasari, B. (2020). The Impact of Online Learning toward Students' Academic Performance on Business Correspondence Course. *EDUTECH : Journal of Education And Technology*, *4*(1), 98–110. <https://doi.org/10.29062/edu.v4i1.74>
- Martínez-Domínguez, M., & Mora-Rivera, J. (2020). Internet adoption and usage patterns in

- rural Mexico. *Technology in Society*, 60(June 2019).
<https://doi.org/10.1016/j.techsoc.2019.101226>
- Mitsis, G., Apostolopoulos, P. A., Tsiropoulou, E. E., & Papavassiliou, S. (2019). Intelligent dynamic data offloading in a competitive Mobile Edge Computing market. *Future Internet*, 11(5), 1–19. <https://doi.org/10.3390/fi11050118>
- Nguyen, H. V., & Byeon, H. (2022). Analysis of the Elderly's Internet Accessed Time using XGB Machine Learning Model for Solving the Level of the Information Gap of the Elderly. In ... *Journal of Advanced Computer Science* researchgate.net. https://www.researchgate.net/profile/Haewon-Byeon/publication/359583018_Analysis_of_the_Elderly's_Internet_Accessed_Time_using_XGB_Machine_Learning_Model_for_Solving_the_Level_of_the_Information_Gap_of_the_Elderly/links/624459835e2f8c7a034ab437/Analysis-o
- Oh, H., Park, S., Lee, G. M., Heo, H., & Choi, J. K. (2019). Personal Data Trading Scheme for Data Brokers in IoT Data Marketplaces. *IEEE Access*, 7, 40120–40132. <https://doi.org/10.1109/ACCESS.2019.2904248>
- Özad, B. E., & Kutoğlu, Ü. (2010). The use of the internet in media education. *Turkish Online Journal of Educational Technology*, 9(2), 245–255.
- Ramón-Arбуés, E., Granada-López, J. M., Martínez-Abadía, B., Echániz-Serrano, E., Antón-Solanas, I., & Nash, M. (2021). Prevalence and factors associated with problematic internet use in a population of spanish university students. *International Journal of Environmental Research and Public Health*, 18(14). <https://doi.org/10.3390/ijerph18147620>
- Sha, P., Sariyska, R., Riedl, R., Lachmann, B., & Montag, C. (2019). Linking Internet Communication and Smartphone Use Disorder by taking a closer look at the Facebook and WhatsApp applications. *Addictive Behaviors Reports*, 9(September 2018). <https://doi.org/10.1016/j.abrep.2018.100148>
- Sharov, S., Vorovka, M., Sharova, T., & Zemlianska, A. (2021). The impact of social networks on the development of students' social competence. *International Journal of Engineering Pedagogy*, 11(3), 84–98. <https://doi.org/10.3991/IJEP.V11I3.20491>
- Spirin, O., Oleksiuk, V., Balyk, N., Lytvynova, S., & Sydorenko, S. (2019). The blended methodology of learning computer networks: Cloud-based approach. *CEUR Workshop Proceedings*, 2393, 68–80.
- Srinidhi, N. N., Dilip Kumar, S. M., & Venugopal, K. R. (2019). Network optimizations in the Internet of Things: A review. *Engineering Science and Technology, an International Journal*, 22(1), 1–21. <https://doi.org/10.1016/j.jestch.2018.09.003>
- Storck, C. R., & Duarte-Figueiredo, F. (2020). A Survey of 5G Technology Evolution, Standards, and Infrastructure Associated with Vehicle-to-Everything Communications by Internet of Vehicles. *IEEE Access*, 8, 117593–117614. <https://doi.org/10.1109/ACCESS.2020.3004779>

- Suana, W., Riyanda, A. R., & Putri, N. M. A. A. (2019). Internet Access and Internet Self-efficacy of High School Students. *Journal of Educational Science and Technology (EST)*, 5(2), 110–117. <https://doi.org/10.26858/est.v5i2.8397>
- Sugaya, N., Shirasaka, T., Takahashi, K., & Kanda, H. (2019). Bio-psychosocial factors of children and adolescents with internet gaming disorder: A systematic review. *BioPsychoSocial Medicine*, 13(1), 1–16. <https://doi.org/10.1186/s13030-019-0144-5>
- Sundari, H. (2022). ANALYZING NEEDS OF ONLINE-BASED EFL ACADEMIC WRITING COURSE: STUDENTS' VOICES IN COURSE DESIGN. In *Research and Development Journal of Education*. academia.edu. <https://www.academia.edu/download/98409570/11215-34330-1-PB.pdf>
- Supiyanti, Iriyadi, F. (2022). Journal of Technology and Science Education. *Journal of Technology and Science Education*, 4(4), 215–227. <http://www.jotse.org/index.php/jotse/article/view/110/142>
- van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media and Society*, 21(2), 354–375. <https://doi.org/10.1177/1461444818797082>
- Wang, G., Feng, G., Qin, S., Wen, R., & Sun, S. (2019). Optimizing Network Slice Dimensioning via Resource Pricing. *IEEE Access*, 7, 30331–30343. <https://doi.org/10.1109/ACCESS.2019.2902432>
- We, A. T. E., Accounting, M., Gorodnichenko, Y., Heidhues, P., Kamdar, R., Kaufmann, M., Laibson, D., Shleifer, A., & Strack, P. (2020). *Oszegi and*. 1153–1207. <https://doi.org/10.1093/qje/qjz043>. Advance
- Wiradhany, W., & Baumgartner, S. E. (2019). Exploring the variability of media multitasking choice behaviour using a network approach. *Behaviour and Information Technology*, 38(12), 1355–1368. <https://doi.org/10.1080/0144929X.2019.1589575>
- Khairinal, K., Syuhada, S., & Sitingjak, R. S. (2022). Pengaruh Media Sosial, Konformitas, dan Pendidikan Ekonomi keluarga, terhadap perilaku Konsumtif Siswa Kelas XI Smk 1 Kota Jambi Tahun Pelajaran 2021/2022. *Jurnal Manajemen Pendidikan Dan Ilmu Sosial*, 3(2), 923–938.
- Krisnawati, E. (2016). Perilaku Konsumsi Media Oleh Kalangan Remaja Dalam Pencarian Informasi. In *Komunikatif* (Vol. 5, Issue 1, pp. 43–69).
- Noviyarto, H. (2017). Pengaruh Perilaku Konsumen Mobile Internet Terhadap Keputusan Pembelian Paket Layanan Data Unlimited Internet CDMA di DKI Jakarta. *Jurnal Telekomunikasi Dan Komputer*, 1(2), 107. <https://doi.org/10.22441/incomtech.v1i2.1099>
- Nur Rahma, A. (2018). *PENGARUH INTENSITAS MENGAKSES INSTAGRAM TERHADAP PERILAKU KONSUMTIF SISWA-SISWI SMA MUHAMMADIYAH 1 KOTA MAGELANG SKRIPSI* Diajukan kepada Fakultas Dakwah dan Komunikasi Universitas Islam Negeri Sunan Kalijaga Yogyakarta untuk Memenuhi Sebagian Syarat-syara. 1–65.

Santoso, A. K., & Prasetyo, A. R. (2021). Hubungan Self Monitoring Dengan Perilaku Konsumtif Pembelian Gadget Pada Siswa Sma Islam Al Azhar 14 Semarang. *Jurnal EMPATI*, 9(6), 482–489. <https://doi.org/10.14710/empati.2020.30068>