

Date
November 2022

Title
Using digital platforms for agriculture, health and nutrition messaging

Country/ Region
Zinder Region, Niger

Sector
Health / Nutrition
Agriculture

Intervention Dates
From July 2021 to June 2022

Costs
Total budget of
UNITLIFE-funded GOAL,
Niger project
USD 500,000.00

Statistics
92% of Nigeriens in 2021
had access to a 2G network

37% of Nigeriens in 2019
owned a mobile phone



Executive Summary

This brief outlines a GOAL, Niger study attempting to verify the relationship between the use of the digital platforms and users' socio-demographic characteristics in its programming. The study aims to test the hypothesis that age and gender are associated with platform usage. The digital platform in question is VIAMO.

Results show a strong association between gender, age, and platform utilisation with younger age groups and males showing a stronger usage of the platform. The brief recommends that while digital media is getting increased attention and investment, it is important to better understand who is and who is not benefitting from modern technologies and tailor their roll out according to gaps identified.

Background

Agricultural and health extension services are vital to achieving sustainable development goals as they provide critical support and advice, especially to rural populations. In most low- and middle-income countries, communities living in remote areas are often underserved. With the growth of mobile phone ownership, the interest in using them to promote improved agricultural and nutritional practices is also growing.

However even among the users of mobile phones, differences persist according to social demographic characteristics. This study attempts to verify the relationship between the use of the digital platforms and participants' age and gender, testing the hypothesis that these characteristics determine digital platform usage.

The dataset analysed in this brief comprises of anonymised calls made by subscribers who are also participants in a GOAL, Niger UNITLIFE-funded, project aimed at reducing the prevalence of chronic malnutrition among children under five and pregnant and lactating women through nutrition-sensitive and climate-smart agricultural interventions.

The data includes demographic variables namely: age, gender, location, and language the participants selected for listening to the platform content. The topics the participants selected, and the amount of time spent listening to each topic was also recorded. These variables were subjected to multiple analysis of variance to explore the effects across, between and within them.

Methodology

The study dataset was composed of 835,205 records of calls made on the platform between July 2021 and June 2022 by 274,842 unique subscribers. The subscribers self-reported their demographic information (age and gender), while the platform generated the call date, call duration, language, location, and topic the subscriber listened to. Platform use was defined as the amount of time the subscriber spent listening to messages on the platform.

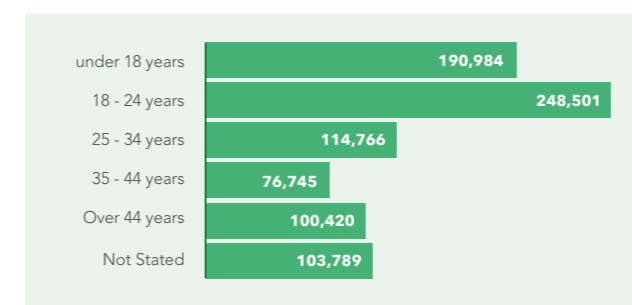
Analysis of Variance (ANOVA) was used to understand whether there exist statistically significant differences in platform usage (measured by amount of time spent listening to the messages on the platform) across gender and age groups. Tukey's Honest Significant Differences (HSD) was used to establish which specific age groups' means (compared with each other) are significantly different. The test compares all possible pairs of age group means.

Findings

Relationship between age and platform use

Figure 1 shows the age distribution of the platform users. The 18-24 years age group had the most calls (34%) followed by the under 18 age group (26%). The 35-44 years had the lowest number of calls (10%).

Figure 1: Distribution of platform users by age group



The average call length for each age group is presented in Table 1. The average call duration was higher in the 35-44 years age group and lowest in the under 18 age group

Table 1: Average call duration by age group

Age group	Mean length in seconds	Standard Deviation
Under 18 years	320.8	425
18-24 years	347.2	446
25-34 years	357.8	441
35-44 years	364.1	450
Over 44 years	336.2	420

The Analysis of Variance (ANOVA) results for age showed the p-value to be less than 0.05. As such we can conclude that at least one of the age groups is different from others in terms of call duration (p-value < 2.2e-16).

VIAMO

VIAMO is a mobile phone notification and survey platform application that uses local - language based services.

NGOs, government agencies, donors and businesses can use the platform to communicate directly with the people they intend to reach via mobile.

UNITLIFE

UNITLIFE was established by UN Women, UN Capital Development Fund (UNCDF), the Government of France, and the Abu Dhabi Crown Prince Court to leverage innovation and partnerships to protect human capital from malnutrition during the first 1,000 days of a child's life.

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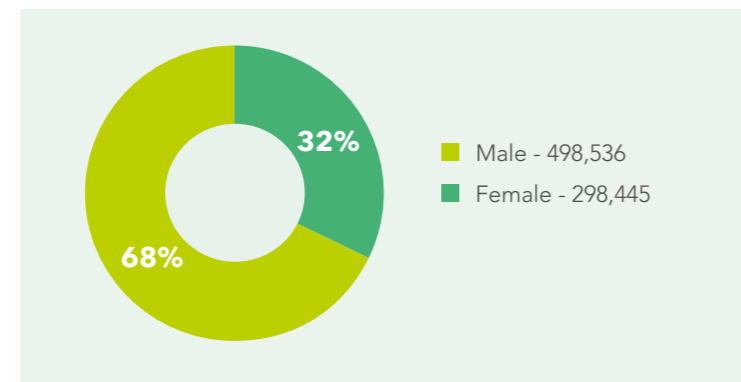
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Multiple pairwise comparisons of the age groups were conducted using Tukey's HSD to see if the mean differences between certain pairs of age groups were statistically significant. Differences between all age groups were statistically significant with an adjusted p-value of less than 0.01. Hence the conclusion is that there is a significant relationship between age and platform use.

Relationship between gender and platform use

Males made up 68% of the platform users while females were 32% (Figure 2).

Figure 2: Gender distribution of platform users



The average call length for men and women is presented in Table 2. The average call duration was higher in the 35-44 years age group and lowest in the under 18 age group.

Table 2: Average call duration by gender

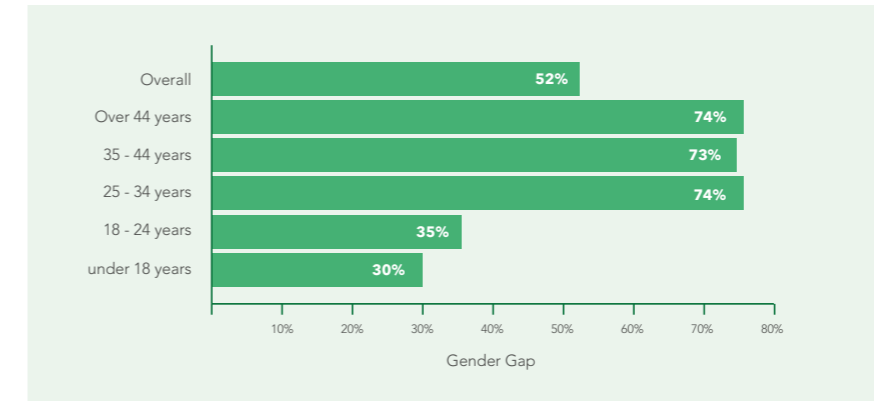
Gender	Mean length in seconds	Standard Deviation
Male	347	432
Female	334	448

The Analysis of Variance (ANOVA) results yielded a p-value less than 0.05. We therefore can conclude that there is statistically significant difference between men and women in the use of the platform and the amount of time they spent on the platform. (p-value < 2.2e-16).

The average duration for calls made by females was 333.6 seconds and that of males was slightly higher at 346.8 seconds. The p-value of the t-test is 6.39546e-32, which is less than the significance level alpha = 0.05. Results show that that men's average call duration is significantly different from women's average call duration.

Across all age groups, the gender gap in usage was 52%. This was quite prominent in the age groups 24 years and above that averaged 74%. The gender gap was however slightly narrow in the under 18-year (30%) and 18-24 years (35%) age groups (Figure 3).

Figure 3: Gender gap in platform use



Two-way analysis of variance was also conducted and was used to compare the effects of gender and age on platform use at the same time. The results showed that the 'age: gender' variable has a high sum-of-squares value and a low p-value, which means there is variation that can be explained by the interaction between age and gender in the ANOVA.

Conclusion

This study sought to assess the hypothesis that age and gender are associated with the VIAMO digital platform usage in our GOAL project UNITLIFE. The study identified significant gender- and age-based differentials in the platform usage. These findings are interpreted as suggestive evidence that mobile phone-based services, while they do offer good platforms to reach underserved communities, they can also generate new inequalities, between age groups and between genders as women and men do not equally access the platforms.

There is a risk that certain groups will be left behind by such services. It is evident from literature and our study that barriers to mobile phone ownership and use disproportionately and negatively impact older age groups and women, who tend to belong to the groups that are most likely to be unconnected, such as those who are unemployed or have low literacy levels and are also often affected by social norms which make mobile ownership and use more difficult.

Recommendations

Realising the potential of digital agriculture extension services and social behaviour change messaging requires an interdisciplinary effort to develop and evaluate a variety of approaches, incorporating insights from behavioural science, agriculture, economics, and data science.

It is recommended that with digital media getting a lot of attention and investment, it is important to better understand who is and who is not benefitting from modern technologies and tailor their roll out according to gaps identified. Additional qualitative research may need to be conducted to build on the findings to develop a more nuanced understanding of usage across different demographics including non-users.

GOAL, UNITLIFE and VIAMO

GOAL and UNITLIFE began a project in July 2021 aimed at reducing chronic malnutrition among children under 5 years of age and pregnant and lactating women.

Using nutrition-sensitive and climate-smart agricultural interventions, the project was implemented in 20 villages in the Zinder region of Niger.

GOAL procured the services of VIAMO to set up a national awareness campaign on 15 project related topics available on a digital platform accessible through mobile phones