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Exploring Digital Footprint Awareness among IT Students: Basis for an Action Plan

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Abstract

This study aimed to investigate digital footprint awareness among IT students and provide a basis for an action plan. The study used a descriptive research design that involved 307 college students from a public higher education institution in Nueva Ecija, Philippines. Using a survey instrument, data was gathered and analyzed. The results found that male respondents outnumbered female respondents by 33.6%, and first-year students were the most responsive group. The majority of respondents spent 5–6 hours daily on the internet, accessing social networking sites via smartphones. IT students were found to be fully aware of their digital

footprint, including the implications for personal information and online transactions. They were also knowledgeable about the digital footprint they left behind on various online platforms. Overall, the respondents demonstrated a high level of awareness of their digital footprint. These findings suggest the importance of designing and implementing educational programs to enhance students' understanding of their digital footprint, with a focus on personal privacy and security. Such programs should be interactive, engaging, and continuously evaluated to remain effective in light of evolving technologies and online activities.

Keywords: Action Plan, Assessment, Descriptive Research, Digital Footprint Awareness, Information Technology

1. Introduction

In today's era, an increasing number of people worldwide use the internet. As of January 2023, 64.4% of the global population uses the internet which is approximately 5.16 billion users. It is reported that 59.4% of these users are social media users (Petrosyan, 2023) ^[1]. As a result, the digital footprint is rapidly growing, making it necessary to understand it.

Digital footprints are the data trails made and left behind by the use of various digital platforms. (Jahankhani, Kendzierskyj, and Popescu, 2020) ^[2]. Digital footprints include logins, bookmarks, website visits, geolocation, postings, ratings, purchases, and sharing. This trail can be tracked back to the end-users (Rogers, 2020) ^[3]. It is possible to identify and collect information about individuals based on their digital footprints. This information can include personal data such as name, location, age, interests, and more. The collection and use of digital footprints has become increasingly common as business and organizations seek to understand their customer or users better.

According to Cveticanin (2023) ^[4], there are different types of digital footprints which include personally identifiable footprints, anonymous footprints, active digital footprints, passive digital footprints, user input footprints, and sensor data footprints. Digital footprints have a significant impact on one's reputation.

From the reviewed literature and studies like the studies of Olipas (2023) ^[5] and Samarina, and Samarina (2022) ^[6], there is still a scarcity of studies on college students' knowledge and awareness of their online presence, despite the growing significance of managing one's digital footprint. While research has explored digital footprint awareness and management in many demographics, including professionals and adolescents, there is a gap in the literature about the digital footprint behavior of college students. Given that college students are a distinct demographic with distinct digital behaviors and may experience specific consequences related to their digital footprint (e.g., impact on future career chances), it is crucial to obtain a deeper knowledge of their awareness and behaviors in this area. Hence, an evaluation of college students' digital footprint awareness and management practices could fill a gap in the research and give educators, policymakers, and other stakeholders with significant insights.

This study aimed to explore the digital footprint awareness among the information technology students to provide a basis for a plan of action. Specifically, it sought to answer the following:

1. What is the demographic profile of the respondents in terms of

- 1.1 Sex;
 - 1.2 Year Level;
 - 1.3 Age;
 - 1.4 Daily Internet Time;
 - 1.5 Types of Gadgets Owned; and
 - 1.6 Frequently Accessed Sites?
2. What is the level of digital footprint awareness among the IT students in terms of
- 2.1 Online Activities;
 - 2.2 Personal Information;
 - 2.3 Online Transactions;
 - 2.4 Online Platforms and Environments; and
 - 2.5 Security and Privacy?
3. What is the overall digital footprint awareness of IT students?

2. Methodology

A quantitative research design was employed in this study to collect and analyze data in numerical forms. This design was used to generalize a wide population (Bhandari, 2022) [7]. Different quantitative research methods existed. For this study, the researcher utilized a descriptive approach. The main goal was to provide a summary of the variables under investigation to gain a better understanding of their awareness of their digital footprint. For the study, college students from a public higher education institution in Nueva Ecija, Philippines, during the first semester of the academic year 2022-2023 were selected as respondents. A total of 307 college students voluntarily

participated in the survey, which was considered statistically significant, taking into consideration the total number of students in the college.

The researcher was inspired by the instrument used in the study by Surmelioglu and Seferoglu (2019) [8] and was able to adapt it for use in this study. The instrument used in the previous study was modified to suit the context of this study. The researcher recognized the inspiration drawn from the previous work and was able to develop a valuable instrument.

The instrument was composed of two parts. The first part covered the demographic profile of the college students including their sex, age, year level, daily internet access time, type of gadgets owned, and frequently accessed sites. The second part of the instrument covered the assessment of the digital footprint awareness of the college students. It included the following criteria: online activities, personal information, online transactions, online platforms and environments, and privacy and security awareness.

The researcher ensured that the instrument would yield valid and reliable results by performing face and context validity measures. The researcher sought the comments, feedback, and recommendations of experts knowledgeable in the fields of information technology, digital citizenship, and digital footprint. Their valuable input led to the improvement of the instrument. Furthermore, reliability analysis was conducted to ensure that the instrument had internal consistency and validity.

As presented in Table 1, the result of the reliability analysis was shown.

Table 1: Reliability Analysis

Scale	Cronbach's Alpha	Number of Items	Reliability Level
Online Activities	0.876	5	Good
Personal Information	0.906	5	Excellent
Online Transactions	0.880	5	Good
Online Platforms and Environments	0.893	5	Good
Privacy and Security	0.834	5	Good

It could be observed that the instrument used was valid and reliable. According to Geogre and Mallery (2003) [9], as cited by Olipas (2023) [5], the following were the rules of thumb for interpreting whether an instrument would yield reliable results: $\alpha > 0.9$ – excellent; $\alpha > 0.8$ – good; $\alpha > 0.7$ – acceptable; $\alpha > 0.6$ – questionable; $\alpha > 0.5$ – poor; and $\alpha < 0.5$ – unacceptable. Furthermore, according to Gliem and Gliem (2003) [10], an alpha of 0.8 was considered reasonable.

Thus, the results of the reliability analysis showed that the instrument could provide reliable and consistent results.

To guide the respondents in answering the instrument, the researcher used Table 2, which presented the numerical rating, range, verbal interpretation for the level of agreement, and verbal interpretation for the level of awareness of the respondents.

Table 2: Response Mode and Scoring Guide

Numerical Rating	Range	Verbal Interpretation for Level of Agreement	Verbal Interpretation for Level of Awareness
4	3.25-4.00	Strongly Agree	Fully Aware
3	2.50-3.24	Agree	Aware
2	1.75-2.49	Disagree	Not Aware
1	1.00-1.74	Strongly Disagree	Fully Not Aware

The gathering of data for this study took place during the first semester of academic year 2022-2023. The researcher utilized an online survey tool to collect data. In the online instrument, all the necessary information that respondents had to know before participating in the study was expressed. The researcher ensured that the data collected would be used for the purpose of this study only and that appropriate measures were taken to retrieve, collect, store, and destroy

the data. All necessary precautions had been taken to ensure that no harm of any kind was inflicted to the respondents. After the data has been collected, cleaned, and organized, it was analyzed using Software Packages for Social Sciences (SPSS) version 23. The researcher had used descriptive statistics such as frequency and percentage distribution, as well as mean ratings.

3. Results and Discussion

To get a better idea of the respondents' digital footprints, the following figures show the sex, year level, age, amount of time spent on the internet every day, types of devices they own, and most visited sites.

3.1 Demographic Profile of the Respondents

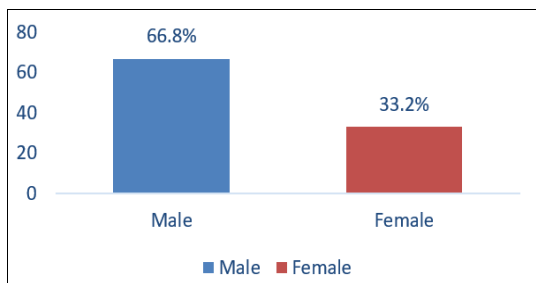


Fig 1: Percentage Distribution of the Respondents Based on Sex

Fig 1 presented the percentage distribution of the respondents in terms of their sex. With a total of 307 respondents, 205 of them are male, constituting 66.8%, while 102 were female, equivalent to 33.2%. A 33.6% difference existed in the number of males and females. Typically, in computing programs like information technology, the number of male students is higher than the number of female students. The previous study conducted by Olipas (2023) [5], the report released by the Commission on Higher Education in Central Luzon in 2022, and the study of Olipas and Cochanco (2021) [12] supported the findings of this study. On that account, it is remarkable to assert that the field of computing, like information technology, was found to be dominated by men, in consideration of the existing context of this study. This finding suggested that there was a strong need to encourage females to pursue computing-related programs, which could help to close the gender gap and provide opportunities for people of all genders and sexual orientations in the field.

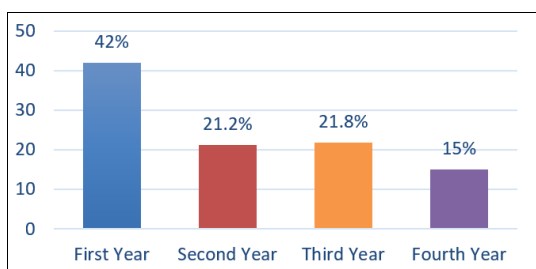


Fig 2: Percentage Distribution of the Respondents Based on Year Level

The percentage distribution of the respondents based on their year level was presented in Figure 2. Out of the total number of 307 respondents, 129 were first-year students, which accounted for 42%. The second-year students were 65, making up 21.2% of the total respondents. The third-year level had 67 students, which constituted 21.8% of the total number of respondents. Lastly, there were 46 fourth-year students, which accounted for 15% of the total number of respondents.

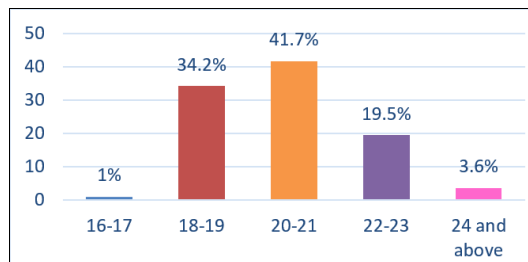


Fig 3: Percentage Distribution of the Respondents Based on their Age

Fig 3 shows the percentage distribution of the respondents in terms of their age. The lowest number of respondents in terms of their age belonged to the 16–17 year old age bracket, with only 1%, followed by 3.6% of the respondents who belonged to the 24 and above age bracket. The 22-23-year-old age bracket had 19.5%, while the 18-19-year-old age bracket represented 34.2% of the respondents. The majority of respondents in this study were between the ages of 20 and 21, accounting for 41.7% of the total. The age distribution of the respondents was consistent with the distribution presented in terms of their year level in Figure 2.

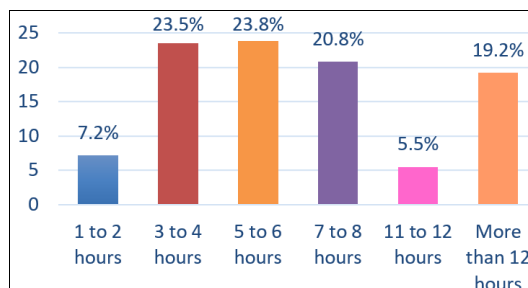


Fig 4: Percentage Distribution of the Respondents in terms of Daily Internet Time

Every day, 23.8% of the respondents accessed the internet for 5 to 6 hours, 23.5% used the internet for 3 to 4 hours, 20.8% accessed the internet for 7 to 8 hours, and 19.2% of the respondents accessed the internet for more than 12 hours. Only 7.2% of them accessed the internet for 1 to 2 hours, while 5.5% of the respondents had 11 to 12 hours of internet time. According to a 2022 report by the Philippine New Agency, the average person spent 7 hours per day on the internet. From the presented result, it can be observed that the respondents used the internet every day for a great deal of time.

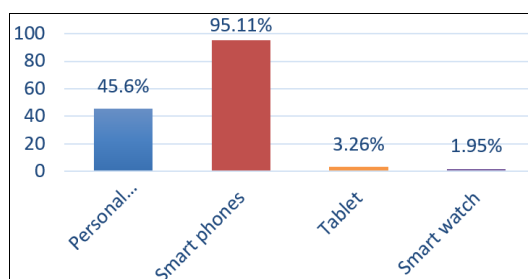


Fig 5: Percentage Distribution in terms of the Type of Gadgets Owned

The information presented in Fig 5 depicts the proportion of each type of gadget owned by the respondents in this study. The results indicate that almost half of the respondents, specifically 45.6%, reported using personal computers or laptops as their primary electronic device. Moreover, the majority of the respondents, 95.11%, indicated that they owned and used a smartphone. In contrast, a smaller percentage of respondents, at 3.26%, reported using tablets, and only 1.95% of the respondents reported owning and using a smartwatch. This data provides insight into the devices that were commonly used by the respondents and potentially provides valuable information on how their digital footprints may be affected.

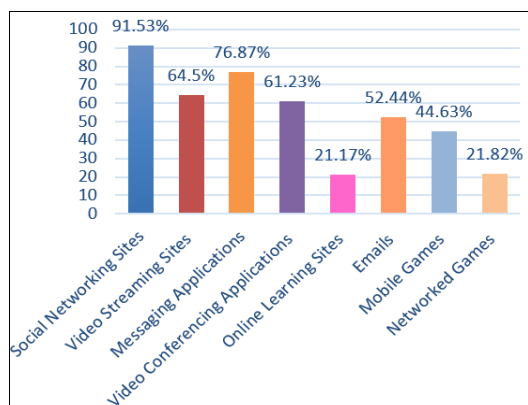


Fig 6: Percentage Distribution in terms of the Frequently Accessed Sites

Fig 6 presents the percentage distribution of frequently accessed sites among respondents. The data revealed that social networking sites were the most commonly accessed by the respondents, with 91.53% reporting using these sites. This result is consistent with the trend of social media being widely used across different demographics. The second-most-accessed sites were video streaming platforms, with 64.5% of the respondents indicating that they used these sites. This result highlights the growing popularity of online video streaming as a preferred mode of entertainment and information consumption.

Messaging applications were also commonly accessed by the respondents, with 76.87% indicating that they used these applications. The high usage of messaging applications is likely due to their convenience and ease of use. 61.23% of the respondents used video conferencing apps, which is likely due to remote work and online learning becoming more popular during the COVID-19 pandemic. Online learning sites were accessed by only 21.17% of the respondents, which may mean that few respondents in this study took the time to access such sites. 52.44% of the respondents used email, showing that it is still an important means of communication in the digital age.

Mobile games were accessed by 44.63% of the respondents, while networked games, were accessed by 21.82% of the respondents. This high percentage of mobile game users is not surprising since gaming apps are common and easy to use. This data provides insights into online behavior trends and the digital footprints of people who use different online services, which can be used to improve the user experience on popular online platforms.

3.2 The Digital Footprint Awareness of the Undergraduate IT Students

The tables below present the results of the assessment of IT students' digital footprint awareness in terms of their online activities, personal information supplied on various online platforms, online transactions, online platforms and environments accessed, and the privacy and security of their activities.

Table 3: Digital Footprint Awareness associated with Online Activities

Item Statements	Mean Rating	Verbal Interpretation
Before sharing a comment or article in digital environment, I check what I have written in terms of style many times and then share it.	3.46	Strongly Agree
Before sharing a comment or article in digital environment, I check what I have written in terms of spelling many times and then share it.	3.43	Strongly Agree
Before sharing a comment or article in digital environment, I check the date it was posted and the source, and then share it	3.37	Strongly Agree
I conduct fact-checking of comments and/or articles I see online before sharing it	3.41	Strongly Agree
I double check the sources of information if it is a legitimate source before sharing it in digital environment	3.44	Strongly Agree
Grand Mean	3.42	
Verbal Interpretation	Fully Aware	

The results presented in Table 3 revealed that respondents strongly agreed with the statement that they proofread their writing for style and spelling before publishing it online. They also all agreed that before posting online comments or articles, they checked the facts and made sure the sources were reliable. The mean score of 3.42 indicated that respondents were fully aware of the significance of checking the accuracy and dependability of information before sharing it online. This showed that the respondents who answered were mature and knew what would happen if they posted false or misleading information online.

Table 4: Digital Footprint Awareness associated with Personal Information

Item Statements	Mean Rating	Verbal Interpretation
I am aware that information about myself in digital environments can be encountered in my school, professional, or private life	3.43	Strongly Agree
I play it safe when I share information in digital environments because they may be encountered in my professional or private life	3.42	Strongly Agree
I am aware that the contact details I supply in different sites in different digital platforms can be use by others	3.36	Strongly Agree
I know that the personal details I put in the different online platforms that I use can leak and be accessed by others	3.33	Strongly Agree
I am aware that somebody may access my public personal information and use it to their advantage	3.36	Strongly Agree
Grand Mean	3.38	
Verbal Interpretation	Fully Aware	

According to Table 4, the respondents strongly agreed that their personal information in digital environments could be accessed and encountered in different areas of their lives, including school, professional, and private life. They were cautious when sharing information online because they understood the potential impact it could have on their professional or private lives. The respondents were also aware that their contact details and personal information provided on various digital platforms could be accessed and used by others. The mean score of 3.38 indicates that the respondents were fully aware of the potential consequences of sharing personal information online and the importance of taking precautions to protect their privacy. Overall, the respondents appeared to be conscious and responsible when it came to sharing their personal information online.

Table 5: Digital Footprint Awareness associated with Online Transactions

Item Statements	Mean Rating	Verbal Interpretation
I know that all kinds of transactions that I perform in digital environments will be recorded	3.36	Strongly Agree
I am aware that none of the transactions that I perform in digital environments may remain anonymous	3.25	Strongly Agree
I know that the transactions I perform in the digital environments leave a trace and contribute to my online trail	3.33	Strongly Agree
I am aware that may online transactions in digital environments are stored in the site which I visit	3.37	Strongly Agree
I know that part of the transactions I made online can reflect in different accounts I access.	3.31	Strongly Agree
Grand Mean	3.32	
Verbal Interpretation	Fully Aware	

The statements presented in Table 5 indicated that the respondents had a strong understanding and awareness of the fact that digital transactions were recorded and could leave a trace, which contributed to their online trail. They also understood that digital transactions may not have remained anonymous and could have been stored by the sites where they were made. Furthermore, the respondents acknowledged that some digital transactions may have been linked to different accounts they accessed. The grand mean score of 3.32 showed that the people who answered the survey had a good level of awareness and understanding of the possible effects of doing business online.

Table 6: Digital Footprint Awareness associated with Online Platforms

Item Statements	Mean Rating	Verbal Interpretation
I am aware that my information/sharings may be found by other people in environments like internet cafe and shared computers	3.36	Strongly Agree
I take necessary precautions so that other people will not see or use my personal information in digital environments	3.47	Strongly Agree
I am aware that my log trail in different environments and platforms are being recorded	3.36	Strongly Agree
I am aware that the passwords and other	3.36	Strongly Agree

personal details are stored in different environments I use and access		
I know that there is a possible of leakage of information in the sites I visit	3.40	Strongly Agree
Grand Mean	3.39	
Verbal Interpretation	Fully Aware	

These statements in Table 6 suggested that the respondents had a high level of awareness and concern about the different online platforms they used. They recognized that their information and activities could be potentially accessed by others in shared environments, such as internet cafes, and took the necessary precautions to protect their personal information. They also acknowledged that their online activities and log trails could be recorded, and that their passwords and personal details could be stored in the different environments they used. The respondents were also aware of the possibility of information leakage on the sites they visited. Overall, the grand mean score of 3.39 indicated that the respondents were fully aware of the potential risks and took appropriate measures to safeguard their personal information in digital environments.

Table 7: Digital Footprint Awareness associated with Privacy and Security

Item Statements	Mean Rating	Verbal Interpretation
I use privacy settings in online forms	3.47	Strongly Agree
I always check and arrange privacy settings in online tools	3.44	Strongly Agree
I read and understand the privacy and security terms of the sites I access and use	3.37	Strongly Agree
I always delete history logs and cookies	3.29	Strongly Agree
I change my password in different accounts regularly	3.14	Agree
Grand Mean	3.34	
Verbal Interpretation	Fully Aware	

The statements presented in Table 8 showed that the respondents had a good level of awareness and concern for the privacy and security of their personal information in digital environments. They strongly agreed that they used and checked privacy settings in online forms and tools and also read and understood the privacy and security terms of the sites they accessed and used. They also consented to the deletion of their history logs and cookies. However, they only agreed that they changed their passwords for different accounts regularly, which indicated that there was some room for improvement in this area. The grand mean score of 3.34 suggested that overall, the respondents were fully aware of the importance of safeguarding their personal information and took the necessary measures to protect it.

3.3 Overall Digital Footprint Awareness of IT Students

The table below shows the overall evaluation of the IT students regarding their digital footprint awareness.

Table 8: Overall Digital Footprint Awareness of IT Students

Item Statements	Mean Rating	Verbal Interpretation
I am aware of the concept of digital footprint	3.32	Strongly Agree

Overall, the statement implies that the respondents had an awareness of the concept of a digital footprint. A digital footprint is the trail of data that is created when a person uses the internet. This covered both information provided by the individual online and information acquired by third-party websites and platforms. Understanding the concept of a digital footprint was crucial because it could help individuals make informed decisions about what they posted online and what information they shared, as well as how they managed their online presence and reputation. It also underlined the necessity of privacy and security safeguards, as a person's digital footprint could potentially be accessed and used by others without their knowledge or consent.

4. Conclusion

This study aimed to explore digital footprint awareness among IT students to provide a basis for an action plan. In conclusion, the study discovered that male respondents outnumbered female respondents by 33.6%, and first-year students were the most responsive group. The age bracket of 20–21 had the highest number of respondents, and the majority of the respondents spent 5–6 hours on the internet each day, mostly accessing social networking sites through smartphones. The study discovered that IT students were fully aware of their digital footprint and its implications for their personal information and online transactions. They were also knowledgeable about the digital footprint they left behind on various online platforms. Overall, the respondents had a high level of awareness of their digital footprint. The study's findings could serve as a foundation for creating activities to sustain, enhance, and continuously improve the respondents' understanding of their digital footprint for different online activities.

5. Recommendations

It is recommended, based on the findings of the study, that particular educational programs and activities be designed and implemented for IT students in order to maintain and increase their knowledge of digital footprints. These programs should include comprehensive information on the impact of digital footprints on personal privacy and security, as well as management and control strategies. In addition, the programs should be intended to be interactive, engaging, and applicable, including real-world scenarios and case studies. Lastly, it is essential to continually analyze the efficacy of these programs and adjust them frequently to stay up with the always evolving digital technology and online activity scene. IT students will be better able to stay safe online and act in the right way if they follow these suggestions.

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