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Like, Comment, and Share: Analyzing Public Sentiments of Government Policies in Social Media

Jana Flor V. Vizmanos, Sheila V. Siar, Jose Ramon G. Albert, Janina Luz C. Sarmiento, and Angelo C. Hernandez

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Abstract

Social media has become an increasingly important tool for gauging public sentiment, offering real-time insights that can guide policy decisions. This study focuses on analyzing sentiments expressed on the Philippine Institute for Development Studies (PIDS) Facebook page, providing a window into public opinion on various development issues and governmental policies. By conducting opinion mining and sentiment analysis on comments from the top three viral Facebook posts of PIDS, which discuss education, the middle class, and social protection policies, the study reveals a range of public perspectives and highlights the challenges faced by the populace. Additionally, an online survey targeting PIDS' social media followers was conducted to understand their demographics and preferences in accessing development research. The findings demonstrate the effectiveness of social media analytics in capturing genuine public opinion, which can be instrumental in refining policies based on evidence. The study recommends enhancing analytics capabilities, systematically incorporating these insights while safeguarding data privacy, and continuously updating strategies to reflect changing public sentiments. This policy research study underscores the value of social media data in making governance more responsive and inclusive.

Keywords: public sentiments, opinion mining, social media

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Analyzing Public Sentiments of Government Policies in Social Media

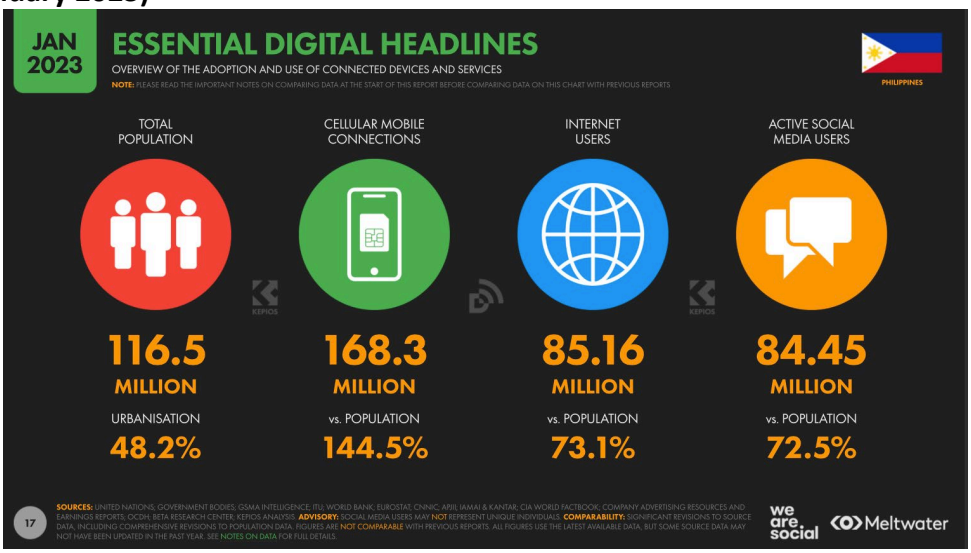
Jana Flor V. Vizmanos, Sheila V. Siar, Jose Ramon G. Albert, Janina Luz C. Sarmiento, and Angelo C. Hernandez [*]

1. Introduction

The advent of the Fourth Industrial Revolution (FIRe) has spurred the widespread adoption of cutting-edge technologies such as the internet, sensors, and satellite imagery. This surge has given rise to Big Data, which can be thought of as digital fingerprints, or data given off as byproducts of digital activities like Internet browsing, social media use, or just moving around with our smartphones. Increased use of these FIRe technologies, particularly digital advancements, has not only revolutionized the production and consumption of products and services but has also instigated a data revolution at an exponential pace. The notion that Big data and crowd-sourced data can complement traditional data sources used in official statistics to monitor socio economic conditions and various development outcomes is also growing.

As of January 2023, there were 84.45 million social media users in the Philippines (**Figure 1**), with 80.30 million users on Facebook. Social media channels became an accessible platform of consuming news contents and timely information on relevant development issues, with 73% of social media users in the Philippines reported using such platforms as source of news, particularly on relevant development issues (DataReportal 2023).

Figure 1. Overview of the Adoption and Use of Connected Devices and Services: Philippines (as of January 2023)



Source: DataReportal 2023

While official statistics sourced from censuses, surveys, and administrative data are commonly used to analyze the impact of development policies, these traditional data sources can be

[*] The first author is a supervising research specialist, the second author is a former department manager, the third author is a senior research fellow, the fourth author is an information officer, and the last author is a research analyst at the Philippine Institute for Development Studies (PIDS). The views expressed here are the authors' own and do not necessarily reflect the positions of the organizations that the writers are associated with.

complemented with social media data to gain deeper understanding on how the public responds to government interventions over time.

Over the years, the government's main policy think tank, Philippine Institute for Development Studies (PIDS), has leveraged social media to enhance the dissemination its research products and services and strengthen its engagement with stakeholders. It has a Facebook page[1] with more than 43,500 organic followers and a Twitter account[2] with nearly 3,000 organic followers as of March 2023. These online audiences are valuable sources of feedback for PIDS not only on the usefulness of its knowledge products and services but also on public sentiments on development issues.

From its website, PIDS gathers data on its customers who use its knowledge products. This formed part of the 2022 study titled "Addressing Data Gaps through Innovative Data Sources". As a follow-up research, this study looks into public sentiments expressed in social media (PIDS Facebook and Twitter) to answer the question, "What lessons can be learned on public sentiments on development issues in social media?"

The study can contribute to the discussion on exploring the use of big data as a cheap and fast source of information for government agencies. For instance, public sentiments can be included in the monitoring and evaluation systems of implementers to track progress and performance of policies, programs, and projects. The immediate feedback of stakeholders in social media can help the government address implementation gaps in a timely manner and prevent the spread of false information. The study aims to analyze public sentiments in social media to gain insights on improving the relevance and effectiveness of government policies

2. Literature Review

2.1. Social media and public opinion

The rise and proliferation of new media, which includes social media, has expanded the avenues by which people share information and viewpoints and participate in societal processes. Some scholars have studied its role as an information and participation equalizer in terms of widening political participation (Xenos et al. 2013), expanding access to timely, accessible, and credible health information (McNab 2009), promoting environmental engagement (Zhang and Skoric 2018), and raising awareness of climate change (Unde and Seniwati 2019). Traditional media, such as broadcast and print, had long held the supremacy as information channels, gatekeeping the flow of information and acting as the primary vehicle of those in authority to reach people (Quattrociocchi et al. 2014). With the advent of the internet, the media landscape has become diverse and decentralized. The sources of information have also become more varied, giving ordinary people a voice. In a social network, anyone online can publish information and give opinions. Moya and Bosch (2013) described such phenomenon as the flattening of hierarchies, with media consumers becoming producers.

In their study of the influence of having diverse media and its influence on public opinion, Chen and Lan (2021) saw that the wide array of media tools available had provided people with more choices in getting and sharing information, although they "only choose media within the bounds of their horizons"; in short, those are that are familiar and accessible to them.

[1] https://www.facebook.com/PIDS.PH
[2] https://twitter.com/pids_ph

Compared to a single medium, the diversity of media reduces the attraction of extreme opinions, leading to a dispersed opinion distribution that plays an important role in influencing public opinion. Such dispersion may bring those with the same opinions together. Individuals in a social network typically interact with their acquaintances with their chosen media and are attracted to opinions similar to those they hold.

As a rich resource for inferring public opinion, Xuefan and Lian (2021) noted that social media can provide a comprehensive understanding of public perceptions in less time and cost than survey polls. It provides a new way of representing and measuring public opinion, as shown in the increasing use of social media-based public opinion analysis in various fields, such as social science, politics, education, transportation, and finance. The advantages of social media over traditional surveys as a data source have been emphasized by Murphy et al. (2014) and Adams-Cohen (2020). Ibrahim and Wang (2019) saw its use in resolving the difficulty of obtaining time-series data, while McGregor (2019) took note of the time-sensitive advantage of obtaining and gauging public sentiment on public policies.

2.2. Issues in using social media data

Despite the advantages of social media as a data source, Xuefan and Lian (2021, p. 2) cautioned that certain problems must be considered, "such as difficulties in guaranteeing the relativity of [social media] data, barriers to sharing information honestly and openly, and the reliability and validity of data reprocessing".

Tufekci (2014), who analyzed the limitations of platforms such as Twitter and Facebook, stressed persistent issues, including sampling biases brought about by sample selection using hashtags and vague and unrepresentative sampling frames. On the issue of representativeness, he pointed out the "denominator" problem or the subpopulation being sampled and knowing its characteristics. While it is possible to estimate the sample by the number of people who saw a post, commented on it, or reshared it, the proprietary character of most social media platforms poses a challenge by limiting access to details. Interpreting retweets or shares is also tricky as it can have "multiple, even contradictory meanings" and thus cannot be taken loosely as a sign of agreement.

The use of social media by journalists to infer public opinion has been reported by Dubois et al. (2020). Journalists deduce public sentiments by quoting social media posts and identifying trending topics. In turn, this may influence citizens' opinion and those involved in policy development. McGregor (2019) echoed the same views, noting that journalists often looked to social media for the public pulse as part of their professional routine. Examining the 2016 elections in the United States, he observed this reliance by journalists on social media whereby the press reported online sentiments and trends as a form of public opinion even though not all social media users are representative of the electorate.

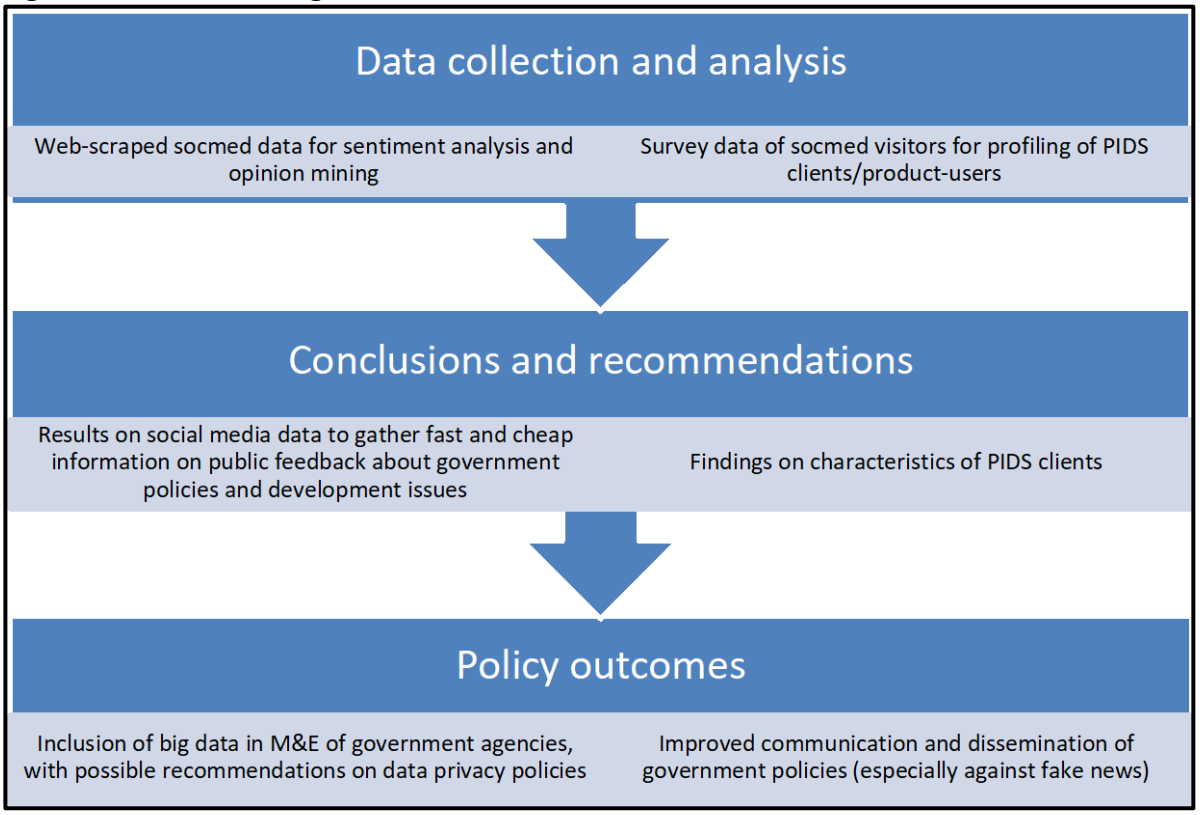
A related study by Ross et al. (2021, p. 1) noted that public opinion cues on social media, such as "likes", "shares", and "comments" may act as "powerful social endorsements", thus, may influence public opinion even though these cues are not representative of public consensus. Journalists referencing these social media cues can influence audience perception away from the truth. The risk magnifies when fabricated cues populate social media fueled by disinformation, making social media users and audiences more vulnerable to deception and manipulation.

3. Conceptual Framework, Research Design and Data Sources

3.1. Conceptual framework and research design

Big Data provides a fast and cheap stream of information thus enhancing responsiveness to socio economic development problems being addressed in the policy cycle (Vizmanos, et al., 2022). Thus, many international organizations have started to look into use of nontraditional data sources. A UN agency created by the former UN Secretary General called UN Global Pulse examined twitter conversations on the price of rice in Jakarta and found that that a resulting index from these tweets provided a near-real time proxy indicator of food inflation. UN Women did a landscape review of big data for addressing gaps on gender data. Another example of crowdsourced data is data on citizens' feedback from smart cities such as Jakarta Smart City obtained through digital technology to improve local service delivery. Another example is data on violence against women obtained by the Safecity app (used in India) where women can post online about incidences of harassment and assault in public spaces across cities in India (including geo-locations of these events). Governments, such as the European Union, have growing interest in exploring ICT-based methods of exploiting political contents in various web sites and social media accounts of EU citizens by employing opinion mining and sentiment analysis to obtain a better understanding of the needs and problems of society, and also the perceptions and feelings of the citizens, and to formulate effective public policies (Charalabidis et al. 2015).

Figure 2. Research Design



Note: Authors' illustration

To effectively analyze public sentiments on social media, sophisticated methodologies are essential. The application of sentiment analysis, natural language processing, and machine learning techniques has proven valuable (Pak & Paroubek, 2010; Thelwall et al., 2010). These

tools enable the extraction of meaningful insights from vast amounts of unstructured data, providing a foundation for understanding public sentiments towards government policies.

As shown in **Figure 2**, the proposed research will entail analysis of social media data to gain fast and cheap source of information on public feedback on development issues and government policies that were previously studied by PIDS. The study will also be complemented with primary data collection to gather information on the characteristics of social media visitors of PIDS pages via online survey. The results of the study explores the use of social media data to be potentially included in M&E systems of government agencies to incorporate public participation in the implementation of government policies and programs while taking into consideration data privacy concerns.

3.2. Data sources and data collection methods

The study conducted opinion mining and sentiment analysis of PIDS posts in Facebook that discuss insights and analyses of government policies and programs (**Table 1**). For the analysis, only aggregate results will be released to ensure anonymity of social media users. The PIDS Facebook page, currently with around 45,000 followers, is regularly updated with new posts featuring new PIDS publications, seminar announcements, *instaquotes*, infographics, employment opportunities, videos, national/international observances and related PIDS studies, announcements of partner-agencies, and livestream of seminars/webinars. While there is no explicit policy on data privacy regarding utilization of social media data, only aggregate results of comments from public posts were made available to ensure anonymity of social media users.

While data from tweets were initially considered as another source for social media data, a recent policy from X (formerly Twitter) halted its free access on Twitter's Application Programming Interface (API) which allows third parties, like researchers, to retrieve and analyze public Twitter data. Instead, their developer policy was replaced with paid basic tiers and updates on its developer rules involved banning of third-party clients[3].

Another method in this research involved profiling of PIDS' social media audience, including their social media use and preferences in accessing development research and information. This is intended to gauge their current use of PIDS social media channels and gather suggestions on how to improve the Institute's social media strategies. Using a non-probability sampling technique, the survey ran from August to October 2023 and a link to the survey form was disseminated through the PIDS Facebook page to form a snowball of respondents. It was announced repeatedly on Facebook to remind the Institute's social media audience. In addition, the survey was promoted through the PIDS Updates, the Institute's monthly electronic newsletter.

[3] https://www.theverge.com/2023/2/2/23582615/twitter-removing-free-api-developer-apps-price-announcement

Table 1. Summary mapping of study objectives and the corresponding data and analyses

Specific Objective	*Data Items*	*Data Analyses*
Opinion mining and sentiment analysis of three (3) viral PIDS posts in Facebook	Social media data 1. Likes and reactions 2. Comments 3. Shares	Opinion mining, sentiment analysis
Profile of PIDS social media audience	Online survey responses	Descriptive analysis

4. Results and Discussion

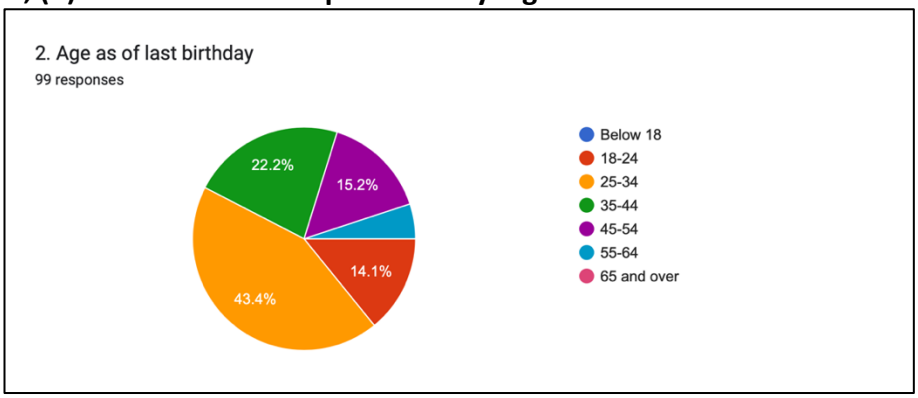
4.2. Results of PIDS' Social Media Audience Survey

To enhance PIDS' use of social media for research dissemination, policy advocacy, and stakeholder engagement, it needs to understand its audience on social media better. Thus, this online survey aims to get to know its online audience and determine how effectively research findings and engagement with stakeholders are communicated through social media. This is the first social media survey undertaken by PIDS since it created its Facebook account in 2010.

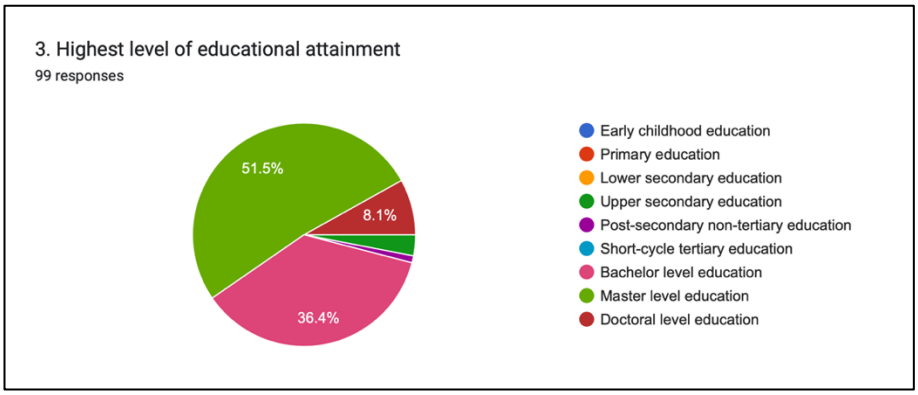
4.1.1. Audience Characteristics

Of the 102 respondents who accessed the forms, only 99 agreed to participate in the survey. Of these, around three-fifths are female, and respondents were largely aged 25 to 34 years old. 60% have attended graduated studies, with half of the respondents have at least a master level of education (**Figure 3**).

Figure 3. Audience Characteristics: (a) Distribution of Respondents who agreed to participate in the survey; (b) Sex distribution of respondents; (c) Age distribution of respondents; (d) Distribution of respondents by highest level of educational attainment



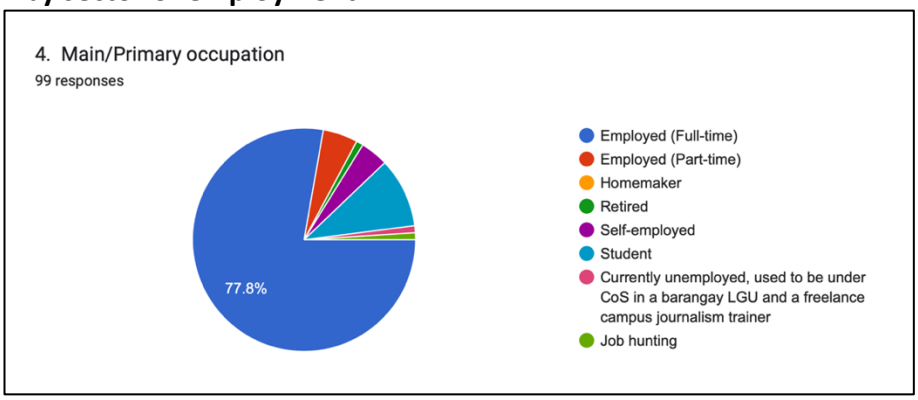
(a)



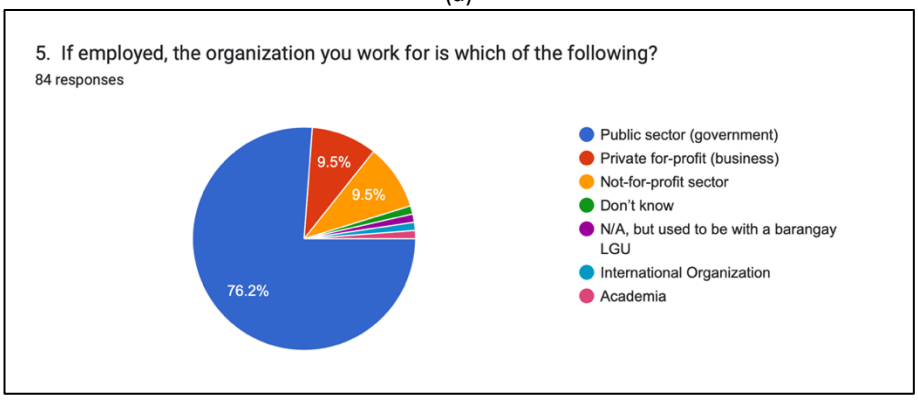
(b)

Further, most respondents were employed full-time (77.8%) and are working for the government (76.2%) (**Figure 4**). Those employed are largely involved in the education sector (32.1%). They are largely research staff (40.5%), or holding supervisory (33.3%) and managerial positions (9.5%).

Figure 4. Audience Characteristics (continued): (a) Distribution by Primary Occupation; (b) Distribution by sector of employment



(a)



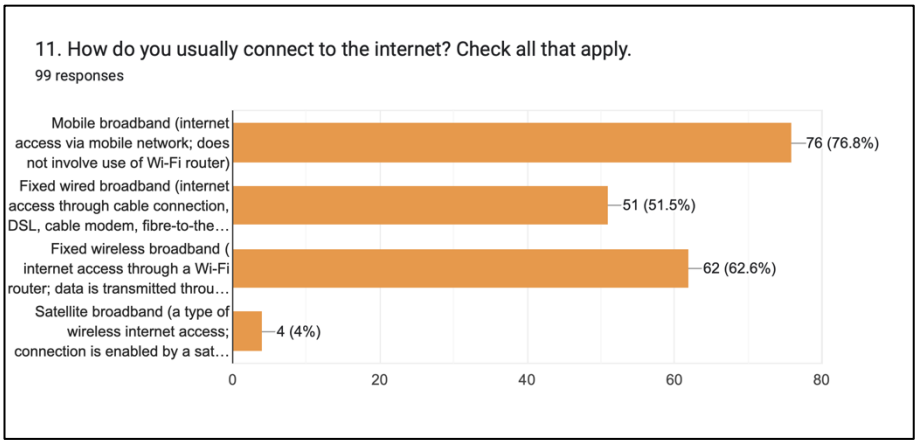
(b)

In terms of location, 95% of the respondents are located in the Philippines, with most of them are from regions in Luzon. Those abroad are located in Thailand, Singapore, Germany, and Saudi Arabia.

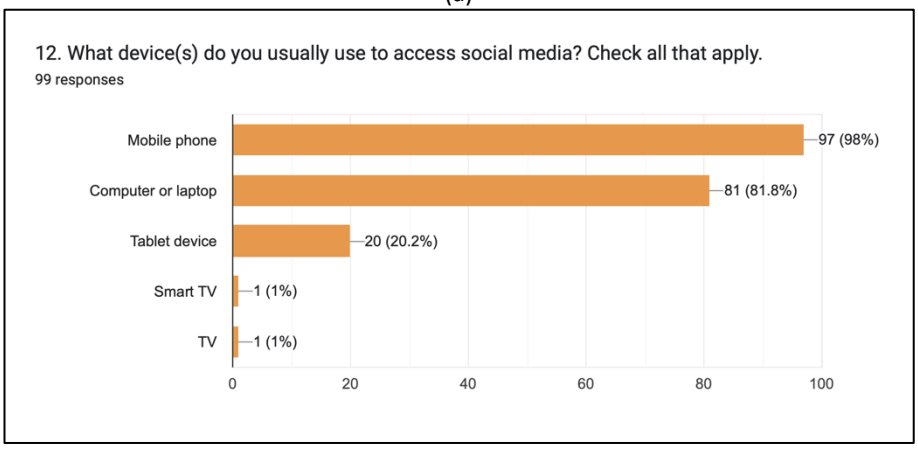
4.1.2. Social media use of respondents

Meanwhile, majority of the respondents use their mobile phones (98.0%) or their laptops or desktops (81.8%) to access social media. The respondents also have available options to connect to the internet using their devices: 76.8% use mobile data, 62.6% are connected to the Wi-Fi, and half use fixed broadband like cable, fiber or modem connections (**Figure 5**).

Figure 5. Audience Characteristics (continued): (a) Number/Proportion of respondents by type of internet connection; (b) Proportion of respondents by device used to access social media



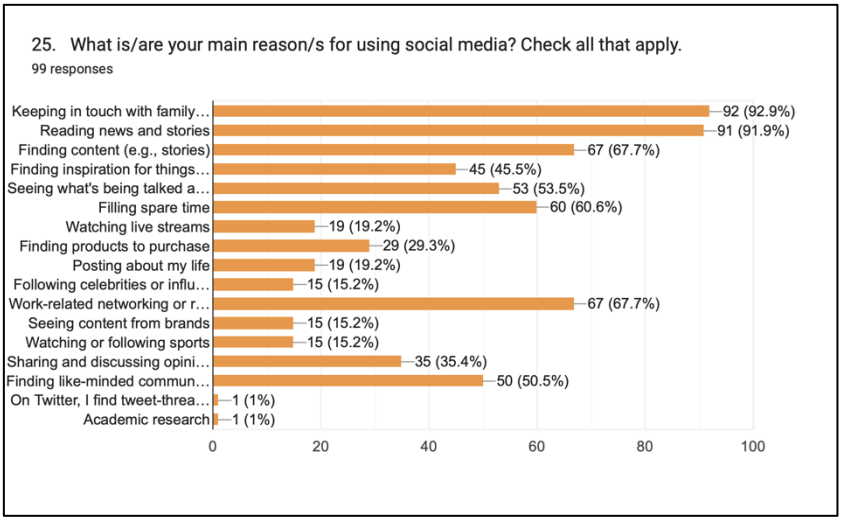
(a)



(b)

Based on **Figure 6**, Respondents' main reason for using social media is to connect with family, friends and colleagues (92.9%), followed closely by using social media as their source for reading news and stories (91.9%).

Figure 6. Number/Proportion of respondents by their main reason of using social media

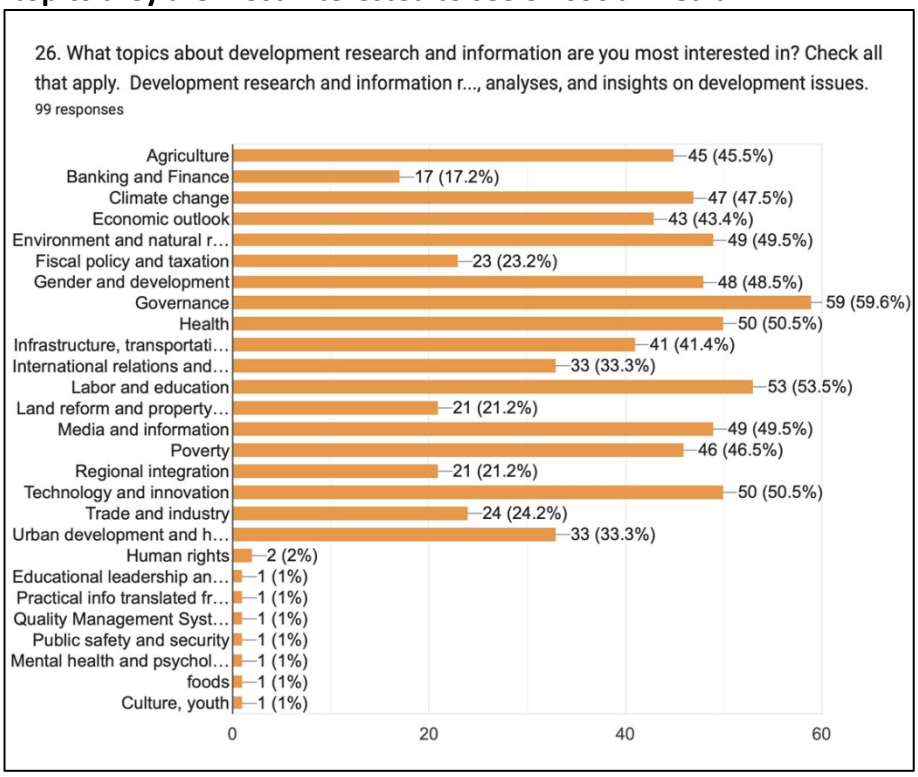


Facebook daily users comprise 78.8% of the respondents, with around half of them spending more than two hours a day of their time. A larger proportion of respondents use Facebook Messenger (93.9%) on a daily basis and 53.8% of them spend a similar amount of time with Facebook users. Meanwhile, a third were using Instagram daily, spending less than one hour in the social media app. When asked about using Tiktok, more than 60% of the respondents reported they have never used the platform. Among the 14% of the daily users, two-thirds use the platform for more than two hours. On the other hand, only two-fifths have never used X, formerly Twitter. However, half of the 21% who consider themselves as daily users spend more than two hours in the platform. A majority of daily users of Youtube (46.7%) also spend the same amount of time, while a third access the platform several times a week.

4.1.3. Use of social media to access development research and information

Table 7 shows that respondents, in general, are most commonly interested in governance (59.6%), labor and education (53.5%), and trade and industry (50.5%) when accessing topics on development research and information. A similar ranking can be said in terms of most commonly sought focus areas of PIDS in social media: governance (61.8%), labor and education (57.3%), and poverty (49.4%).

Figure 7. Number/Proportion of respondents by topics about development research and information they are interested in; (b) Proportion of PIDS' social media users by focus area of research topics they are most interested to see on social media



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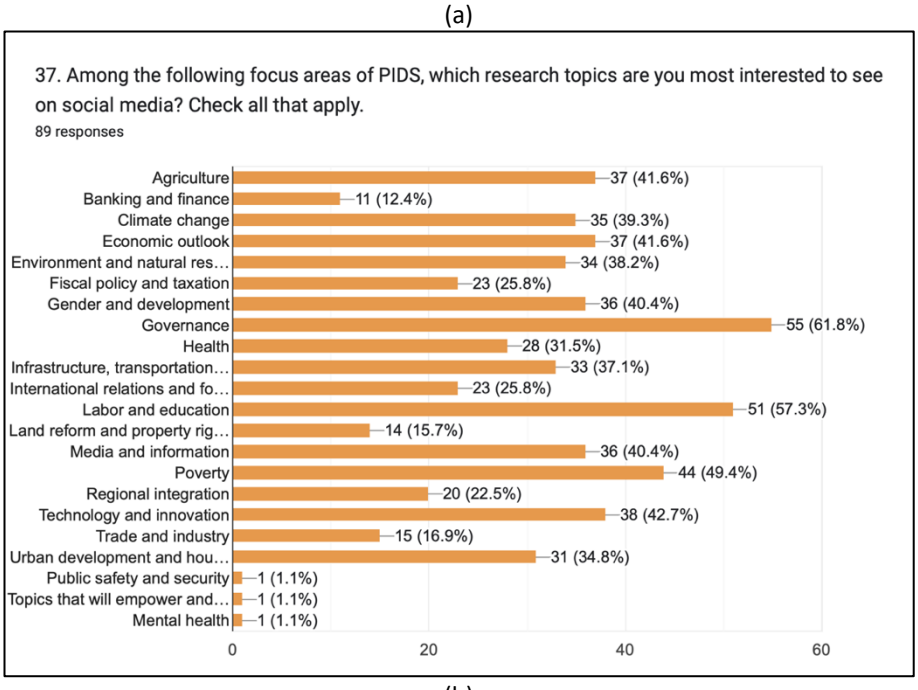
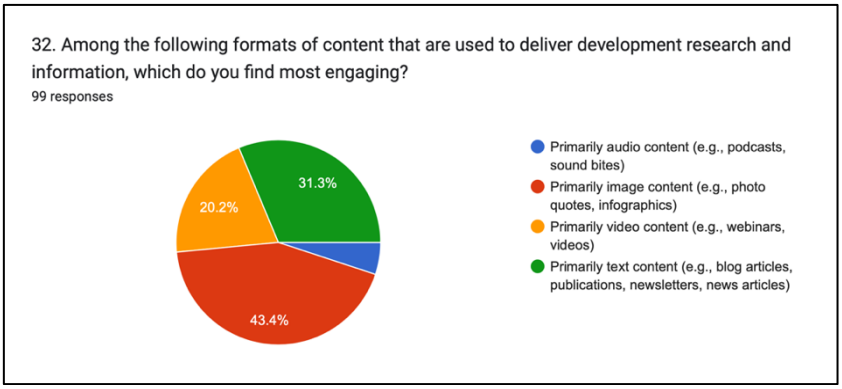


(b)

Email services is the most preferred platform to access development research and information, followed by social media platforms and search engines. Respondents use online platforms because it is accessible, (78.8%), easy to use (77.8%), provides comprehensive information (63.6%), and that access is free of charge (61.6%).

Figure 8. Distribution of respondents by type of most engaging format of development research and information content

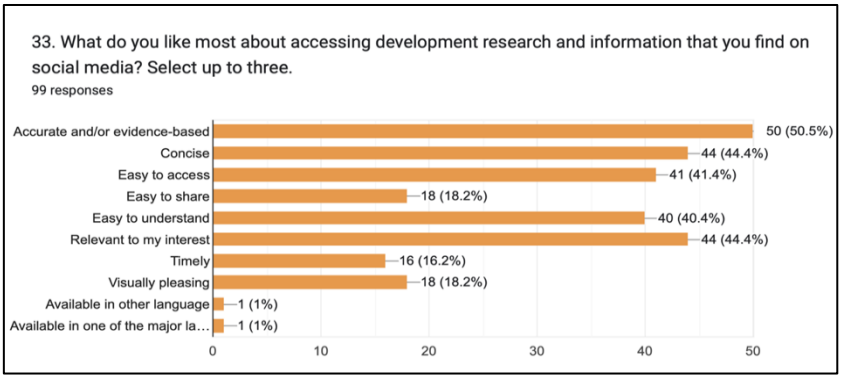


Furthermore, 75.8% of the respondents most likely access development research and information contents on weekdays, around the afternoon to nighttime (51.5%) while they are at work (65.7%) or at the comfort of their own homes (80.5%). They are most likely engaged in image contents (43.4%) like infographics or via text-based contents (31.3%) like blogs, articles, and newsletters (**Figure 8**).

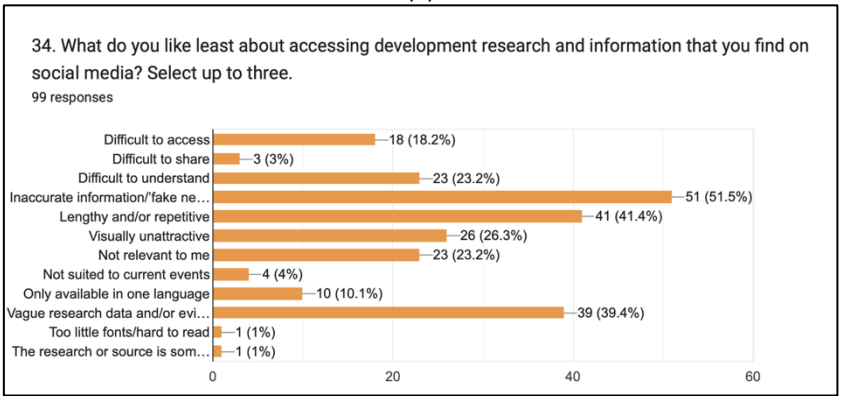
On the other hand, social media users mostly like the accuracy or evidence-based (50.5%), concise (44.4%), and relevance of the content (44.4%) when accessing development research and information in social media. However, respondents reported that they least liked inaccurate information or "fake news" (51.5%), lengthy/repetitive contents (41.4%), and vague research data/evidence (39.4%) when accessing such information in social media (**Figure 9**).

(b)

Figure 9. Number/Proportion of respondents by most (a) and least (b) liked reason for accessing development research and information in social media



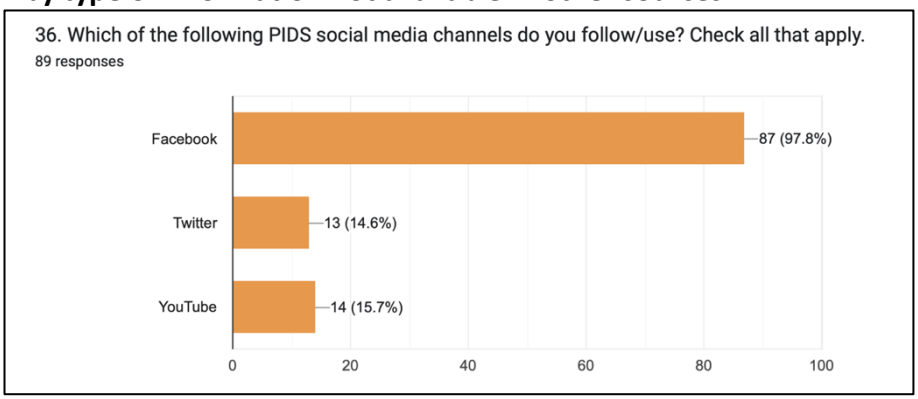
(a)



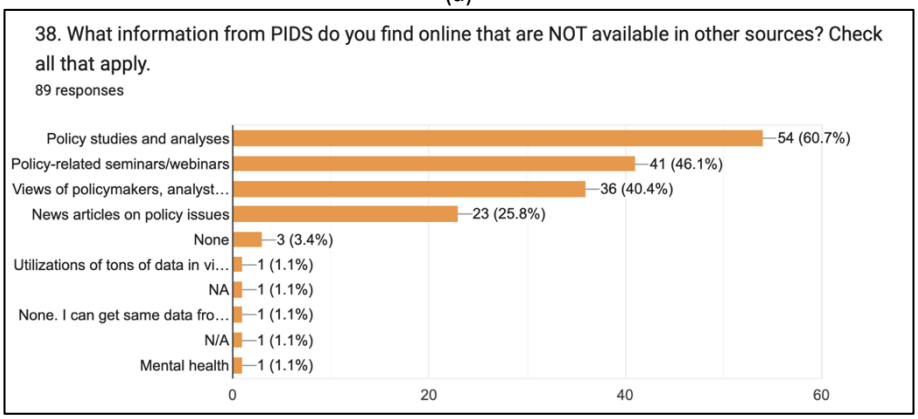
4.1.4. Use of PIDS social media channels to access development research and information

In terms of using PIDS social media channels to access development research and information, 89% of the respondents used PIDS' social media channels, and majority of them access content in Facebook (97.8%). Policy studies and analyses and policy-related webinars were the commonly cited contents that are unique and are not available in other sources (**Figure 10**).

Figure 10. (a) Number/Proportion of respondents following PIDS social media channels; (b) Proportion of PIDS' social media users with access to development research and information by type of information not available in other sources



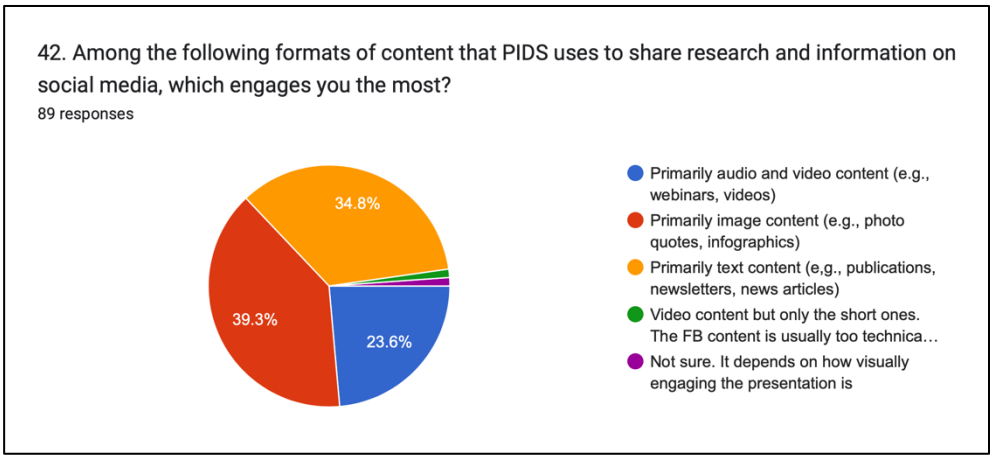
(a)



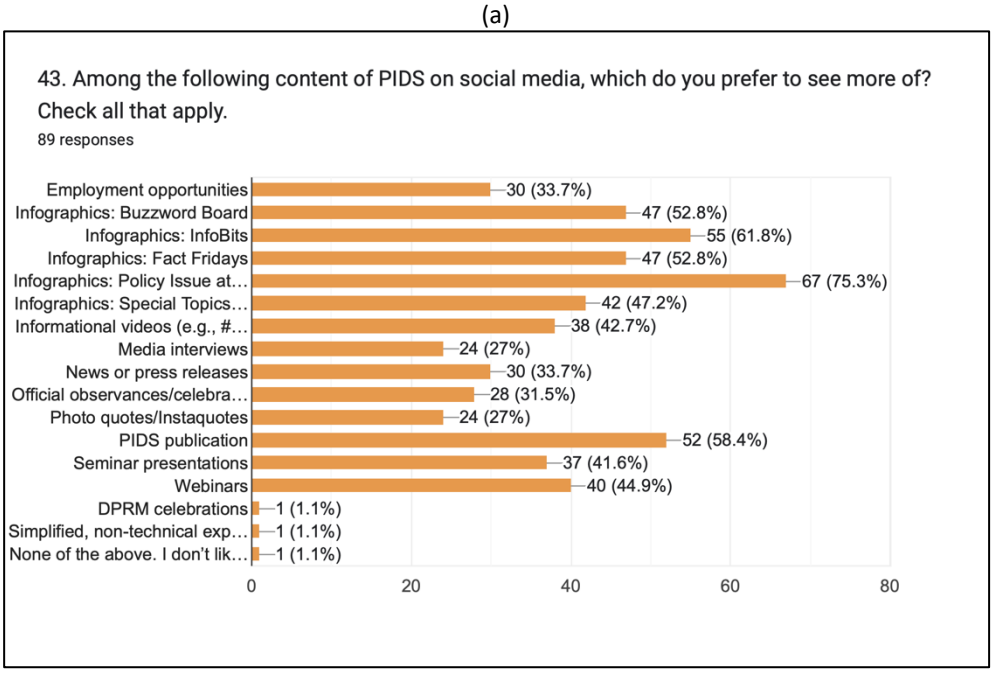
(b)

Meanwhile, around three-fourths of respondents access PIDS' social media during weekdays and more than half of PIDS's social media users are more likely to access them during the afternoon. Similarly, they are most likely engaged in image contents (39.3%) like infographics through #PolicyIssueAtAGlance or via text-based contents (34.8%) such as publications, news articles, and newsletters (**Figure 11**).

Figure 11. (a) Distribution of respondents by type of most engaging format of development research and information content; (b) Number/Proportion of respondents by type of PIDS social media content



(a)

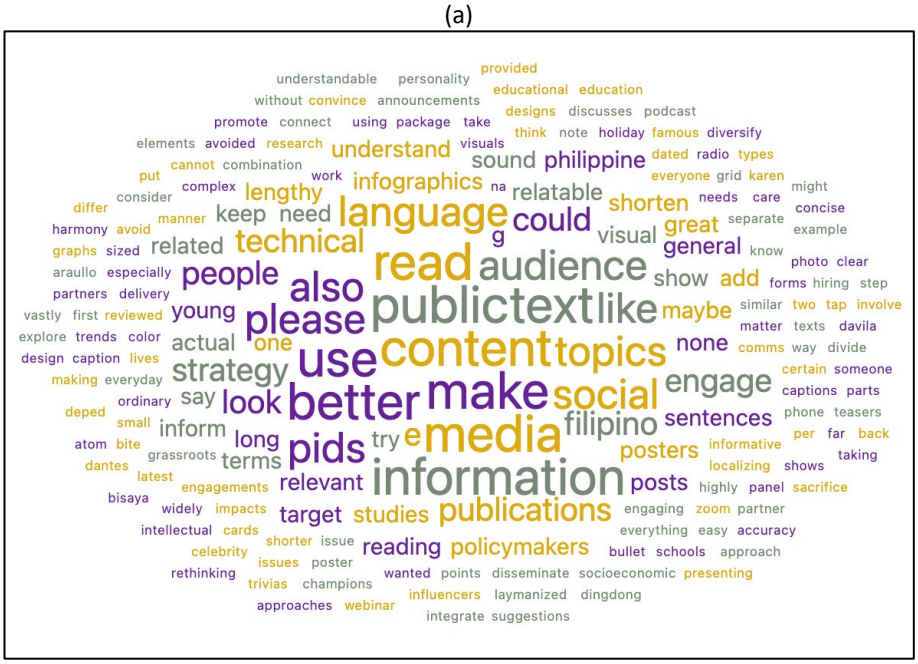


(b)

Based on **Figure 12**, most respondents characterized PIDS and its contents as informative, relevant, and reliable. To gain insights from respondents, they were asked to provide inputs to improve PIDS' social media content. Some respondents suggested to shorten posts into bite-sized information that can easily be digested. In addition, frequency of posts can also be increased to widen its target audience and using other languages in its posts (*e.g.*, audience-youth, kid-friendly content, regional-related contents). Others mentioned about engaging influencers to promote content, such as hiring celebrities or experts for teasers of webinars or upcoming publications.

Figure 12. Word cloud of (a) characteristics of PIDS as mentioned by respondents; (b) suggestions from respondents to improve PIDS' social media content

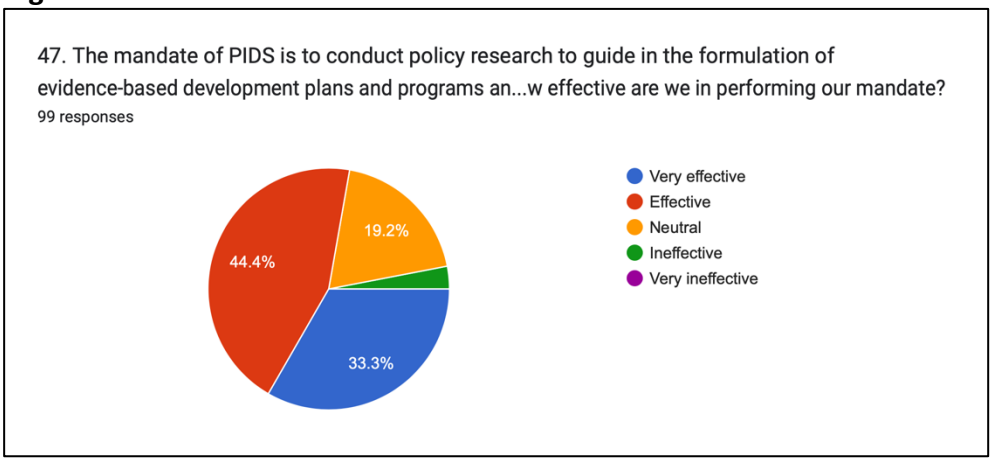
(a)



(b)

Meanwhile, 77.7% of the respondents reported that PIDS is either effective or very effective in performing its mandate (**Figure 13**). However, 3% of the respondents who thought that PIDS mandate was carried out ineffectively mentioned about making research findings more accessible by simplifying content and to conduct more publications related to innovation and AI.

Figure 13. Distribution of respondents by their assessment of effectiveness of PIDS in performing its mandate



4.2. Opinion mining from Top 3 PIDS Facebook posts

For this component, the proposed research entails collection of social media sentiments from top 3 posts of PIDS on its Facebook page: 1) 3 reasons why free college tuition is anti-poor; 2) Policy Issue at Glance: Defining and Profiling the Middle Class (Who are the middle class); and 3) Seminar announcement: Evaluating the 4Ps payment system (**Table 2**). These posts were selected from the top 10 Facebook posts of PIDS from 2017 to 2022 to conduct text mining of at least 100 comments from each post to capture more qualitative data on sentiments of its social media visitors vis-à-vis reactions and shares.

Table 2. Top 10 posts with most number of engagements in PIDS' Facebook page

	Post Title	Date	No. of Reactions							Engagements		
			Likes	Heart	Wow	Haha	Care	Sad	Angry	Total Reactions	Comments and Replies	Shares
1	**3 reasons why free college tuition is anti-poor**	July 12, 2017	545	13	30	120	0	34	561	1303	**387**	1280
2	**Policy Issue at Glance: Defining and Profiling the Middle Class (Who are the middle class)**	February 27, 2019	496	8	51	35	0	10	0	600	**159**	2709
3	**Seminar announcement: Evaluating the 4Ps payment system**	October 29, 2021	355	62	5	0	1	0	0	423	**131**	454
4	Policy Issue at Glance: Defining and Profiling the Middle Class	February 27, 2019	697	65	26	0	0	1	0	789	57	2727
5	On the Employability of the Senior High School Graduates: Evidence from	January 29, 2021	125	17	2	0	1	0	0	145	20	157

	the Labor Force Survey											
6	DRN: Some students lack basic SHS competency	April 23, 2020	91	1	4	1	0	54	0	151	10	126
7	Filipinos' vulnerability to poverty	October 30, 2018	176	12	5	0	0	1	0	194	6	479
8	How Prepared is the Philippines for the FIRe?	September 29, 2018	81	5	8	0	0	0	0	94	3	194
9	How is the Philippines Faring in SDG Achievement? Goal 4: Quality Education	December 10, 2019	93	19	0	0	0	0	0	112	3	150
	#PIDSInfoBits: *Alam nyo ba na unti-unting bumababa ang bilang ng smoking households sa Pilipinas*	March 13, 2023	23	8	0	0	5	0	0	36	2	68
10	Silver Linings for Seniors in the Philippines	November 7, 2019	131	14	4	0	0	0	0	131	1	157

Source: PIDS

4.2.1. PIDS infographic: 3 reasons why free college tuition is anti-poor[4]

This infographic is based on PIDS Policy Note No. 2017-03 titled "Who benefits and loses from an untargeted tuition subsidy for students in SUCs?". This publication has been cited 19 times since it was posted in 2017 by various news media outlets, other studies, and the Senate.[5]

The discussions among comments in the Facebook post of the said infographic focuses around the issue of free education, particularly free college tuition, and how social media users perceived whether the policy is anti-poor or not. These comments portray a multitude of opinions on the subject of free education, with some endorsing it as a means to foster inclusivity, while others express reservations about potential drawbacks and advocate for targeted assistance. Some key points and arguments include:

- Criticisms on universal free tuition and challenges in the education system: Some contend against a universal, one-size-fits-all approach to free college tuition, suggesting that it might inadvertently subsidize the education of affluent and middle-class students who may not require financial assistance. The apprehension is that it could function as a form of welfare for those already privileged. Some also argued that issues such as the quality of basic education and the difficulties faced by poor students in gaining access

[4] https://www.facebook.com/PIDS.PH/posts/3-reasons-why-free-college-tuition-is-anti-poor-providing-free-tuition-to-all-st/1993385714020393/
[5] https://www.pids.gov.ph/publication/policy-notes/who-benefits-and-loses-from-an-untargeted-tuition-subsidy-for-students-in-sucs

to quality education should be addressed. Some also criticize the existing system for categorizing students as poor or non-poor.

- Alternative solutions to free college tuition: Some commenters proposed alternatives, including enhancements to the progressive payment scheme, enhanced information-sharing between educational institutions and tax agencies, and addressing existing complexities in the system. There is also discussion about the possibility of implementing a system where subsidies are targeted based on the income bracket of students. This approach aims to provide assistance to those who genuinely need it while not subsidizing the education of more affluent individuals.

- Advocacy for Free Education: Social media users in favor of free education argue that making college tuition-free can dismantle financial barriers and motivate more individuals, especially from lower-income families, to pursue higher education. Some observations compare the Philippine situation with other countries, underscoring the advantages of free education in places like Europe. Others also mentioned that free college tuition may form part of a solution to issues on quality of education, discrimination, and access of marginalized groups.

Meanwhile, there were also comments criticizing PIDS and its study, questioning the methodology and conclusions drawn. Some argue that the study may be a form of misinformation or that it lacks nuance. However, there is no available data that can confirm or relate their comments as to whether social media users reached by the post were also able to access the policy note.

4.2.2. PIDS #PolicyIssueAtAGlance: Defining and profiling the Middle Class[6]

The aforementioned Facebook infographic post on "Who are the Middle Class" is part of a series of infographics on #PolicyIssueAtAGlance[7] based on PIDS Policy Notes 2018-18 titled "Defining and profiling the middle class".[8] A series of infographics regarding the study provides a profile of middle-class persons and families in the Philippines, the country's prospect of achieving the goal of a largely middle-class society by 2040 (NEDA 2015), and some issues and recommendations on how to strengthen the middle class. The following is a summary of comments on perspectives on the middle class in the Philippines:

- Concerns on defining income classifications: Some questions arise about whether the income figures are annual or monthly and discussions about the challenges of maintaining a certain lifestyle in the face of rising prices. Others express disagreement with the income classifications, stating that survey data should be regularly updated and that the definitions don't match their personal situations.

- Development policies and issues to be considered vis-à-vis defining the middle class: Concerns are raised about the accuracy of the data, and suggestions are made to update it, considering factors like the TRAIN Law, CITIRA, and inflation. Some commenters also mentioned issues of corruption, discipline, public service, and the taxation system

[6] https://www.facebook.com/photo/?fbid=3098408903518063&set=pcb.3098412260184394
[7] https://www.facebook.com/PIDS.PH/posts/policy-issue-at-a-glance-defining-and-profiling-the-middle-classin-ambisyon-nati/3098412260184394/
[8] https://www.pids.gov.ph/publication/policy-notes/defining-and-profiling-the-middle-class

in the Philippines. There were also comments about the impact of the pandemic and the need for equal treatment regardless of economic status.

- Personal experiences of social media users and their socioeconomic conditions: Some commenters share personal anecdotes about their financial situations, expressing sentiments ranging from humor to frustration and highlighting the challenges of achieving a comfortable life in the current economic conditions.

Comments in the referred post provided a glimpse into the varied perspectives and experiences of individuals regarding the definition of the middle class and the economic challenges they face in the Philippines.

4.2.3. Seminar announcement: Evaluating the 4Ps payment system[9]

The comments on the 4Ps seminar announcement express various concerns, experiences, and questions related to the Pantawid Pamilyang Pilipino Program (4Ps) implemented by the Department of Social Welfare and Development (DSWD). Participants share their frustrations about not receiving payouts, seek guidance on how to become a member, and inquire about the inclusion of certain age groups. Some discuss their family situations and request assistance for their children's education. Overall, the comments highlight different issues, appeals for inclusion, and inquiries about the 4Ps:

- Program issues on selection: Some participants expressed frustration with the 4Ps program, calling for a thorough review of beneficiaries and suggesting the exclusion of those not genuinely in need. There were concerns about transparency in the selection process, with criticisms of potential influence by barangay officials. Others raised inquiries about the timing of the *Listahanan* and expressed concerns about the categorization of families as poor or non-poor.
- Membership inquiries and concerns on receiving payouts: There were comments seeking information on how to become a member of 4Ps, inquired about programs for solo parents, and raised questions about the age limit for program participation. Some participants also voiced concerns about the absence of payouts, shared difficulties faced in joining the program, and suggested approaching the DSWD assistance. There were also issues raised regarding ATM cards being issued without funds.
- Personal stories and pleas: Some beneficiaries shared personal stories through their comments about being 4Ps members and made pleas for assistance, citing specific family situations. Some further requested expanding the inclusion in the 4Ps. Additionally, there were inquiries on the UCT (Unconditional Cash Transfer) program.

The comments reflected mixed sentiments, showcasing diverse perspectives and experiences. Most commenters shared personal stories, critiques, and requests for program inclusion.

[9] https://www.facebook.com/PIDS.PH/posts/248180540679290/?paipv=0&eav=Afb6-qjZFpd72yOcq3s0vQoAQKQelJ0cL6FLuT52R3_3etLWCTYyI_bIy225TmiB9_w&_rdr

5. Summary, Policy Issues and Ways Forward

In the era of digital communication, social media has become a crucial platform for citizens to express their opinions and sentiments about government policies. By aligning policies with public sentiment, governments can build trust and credibility. Furthermore, embracing advanced methodologies, identifying challenges and acknowledging insights for policymaking helps the government can enhance its responsiveness and build a more inclusive and participatory way of formulating policies and programs. To leverage inputs gained from analysis of public sentiments in social media, the government can consider the following recommendations:

5.1. Invest in advanced sentiment analysis tools and technologies and enhance capacities of government personnel to utilize social media data

Analyzing public sentiments on social media requires sophisticated methodologies capable of handling large volumes of unstructured data. Sentiment analysis, natural language processing, and machine learning techniques have emerged as prominent tools in this domain. Investments in technologies must also be combined with enhancing capabilities of the workforce to take advantage of gaining valuable insights from social media users. Capacity building of researchers, information officers, and knowledge management and communication personnel in the government may be undertaken by enrolling in massive open online courses (MOOCs) on sentiment analysis, machine learning and language processing techniques which are available for free to those who want to learn new skills. These capacity building initiatives serve as a mechanism to develop the analytical capacity of government personnel given the growing data holdings made available in social media and across the entire data ecosystem.

5.2. Develop a systematic approach for integrating social media insights into the policymaking process while ensuring data and individuals remain protected

Understanding public sentiments on social media has direct implications for policymaking. Research by Theocharis et al. (2016) and Jungherr and Jürgens (2016) suggests that governments can leverage insights from social media analytics to adapt policies in response to public opinion, enhance communication strategies, and foster a more responsive and inclusive governance model. The government can benefit from establishing clear communication channels to address public concerns identified through social media sentiment analysis to ensure rights of social media users remain protected. Addressing data privacy in sentiment analysis involves several processes such as anonymizing and pseudonymizing data, obtaining informed consent, minimizing data collection, securing storage with encryption, ensuring transparency, aggregating data, applying de-identification techniques, establishing data retention policies, conducting privacy impact assessments, complying with legal regulations, providing user control, adhering to ethical guidelines, vetting third-party services, conducting regular privacy audits, and training employees on privacy best practices. These measures collectively aim to protect individuals' privacy while deriving valuable insights from sentiment analysis data, fostering trust and compliance with data protection standards.

5.3. Regularly update and adapt strategies based on evolving public sentiments

There is a growing importance of analyzing public sentiments on social media in shaping effective government policies and influencing political discourse, as social media users now engage in real-time discussions, sharing their thoughts and opinions on a wide array of topics, including pressing development issues. The integration of sentiment analysis tools, the acknowledgment of methodological challenges, and the recognition of the potential impact on policymaking underscore the importance of further exploration in this evolving field. As governments continue to grapple with the complexities of public sentiment in the digital age, future research should focus on refining methodologies, addressing challenges, and developing strategies to harness the power of social media for responsive and effective governance.

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