

Factors Bridging the Satisfaction of Generational Gap in Philippine Healthcare System Telemedicine Use

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Abstract

The Philippines is a developing country in which technological innovations and digital interventions shaped and deepened the gap in the need for better healthcare services for Filipinos. The focus of this study is to identify the factors in the use of telemedicine that affects the satisfaction level of the Millennial and Generation Z telemedicine users in the Philippines. A total of one hundred thirty-eight (138) respondents from Millennials and Generation Z individuals in the Philippines answered the survey questionnaire and data were analyzed with the use of multiple regression analysis. The Millennials have five (5) factors that contributed to the satisfaction towards telemedicine such as usefulness, reliability, salary, ease of use, and employment status. Moreover, Generation Z has four (4) factors such as usefulness, interaction, salary, and period of use. According to the findings, Millennials have a score of 33.17 while Generation Z has a 35.85 score which corresponds to a strong telemedicine satisfaction. With this result, the study recommends to Information and Computer Technology, healthcare practitioners as well as the healthcare industry to develop ways to improve telemedicine services to sustain the growing demand to meet the needs of the generational gap for better healthcare delivery in the Philippines.

Keywords

Generation Z, Millennial, Satisfaction, Telemedicine, Generational Gap

1. Introduction

Technological advancements and digital interventions in the Philippines have altered and widened the gap in the need for better healthcare services for Filipinos. Telemedicine attempts to match the demands of today's healthcare customers and has the potential to transform healthcare delivery (Alvandi, 2020). According to El Y (2017), both younger and older generations have begun to recognize the advantages of current technological advancements. However, in terms of how millennials, Generation Z, and baby boomers interact with healthcare providers, there are generational differences (Sanborn, 2018). As telemedicine progresses toward increased functionality and integration it is a must to consider the generational spectrum according to Ackerman et al. (2010).

There are numerous definitions of telemedicine. However, both telemedicine and telehealth are synonymous since the applications incorporate technological improvements. Telemedicine is described by the World Health Organization (WHO) as the delivery of health care services by health care professionals utilizing technology that involves the exchange of medical information for the diagnosis, treatment, and prevention of diseases and injuries. Marcelo et al. (2016) stated that the Philippine Department of Health (DOH) recognized ICT's potential as a significant tool in achieving Kalusugan Pangkalahatan (KP) or Universal Health Care for all Filipinos. In the context of the present epidemic, telemedicine is quickly improving, and demand for this service is growing (Kichloo et al., 2020). In the year 2020, the telemedicine sector shines during pandemics as it offers Filipinos an alternative source of consolation.

The Department of Health and the National Privacy Commission provides free telemedicine services, which aids in reducing hospital occupancy and limiting the spread of COVID-19, and it has provided almost 70,000 virtual consultation services to patients across the country (Gunasegaran, 2021).

Regardless of telemedicine's tremendous possibilities, it is challenging to measure the usability of this technology, especially among the growing population of the Philippines. There is a great potential for telemedicine, however, there is inadequate research in the Philippines on the use of Telemedicine and its satisfaction among the Millennials and Generation Z. According to Worldometer's elaboration of the most recent United Nations statistics, the Philippines' current population is 111,456,355 as of Saturday, October 16, 2021. Based on the national statistics, Millennials and Generation Z account for almost 70% of the Philippine population while the Centennial or Generation Z Filipinos, with a population of 40 million, are the country's largest demographic.

In addressing the problem, the purpose of the study is to present an innovative healthcare delivery recommendation that can help in developing a system for generational healthcare in the country. The study also sought to identify what factors could influence the satisfaction in the use of telemedicine in the Philippines. Even during and after the COVID-19 pandemic, the research has important implications for simultaneously planning for the future, the generational spectrum may be a beneficial force for progress in healthcare innovation particularly in telemedicine usability in the Philippines. The target goal of this study is eighty percent (80%) of the population of Millennial and Generation Z telemedicine users in the metropolitan area in the Philippines.

The research focuses solely on the Millennial and Generation Z spectrums in the Philippine population and other generations will be aided for future studies. In addition, non-clinical patient's telemedicine user in metropolitan areas of the Philippines were considered as respondents.

2. Literature Review

One of the most significant areas of the Philippine economy today is healthcare. Telemedicine is considered a feasible alternative in providing health services without the need to visit the hospital or other healthcare facilities in the Philippines in response to this national health emergency according to the Department of Trade and Industry (2020). Telemedicine has now reached the mainstream as a result of the epidemic, which made online consultations a vital innovation. According to the CEO and co-founder of telehealth platform provider Medifi, 80 percent of telemedicine, or the use of electronic communications and information technology offer health care, occurs "asynchronously" in the Philippines (N.,2021). To relieve hospitals of non-critical cases and limit the spread of the COVID-19 virus, the Department of Health (DOH) has supported the contactless approach to health care (Abadilla, 2020).

In dealing with a new and uncertain entity like COVID-19, telemedicine allows for virtual consultations, which is especially useful because it allows for constant communication between institutions as well as the ability to contact experts to guide and counsel medical and/or administrative decisions (Nagata et al., 2020). With regards to the interaction, Layfield et al. (2020) asserted that patients also expressed high levels of perceptions of the quality of their interactions, showing that the telemedicine visit was successful in facilitating provider-patient contacts. According to Morgan (2018), telemedicine has reduced the frequency of long-distance travel to hospitals since women may obtain care in the comfort and convenience of their local communities. In the recent study of Koonin (2020), more than 60 percent of its telemedicine users are women, and more than half are between ages 25 and 44. The potential of telemedicine has been recognized, according to Jadauan et.al (2021), the usefulness of telemedicine is that it allows both patient and doctor to have a consultation through a system without risking possible exposure in times of pandemic. The worldwide COVID-19 epidemic has drastically altered consumer habits and attitudes, as well as their worry and comfort levels about health care. As the use of EHR (Electronic Health Record) systems grows, so does the scrutiny around their usefulness as mentioned by Boldt (2021). The keys to resolving these concerns are knowledge on the proper and successful uses of telemedicine, as well as data about the security technologies used to secure patient information stated by Cranford (2017).

Nowadays, telemedicine is a fast-growing service that aims to enhance access to high-quality, efficient, and cost-effective healthcare, particularly in the midst of the present COVID-19 epidemic (Kichloo et al., 2020). Telemedicine design should be user-friendly, with all relevant information and resources readily available as stated by Zhen Lin (2017). According to Garcia and Adalakun (2019), satisfaction is a factor that might affect patient engagement in continuing care and the outcome of the medical result. In the study conducted by (Garg & Brewer, 2011) inadequate security measures in telemedicine services might have a negative influence on the quality of care delivered.

Consumer behavior has the potential to change many areas of the healthcare system. According to Heath (2016), patients exhibit various preferences for patient involvement based on their age and life experiences, just as each generation displays its distinct preferences for fashion and music. Many aspects of health care delivery could be improved by better understanding the factors and processes through which doctors and patients interact as mentioned by Peck (2011). Although, it is critical to examine the usability of telemedicine systems to enhance user acceptability (Nara Simha et al., 2016).

The various age groups, from Generation Z to the Silent Generation, expect different things from healthcare as mentioned by Gardiner (2021). The precise age range for Generation Z has yet to be established, people born between 1997 and 2012 are generally considered to be part of the group. Millennials, like Generation Z, desire digital alternatives for ease in their fast-paced lives. People born between 1996 and 1981 are known as Millennials, and they desire the ability to view medical information and arrange appointments online (Clark, 2020). The decline of pagers and the growth of smartphones were observed by millennials. According to research, Filipino Generation Zers are the most confident in technological knowledge (68 percent), compared to their Southeast Asian and worldwide counterparts (62 percent and 52 percent, respectively).

The physicians, hospitals, and health systems must embrace telehealth and telemedicine services as a compelling way to engage with patients, provide better care, and remain relevant in today's digitally connected world (SCP Health, 2020). Medical Futurist (2021) stated that working hand in hand with technology is the future of healthcare, and healthcare personnel must embrace developing healthcare technologies to remain relevant in the coming years. The study has to be made as even once COVID-19 is eradicated, telemedicine has the potential to overcome ongoing barriers to primary care in the Southeast Asia area, such as a lack of educated healthcare professionals, access issues, and the expenses involved with in-person care (Gudi et al., 2021).

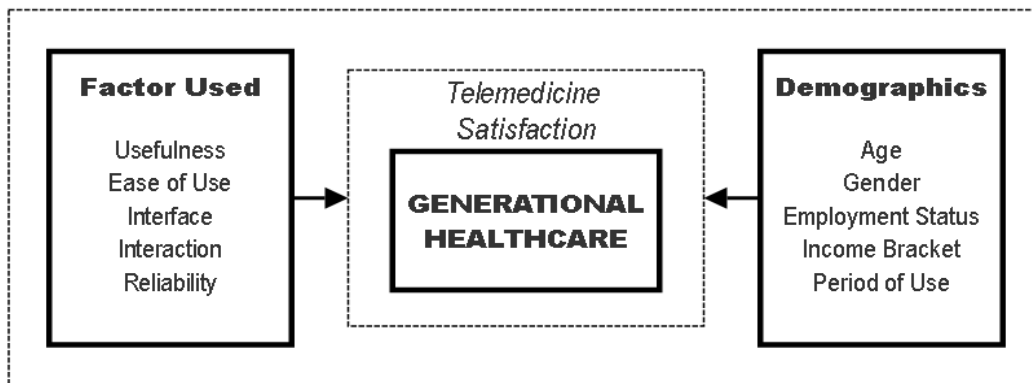


Figure 1. Conceptual Framework

A. Demographics

Demographics are concerned with the specific factors associated with Filipino telemedicine users from Generation Z and Millennials. The factors used were age, gender, employment status, income bracket, and period of use. These variables have a significant impact on both generations, resulting in the satisfaction of generational healthcare telemedicine.

B. Factor in the Use of Telemedicine

The identify factors in the use of telemedicine are usefulness, ease of use, interface, interaction and reliability which are contributing factor to the Filipino telemedicine user from Generation Z and Millennials. These sets of variables are significant since it measures the scales of telemedicine usability of specific generational healthcare.

3. Methods

The quantitative technique was used in this study to obtain and collect the relevant data. The main respondents of this study were Millennials and Generation Z users of telemedicine services in the metropolitan area in the Philippines. The independent variables are the factors in the use of telemedicine systems, while the dependent variable is the satisfaction of the Millennials and Generation Z users in the Philippines. The study utilized Cochran's Sample Size Determination Formula to determine the proper sample size for identifying the respondents. Due to the restriction caused by the pandemic, the degree of confidence level was set at 90%, and the approximate proportion of the population was calculated using 138 samples from both Millennials and Generation Z users. Moreover, the Minitab-19 statistical tool software was utilized to analyze the result from the data gathered.

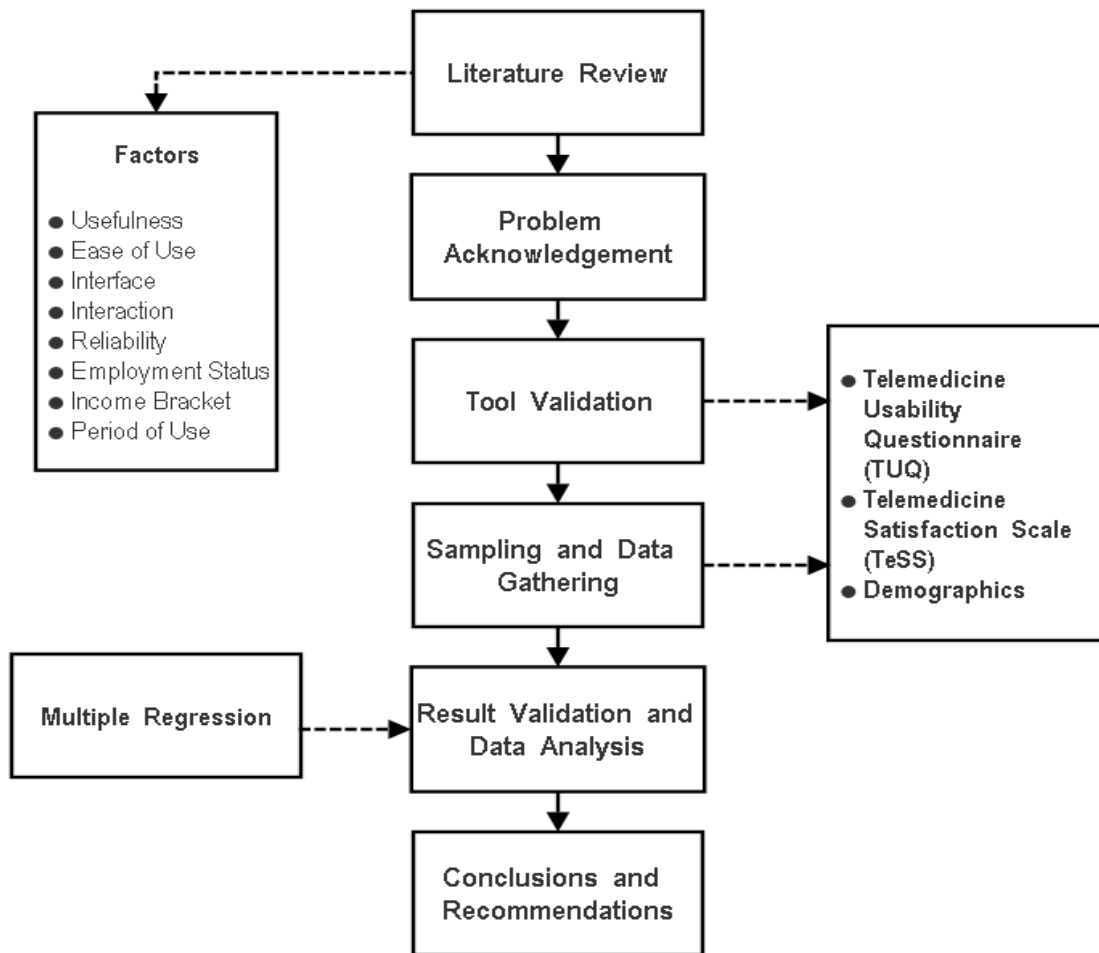


Figure 2. Methodologies

The figure 2 above shows the methodologies that were used to complete the study. The problem identified was through the literature review of the study which focuses on the studies in the Philippines regarding the use of telemedicine and satisfaction of both generations. The gathered data was obtained with the use of an online survey questionnaire and used two measurement tools: Telemedicine Usability Questionnaire (TUQ) and Telemedicine Satisfaction Scale (TeSS). The survey questionnaire was applied to determine the satisfaction among the Millennials and Generation Z users of telemedicine applications in the Philippines. The scaling system for the TeSS is a 1-4 point Likert scale while the TUQ was the Likert scale; a low value (e.g.,1) indicates strong disagreement with the statement, whereas a high value (e.g., 7) indicates strong agreement. The total score on the 10-item TeSS can range from 1-4 point Likert scale, with 4 being the highest scores indicating higher satisfaction. According to Parmo et.al (2016), Telehealth Usability

Questionnaire (TUQ) assesses the comprehensive question that covers all usability factors, including usefulness, usability, validity, and reliability. In addition, Morgan et.al (2014), states that the Telehealth Satisfaction Scale (TeSS) is a tool developed as "satisfaction with telemedicine services and quality of specialist care" that consists of (10) ten questions. The questions for demographic profiles were directly based on their own choice. After the data was collected, multiple regression analysis was used to validate and evaluate the data.

4. Results and Discussion

A total of one hundred thirty-eight (138) respondents from Millennials and Generation Z individuals in the Philippines answered the survey questionnaire voluntarily. The questionnaire was distributed online by utilizing stratified sampling. This sampling technique enhances the accuracy and statistical significance of the results that will reduce sampling bias (Shi, 2015). The sample respondents of the study were (N=69, 50%) Millennials while (N=69, 50%) Generation Z telemedicine users.

Table 1. Demographic Statistics Results (n=138)

Characteristics	Category	Millennials		Generation Z	
		N	%	N	%
Gender	Female	46	66.67%	43	62.32%
	Male	23	33.33%	26	37.68%
Employment Status	Student	24	34.78%	46	66.67%
	Employed	89	60.87%	19	27.54%
	Unemployed	3	4.35%	3	4.35%
	Working Student	0	0%	1	1.45%
Income Group	Below Php 10,000 monthly income	11	15.94%	24	34.78%
	Php 10,000 to Php 21,000 monthly income	13	18.84%	20	28.99%
	Php 21,000 to Php 43,000 monthly income	38	55.07%	24	34.78%
	Php 43,000 to Php 76,000 monthly income	5	7.25%	1	1.45%
	Above Php 76,000 to Php 131,000 monthly income	2	2.90%	0	0%
Period of Use	Once a month	38	55.07%	48	69.57%
	Twice a month	18	26.09%	19	27.54%
	Thrice a month	13	18.84%	2	2.90%

Based on the demographics table 1 above, there are (n=46, 66.67%) of Millennial female users and (n=43, 62.32%) Generation Z female users, while male users for Millennials and Generation Z are (n=23, 33.33%) and (n=26, 37.68%). Most of the respondents from Millennials are employed (n=89, 60.87%), followed by students (n=24, 34.78%) and unemployed (n=3, 4.35%). On the other hand, most of the Generation Z were students followed by employed and unemployed with a consecutive percentage of (n=46, 66.67%, n=19, 27.54%, n=3, 4.35%). For both Millennials and Generation Z, the highest percentage for income group is Php 21,000 to Php 43,000 monthly income (n=38, 55.07% and n=24, 34.78%), followed by Php 10,000 for Millennials with a percentage of (n=13, 18.84%) while Generation Z has (n=24, 34.78%) for income group below Php 10,000 monthly. Moreover, (n=38, 55.07%) of Millennials respondents used telemedicine once a month same as with Generation Z with (n=48, 69.57%), followed by (n=18, 26.09%) and (n=19, 27.54%) respondents for both generations used twice a month. These variables listed are the factors that contribute to the satisfaction and usability of Millennial users of a telemedicine system in the Philippines.

Table 2. Score and Level of Satisfaction

Respondents	Score of Satisfaction	Level of Satisfaction
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Millennials	3.32	Strongly Satisfied
Generation Z	3.59	Strongly Satisfied

The table 2 indicates the results of the score and level of satisfaction of the Millennials and Generation Z. It is shown that Millennials has 3.32 of score satisfaction while the generation Z has 3.59 in a 4-point Likert scale. The level of satisfaction of each generation indicates as strongly satisfied in the use of Telemedicine.

Table 3. Analysis of Variance of Respondents

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Millennial					
Regression	8	50.7572	6.3446	11.77	0.000
Usefulness	1	6.3996	6.3996	11.88	0.001
Ease of Use	1	2.8559	2.8559	5.30	0.026
Reliability	1	12.9763	12.9763	24.08	0.000
Employment Status	2	3.9841	1.9920	3.70	0.032
Salary	3	24.9184	8.3061	15.41	0.000
Error	46	24.7889	0.5389		
Lack-of-Fit	37	24.7587	0.6692	199.52	0.000
Pure Error	9	0.0302	0.0034		
Total	54				
Generation Z					
Regression	6	41.9644	6.9941	16.22	0.000
Usefulness	1	23.9895	23.9895	55.63	0.000
Interaction	1	6.7915	6.7915	15.75	0.000
Salary	2	10.6557	5.3279	12.36	0.000
Period of Use	1	3.0533	3.0533	7.08	0.010
Error	52	22.4226	0.4312		
Total	58				
Variables		S	R-sq	R-sq(adj)	R-sq(pred)
Generation Z		0.6567	65.18%	61.16%	55.74%
Millennial		0.7340	67.19%	61.48%	54.16%

The table 3 shows the final findings, the R-sq(adj) for Generation Z was 65.18% and Millennials with 67.19%. Also, the results showed the list of factors that contributed to the satisfaction of Millennials and Generation Z. For Millennials, five (5) factors contributed to the satisfaction towards telemedicine, it includes usefulness with p-value of 0.001, both reliability and salary has a p-value of 0.000, followed by ease of use with p-value of 0.026 and employment status with p-value of 0.032. Moreover, Generation Z has four (4) factors such as usefulness, interaction, and salary, each with a p-value of 0.000 and a length of usage with a p-value of 0.10.

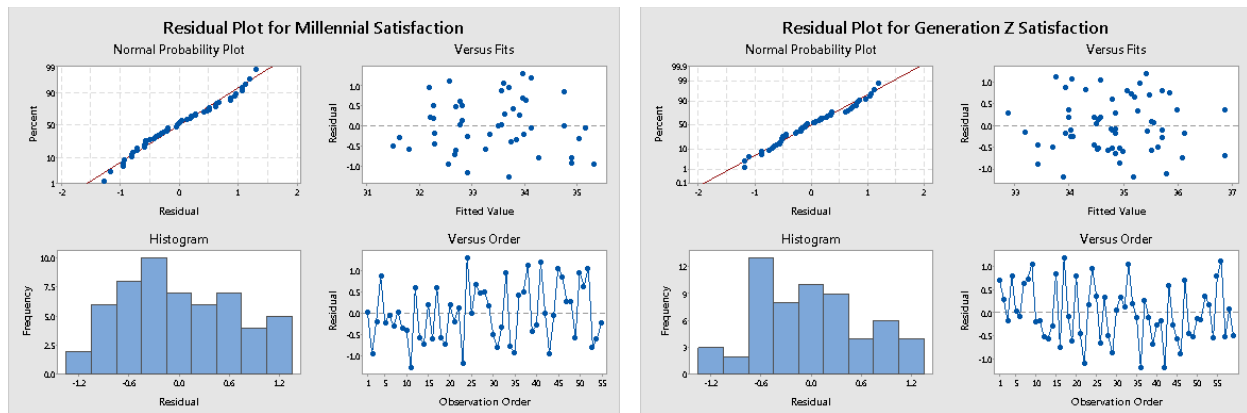


Figure 3. Residual Plot for Satisfaction

Figure 3 above shows that Multiple linear regression is acceptable for the data since the normal probability plot demonstrates that it is normally distributed. Furthermore, the versus fits plot showed a dispersed collection of data which confirms that the existing conclusion should be subjected to multiple regression analysis. Moreover, it is highlighted in the histogram graph that both generations support the normal probability plot, indicating that the data is a good candidate for multiple regression analysis, and the versus order plot demonstrated the residuals' independence.

5. Recommendation

The study showed the factors that affects the Millennials and Generation Z in the Philippines' involvement with the effectiveness of telemedicine as a healthcare provider using multiple regression analysis. The survey questionnaires, and instruments like the Telemedicine Satisfaction Scale (TeSS) were used to collect data for the study which contributed to meet objective of the study.

5.1 Conceptual Contribution

The paper adds to the current literature in the Philippines regarding the use and satisfaction of telemedicine in the country. This research might be valuable both during and after the epidemic since the use of telemedicine is drastically growing in the Philippines. This paper is the pioneer study that assesses and identify the satisfaction of Millennial and Generation Z in using Telemedicine services in the metropolitan area in the Philippines. Through the literature reviews, the paper provides new insights to future researchers and supports studies regarding telemedicine satisfaction in the generational gap in the Philippines.

5.2 Practical Implication

The focus of this study is to identify the factors in the use of telemedicine that affects the satisfaction level of the Millennial and Generation Z telemedicine users in the Philippines. Due to the influence of technology on the healthcare system, telemedicine is considered a means of providing wellness through healthcare system advancements in the country. Both physicians and patients are being driven into a new normal using telemedicine systems, which incorporate video conferences, audio, and other electronic communication even before and during the pandemic. The results of this study can be utilized by Information Technology, Software Developers, Healthcare professionals, and providers as well as other healthcare industries to develop ways to improve telemedicine services to sustain the need for better healthcare delivery in the Philippines. The Millennials and Generation Z have a common factor of usefulness and salary. As a result, the developer should consider the system's functionality, effectiveness, and affordability since most telemedicine applications have a service charge. Furthermore, the interaction of the application between the users and physicians should be robust, reliable, and easy to use to increase user engagement and satisfaction in telemedicine.

5.3 Limitations and Future Research

In this study, the authors note several limitations. First, the respondents of this study consider telemedicine users in the metropolitan area only. To produce more reliable information in the future, the study should extend the coverage of respondents in a rural area in the Philippines. Second, the study focused only on the two-generational spectrums. Future studies can increase their target respondents and are not limited to two generations to get more accurate data in terms of telemedicine satisfaction. Third, to bridge the internet connectivity gap, healthcare providers may adopt an asynchronous or offline consultation that will improve the usefulness, ease of use, and patient-physician interaction. Additionally, the system should include easy access to the information about the credentials of the healthcare practitioners. The income bracket of patients could also be considered as generation Z has 3.59 indicating a strong satisfaction score belonging to 34.78% that earns below the monthly income of Php 10,000. Moreover, additional areas of consultation exclusively for chronic illness can be incorporated to broaden the range of target patients of the telemedicine consultations across the country.

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