



## MODELING YOUTH INFORMATION-SHARING BEHAVIOUR DURING EMERGENCIES.

By

**Emmanuel Ifeduba**

Department of Mass Communication, Redeemer's University, Ede, Osun State, Nigeria. +23408033821430

### **Abstract**

*Sometimes one sees an email, a text message or a WhatsApp chat several hours after it was sent as an emergency message, a situation which sometimes leads to blame, misunderstanding and lost opportunities. With an ever-increasing number of options such as cell phones, instant messaging, emailing, text messaging, personal digital assistants and blogging, choice of channels may increasingly depend on factors such as cost, speed, convenience, availability and security. And it is not clear why communicators sometimes make flawed choices even during emergencies, and this is rampant among students. This study, therefore, interrogates the factors that determine youth choice of communication channels in emergencies with a view to recommending guiding principles for emergency communication as channels continue to multiply. A total of 512 copies of a questionnaire were administered to undergraduates in three universities and 436 were correctly filled and retrieved. Findings indicate that Whatsapp is the most frequently used channel for everyday activities, however, 60.3% of students chose phone calls for emergency messages whereas 20.6% chose Whatsapp for emergency messages. Factors that influenced their choices are delivery speed (42.4%) quick feedback (35%) cost (18.8%) and availability (4%). Respondents that chose Whatsapp for emergencies indicated that cost was the determining factor, and statistical analysis shows that there is a relationship between cost and wrong choice of channel for emergency messages.*

**Keywords:** *Crisis management, communication channel, social media emergency messages, peace and conflict*

## Introduction

Rapid development in digital communication technology has given birth to a multiplicity of channels for various types of communication and currently, it requires some thinking to match messages with the right channels. And factors that influence such decisions include the range of available channels such as phone calls, email, instant messaging services and text messages, each coming with advantages and disadvantages. Availability of each channel, availability of addressees and the nature or characteristics of the message also play important roles in the decision process (Sanina, Balashov, Rubtcova & Satinsky, 2017). How these factors play out in emergency situations is sometimes different if not unpredictable.

During emergencies, messages are time-sensitive and getting audience attention and convincing people to respond quickly to messages could have life or death consequences. The situations are more critical where the solution is suggested in a message and response time is very crucial. Notwithstanding, most studies on this subject focus on the usage of short messaging services (SMS) during crises (Schroeder, Pennington-Gray, Donohoe & Kiouisis, 2013), use of social media during emergencies (Dugdale, Van de Walle & Koeppinghoff, 2012), preferred sources of information during emergencies and communication channels people choose when they cannot use their phones (Sanina & Satinsky, 2017), thereby glossing over the role of multiplicity of channels, speed of channels and cost of channels and the characteristics of various types of emergency.

This study, therefore, interrogates the role of multiplicity of channels, speed of available channels and cost of communicating through each channel, channel availability and channel security during emergencies with a view to answering the following research questions: Which communication channels are the most frequently used by undergraduates in every-day communication? Which communication channels are preferred by students for emergency messages? What is the role of channel characteristics and emergency characteristics in determining channel preference during emergencies? Is there any relationship between channel characteristics, emergency characteristics and channel preference?

## Literature Review

The process of transmitting information in order to create shared meaning is often achieved through speeches, visuals, signals, texts or just body language understandable to the target audience (Velentaz & Broni, 2014). Similarly, Anvari and Antiyaye (2014) states that communicators should be conscious of available information tools and channels, using all of them efficiently, and avoiding obstacles in the communication process. This is in line with Marshal McLuhan's argument: that the means by which content is delivered possesses a great deal of influence on the receiver's view of the message's significance; that each form of media promotes diverse levels of participation. As such, the means by which a person accesses a particular content would influence the individual's perception of it or response to it (Anvari & Antiyaye, 2014).

Choosing a channel of communication from so many options can sometimes present a dilemma. Besides the cost involved, the most significant and major factor when choosing a channel is the appropriateness in relation to the response expected and how quickly it is expected. Thus, Gitonga (2017) notes that certain channels are only appropriate for specific situations since each of them has conditions, merits and demerits; and this is consistent with other arguments on the necessity for cautious analysis of the target audience through research and planned designing of messages and choice of channels for specific groups (Bergin, 2017).

**Communication Channels Used in Schools:** It is observed that there are two types of communication that occur in a school - formal communication and informal communication. Formal communication entails communicating through a formalized organizational network, and would naturally require planning and use of prior approved channels. But in emergencies, crises and difficulties, informal communication is the more frequently utilized channel and a communicator could leverage on nearly all of the modern-day communication tools like text messaging, instant messaging and other channels, often subject to inaccuracies due to noise, chauvinism and context (Bergsten, 2018).

Demographic characteristics of communicators could influence the choice of channels among student communicators. Mamuli, Mutsotso and Namasaka (2013) conducted a study on the influence of communication channels on management practices and found that demographic characteristics influenced choice of channels among student communicators. This position is

consistent with other studies indicating that individual characteristics and perceptions, whether a message comes from a credible source, how the message is delivered, and the message itself could influence acceptance and response (FEMA, 2014). In a study on the determinants of effective communication among undergraduate students, Anvari and Atiyaye (2014) state that students used both verbal and non-verbal communication including Chronemics and kinesics, and the highest average mean involved chronemics communication. In a similar study, Baghestan et al. (2019) states that 68.9% of the respondents would rather see students face-to-face so they can communicate a clear message. Mobile phones came in as the second preferred medium, followed by telephone landlines (12.6%), and written messages (2.9 %).

**Determinants of Channel Choice:** Studies suggest that people's perception of appropriateness could determine their choice of media or change of media (Duffy & Chan, 2019; Strycharz, Kim & Segijn, 2022), while some others observe that both media literacy and the sensory perceptions with which contents are received could play important roles in responding to emergency messages (Angeli, 2019). Similarly, it has been observed that crisis communication could be viewed from an operative level, paying attention to functionality of the equipment and issuing of orders and instructions to citizens etc), as well as on symbolic levels and their impact on message cognition and response. They also examined communication problems such as insufficiently trained communicators, inadequate equipment, limited time and excessive expectations in relation to flooding crises and emergencies in Serbia, concluding that these factors affect the outcome of emergency messages. In the same vein, studies show that beliefs and emotional responses such as hope and confusion shaped COVID-19 crisis misinformation vetting and sharing intentions among WhatsApp users in the United Kingdom, implying that these variables could play important roles in student communications during other types of emergencies (Lu, Vijaykumar, Jin & Rogerson, 2021).

Other factors that influence the methods, means and outcomes of crisis or emergency communication include the element of uncertainty, which has been described as critical in a study that offers directions for future research on the intersection of uncertainty, communication, and crises (Liu, Bartz & Duke, 2016). However, whether communication is shrouded in uncertainty or certainty, well-conceived and effectively delivered emergency messages could help crisis managers to ensure public safety, protect property, facilitate response efforts, elicit cooperation,

instil public confidence and help families reunite where applicable. And such well-conceived messages often encompass alerts and warnings, directives about evacuation, curfews, and other self-protective actions; and information about response status, family members, available assistance and other matters that impact response and recovery (FEMA 2014).

Variables such as convenience, involvement and personal recommendations were interrogated by Austin, Liu and Jin. This study, however, used terms such as ease of feedback in place of convenience (Austin, Liu & Jin, 2012). Studies have also attempted to examine crisis communication specifically in the context of internal communication in private and public organisations, introducing the concept of internal stakeholders and the implications of a staged approach to emergency communication (Frandsen & Johansen, 2011). Though the concept of internal stakeholders would need further clarification, the idea of a staged approach seems to be difficult to argue in the context of a real emergency.

Selecting the appropriate channel could make all the difference in crisis communication, but this depends on the audience, the message, and the purpose of communication. A skilful communicator should, therefore, know when choosing from traditional communication channels such as memos, letters, face-to-face, meetings, and when to use telephone calls, emails, text messages, videoconferencing, blogs, and websites. What is most important in making the choice is a clear understanding of the audience to ensure the channel of communication will effectively accomplish the task (Emmons, 2019; Lyon, 2019).

Choosing the wrong channel can result in more spending, delays and misunderstanding. The communicator is, therefore, expected to understand some variables that aid the decision process; variables such as having a clear idea of the principle of message formality, media limitations, urgency and cost. For instance, a memo or letter is far more formal in tone and format compared to a text message, just as a report would convey a more complex message than a text message; or just as discussing sensitive information is more appropriate in a face-to-face meeting than over a text message (Wiles, 2017; Lyon, 2019).

**Types of Emergency:** An emergency could come in form of a disaster requiring pre-disaster, disaster and post-disaster communications. And studies have suggested the use of modern technology to achieve device-to-device communication, drone-assisted communication, mobile ad

hoc networks and Internet-of-Things, for post-disaster communication (Ladas, Sambo, Pervaiz, Politis & Imran, 2019). An emergency could also be medical in nature requiring complex communication skills. Examples abound in Hong Kong where English-speaking emergency department clinicians generally communicate in emergencies involving native speakers of Chinese. Though they often read and record their medical documentation in English, they must communicate verbally with patients in Cantonese and Mandarin. This requires translation skills in addition to writing and speaking skills, all in emergencies. A study interrogated this phenomenon and found that nearly half of the participating clinicians believed that medical information could be omitted or altered through repeated translations such as a trilingual emergency department (Pun, Chan, Murray, Slade & Matthiessen, 2016).

**Theoretical Perspectives:** Two different theories provide framework for the study. Channel choice is anchored on Media Richness Theory, a theory which provides a framework for describing a communication medium's ability to reproduce the information sent over it without loss or distortion and describes how communication channels should be utilized to successfully convey diverse forms of information (Daft & Lengel, 1983; Bergin, 2017). It states that more difficult information should be disseminated via a richer channel whereas less complex information should pass through leaner channels in order for the message to be interpreted correctly. Richness in this context refers to the potential information carrying capacity of the medium, and four factors determine information-carrying ability: Instant feedback capability, usage of multiple cues, personal focus and language variety. Four factors that affect media richness are feedback, channel, type, and language source (Ishil, Lyons & Carr, 2019). The diffusion of virtual environments implies that the richness or otherwise of new media would be tested by equally new activities such as disaster response and security crisis, and this recommends this theory for this study (Bergin, 2017).

It has been suggested that text-based approaches have a good chance of evolving well as technology advances across different platforms such as computers, tablets and smartphones, and they observed that online text-based communication is less rich than other media on a number of important levels. This assumes that communicators hoping to replace face-to-face mediation with online tools, text-based approaches may seem to lack the immediacy and nuanced communication that face-to-face communication permits. On the other hand, though a phone call would be

immediate and speedy, it would not be able to reproduce visual social cues such as gestures, making it not as rich as video conferencing, which is able to communicate gestures to some extent, but richer than email (Veenen, 2018).

Emergency communication is grounded on the Social Mediated Crisis Communication (SMCC) model, which assumes that in a crisis, multiple “publics” or “audiences” exist in the world of social media, including influencers or individuals that create information that others access. The word “others” in this context refers to active and inactive followers that follow the influencers and access the information they disseminate as well as individuals who do not directly access information from social media and rather seek information from other sources. It acknowledges the direct and indirect dissemination of information across social media, as well as between traditional and social media (Austin, Liu & Jin, 2012). As a result, this model is useful for communication efforts in emergency situations since information exchanged during emergencies has the potential to reach multiple types of audiences. Although inactive members may be connected to social media indirectly through other members or traditional media, these individuals may require different messaging channels than influencers and followers.

## **Methods**

This study employed the survey research method to collect data from 436 students in three universities in Nigeria (Obafemi Awolowo University, Osun State University and Redeemer’s University). Whereas Osun State was purposively selected because it possesses the right mix of federal, state and private institutions, the universities were purposively selected to reflect their public or private status. Three colleges (management sciences, law and pure science) existing in each of the universities were selected purposively while available sample of respondents who had spent at least one complete academic session in each college was selected.

**Over** 60.6% of the respondents were male and 39.4% of respondents were females. While 56.0% of respondents were aged between 16 and 20 years, 40.6% were between the ages of 20 and 24 years, and 3.4% aged between 25 and 30 years. These sampling procedures are consistent with recommendations in previous studies (Pulse, 2018; Alvi, 2016; Taherdoost, 2016). Data was analyzed using the Statistical Package for the Social Science (SPSS) to present findings in form of frequency tables, percentages, correlations and multiple regressions.

## Data Presentation

**Channels Most Frequently Used by Respondents for Daily Communication:** The study sought to find out which communication channels were used frequently by the respondents, and the findings indicate that 94.5% of respondents used Whatsapp most frequently followed by phone calls (92.7%), SMS (92.2%) and Facebook (48.9%) is the least used among respondents. However, 381 (87.4%) students indicated that they had found themselves in some emergencies whereas 55 (12.6%) of the respondents indicated that they had not found themselves in an emergency that required an urgent message. Details are presented in Table 1.

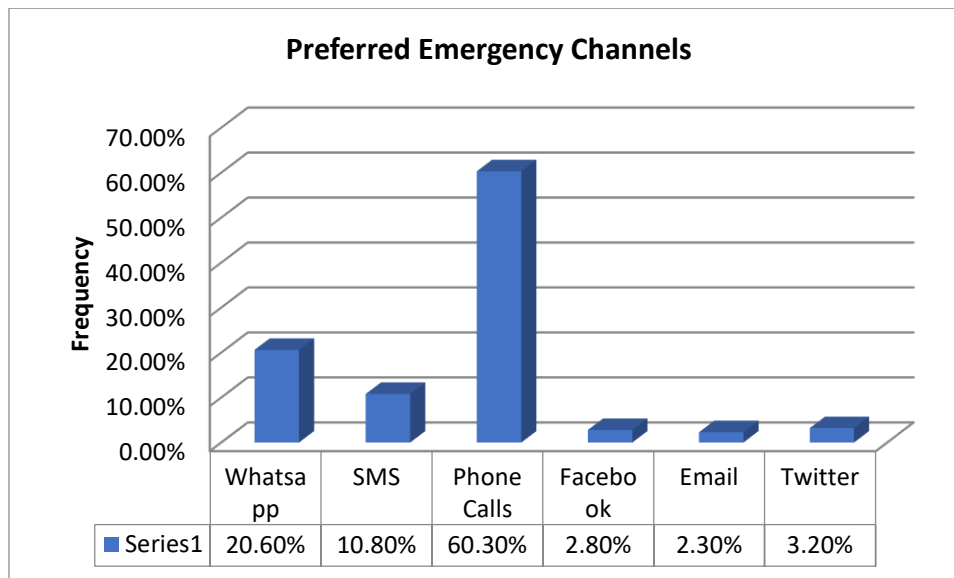
**Table 1**  
*Communication Channels Most Frequently Used*

Communication Channel	Frequency of Use	Percentage
Whatsapp	404	94.5%
SMS	402	92.2%
Phone Calls	412	92.7%
Facebook	213	48.9%
Email	362	83.0%
Twitter	239	54.8%

**Preferred Communication Channels for Sending Emergency Messages:** Respondents were asked to indicate their choices for sending emergency communication channels in order of preference and 60.3% of the respondents indicated that phone call was their first choice, 20.6% chose Whatsapp while 10.8% indicated SMS as emergency channel of first choice. Details are presented in Figure 1

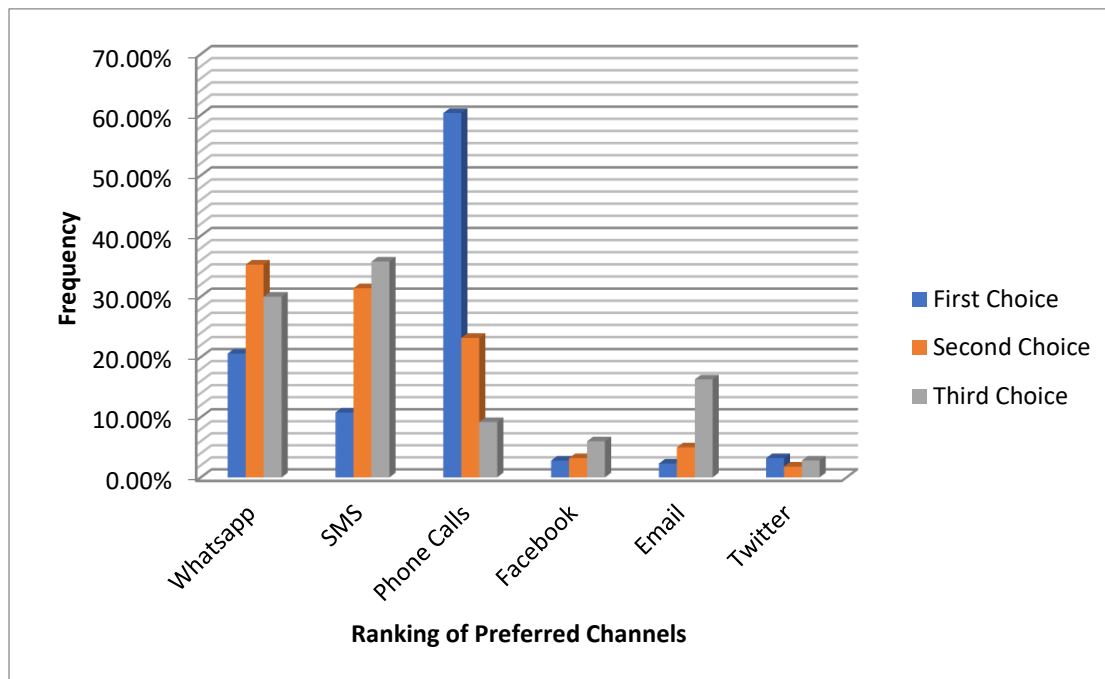


**Figure 1**  
*Preferred Emergency Channels*



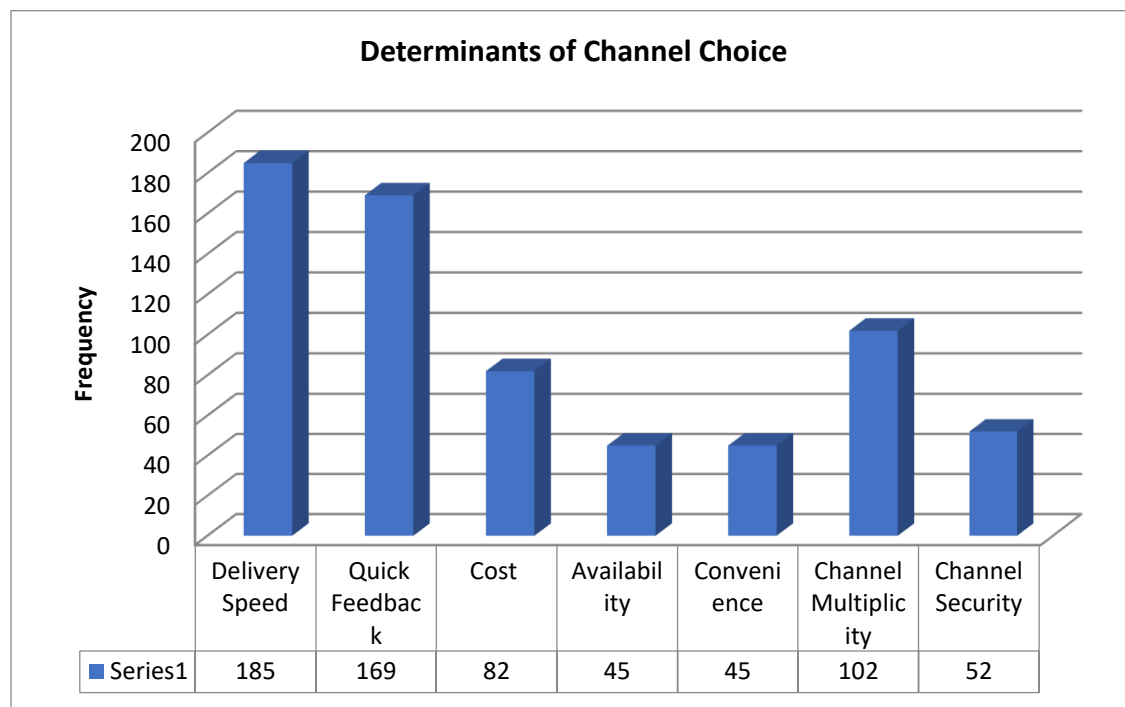
**Other Options:** Over 35% indicated Whatsapp as the second and indicated SMS as the third option, 39.5% indicated email as their fourth option; 39.8% indicated Twitter as their fifth option while 31.3% indicated Facebook as their sixth option. This finding which shows the respondent's choice when sending a very urgent message indicates that Phone calls are mostly the first option and Facebook is the least preferred. Details are presented in Figure 2.

**Figure 2**  
*Ranking of Communication Channels in Order of Preference*



Email was ranked a distant fourth as a channel of choice for emergency communication and Facebook was fifth. Twitter was the least to be considered for emergency communications as 44% ranked it sixth and 39.8% ranked it fifth choice. Over 42.4% of respondents indicated delivery speed as the reason for their preference, 38.8% indicated possibility of quick feedback whereas 18.8% indicated cost-effectiveness as the reason for their choice. Details are presented in Figure3.

**Figure 3**  
*Determinants of Channel Preference during Emergency*

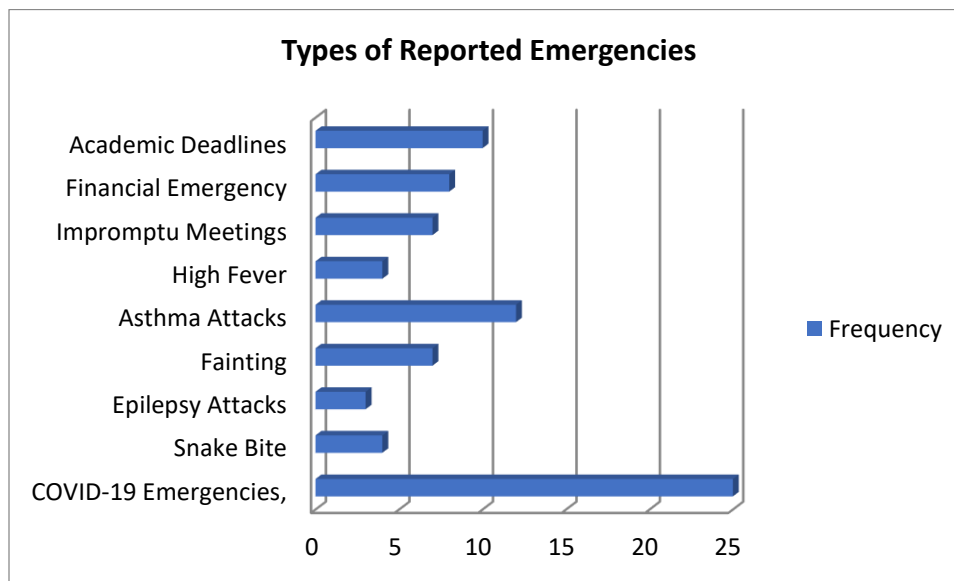


**Communication Channels through which Emergency Messages were Received:** Respondents were asked if they had received emergency messages and their responses indicate that 39.4% of respondents had received urgent or emergency messages on WhatsApp, and 7.1% of them regarded it as a wrong channel for the particular message received and 30% received emergency messages by phone calls, and all these respondents regarded the channel as the right choice, 19% received emergency messages by SMS and questioned the rationale whereas the 5.5% that indicated Facebook, the 3.2% that indicated Twitter and the 2.8% that indicated email all regarded these as wrong choices for the nature of messages received.

**Types of Emergency Message Sent or Received:** Respondents were asked in an open-ended question to indicate the exact subject of the medical and non-medical emergency messages they had received, and they listed COVID-19 emergencies, snake bites, epilepsy attacks, fainting, asthma attacks and high fever. Non-medical emergency messages received had to do with

impromptu meetings, financial emergencies and academic deadlines. Details are presented in Figure 4.

**Figure 4**  
*The Types of Emergencies Reported*



**Relating Channel Choice to Channel Characteristics:** Statements on whether the suggested factors had an influence on the respondents' choice of channels were presented to respondents, and they were asked to indicate their levels of agreement. Delivery speed, quick feedback, multiplicity of channels and cost were among the factors they indicated as being determining factors. Details are presented in Table 4.

**Table 4**  
*Channel Characteristics*

<b>Determining Factors</b>	<b>Strongly Agree/Agree</b>	<b>Strongly Disagree/Disagree</b>
Multiplicity of channels to choose from made my choice of channel difficult during emergency	102	141
Cost influenced my choice of channel during emergency	81	123
Speed of delivery affected my channel choice during emergency	172	92
Feedback possibilities influenced my choice of channel during emergency	164	88
Convenience influenced my choice of channel during emergency	45	71
Availability influenced my choice of channel during emergency	45	71
Channel security influenced my choice of channel during emergency	52	101

Relating Channel Choice to Emergency Characteristics: Statements on whether the nature of the reported emergencies had an influence on the respondents' choice of channels were presented to respondents, and they were asked to indicate their levels of agreement. The nature of emergencies such as Covid-19 and snake bite emergencies were indicated as influencing channel choice. Details are presented in Table 5.

**Table 5**  
*Influence of Emergency Characteristics on Channel Choice*

<b>Determining Factors</b>	<b>Strongly Agree/Agree</b>	<b>Strongly Disagree/Disagree</b>
The nature of COVID-19 emergencies influenced my choice of channel during emergency	125	111
The nature of snake bites influenced my choice of channel during emergency	49	80
The nature of epilepsy attacks influenced my choice of channel during emergency	54	77
The nature of fainting influenced my choice of channel during emergency	70	66
The nature of asthma attacks influenced my choice of channel during emergency	72	90
The nature of high fever influenced my choice of channel during emergency	41	81
The nature of impromptu meetings influenced my choice of channel during emergency	78	74
The nature of financial emergency influenced my choice of channel during emergency	81	95
The nature of academic deadlines influenced my choice of channel during emergency	103	76

**Measure of Relationships:** Pearson correlation was computed to assess the role of channel characteristics as well as emergency characteristics in determining channel choice during emergencies. The results indicate that there was a positive significant correlation between the channel choice and perceived channel characteristics at  $r = .905$ ,  $N = 122$ ,  $p = .000 < 0.05$  and emergency characteristics at  $r = .920$ ,  $N = 116$ ,  $p = .000 < 0.05$ . These findings imply that the more appropriate these facilities (phone calls, Whatsapp and SMS) are perceived to be in regard to the emergency characteristics, the higher would be students' inclination to use them for emergency communication. Conversely, the less appropriate the channel characteristics are perceived to be to the emergency characteristics on hand, the lower the inclination to choose them during an emergency. Details are presented in Table 6.

**Table 6**

*Relationships between of Channel Characteristics and Emergency Characteristics with Channel Choice*

<b>Pearson Correlation Statistics</b>	<b>Channel Characteristics</b>	<b>Emergency Characteristics</b>
Pearson r	.920**	.905**
Sig. (2-tailed)	.000	.000
N	116	122

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Predicting Emergency Channel Choice:** To assess the joint predictive strength of perceived channel characteristics and emergency characteristics with regard to channel choice, a multiple regression analysis was conducted. The results indicate that the model with P-value .000 is significant in predicting the adoption level of channel choice at 0.05 level. The R. Square value of the model was .849, meaning that 84.9% of the variance in the choice of channels could be explained by perceived channel characteristics and emergency characteristics together. Details are presented in Table 6.

**Table 6**

*Regression Showing the Influence of Channel Characteristics and Emergency Characteristics on Channel Choice*

<b>Model</b>		<b>SS</b>	<b>dF</b>	<b>MS</b>	<b>F</b>	<b>Sig.</b>	<b>Adjusted R. Square</b>
<b>1</b>	<b>Regression</b>	6.318	2	3.159	324.741	.000	.849
	<b>Residual</b>	1.099	113	.010			
	<b>Total</b>	7.418	115				

Further analysis was conducted to assess the predictive strength of individual variables in the model, and the results indicate that perceived channel characteristics with p-value 0.000 and perceived emergency characteristics with a P-value 0.048, were statistically significant in predicting channel choice at 0.05 level. The B-weight of channel characteristics was 0.707. This means that if the perceived characteristics of phone call, SMS and Whatsapp channels increase by

one unit, the usage level of phone call, SMS and Whatsapp for emergencies would increase by 0.707. Conversely, if perceived channel characteristics decrease by one unit, the usage level of these channels would decrease by 0.707. The B-weight of emergency characteristics was 0.225, implying that if the perceived characteristics of the various emergencies such as Covid-19, asthma attack and snake bite increase by one unit, the usage level of phone call, SMS and Whatsapp for these emergencies would increase by 0.225. The B-weight of emergency characteristics was 0.225. Conversely, if perceived emergency characteristics decrease by one unit, the usage level of these communication channels would decrease by 0.225.

### **Discussion of Findings**

The study found that the most frequently used channels by youths in everyday communication are phone call, Whatsapp messages and SMS while Facebook was the least used for daily communications. This supports previous studies indicating that whatsapp messaging has not only overtaken SMS usage but may soon compete favourably with phone calls (Cetinkaya, 2017; Avi & Sigal, 2018).

Responses to the question on which communication channels are preferred by youths for emergency messages indicated that phone call is ahead of all channels; and the rationale for this preference is hinged on the possibility of immediate response or feedback, failing which the caller may quickly resort to another channel. This aligns with the nature of the subject of the study (emergency) because response time could mean life or death in most emergencies. Whatsapp is also validated as the number one communication channel that people choose when they cannot use their phones as stated by (Sanina, Balashov, Rubtcova, & Satinsky, 2017). One major reason for resorting to the use of whatsapp messages is cost. Use of this application does not attract charges so long as the user has data for general online activities.

The role of channel characteristics in determining channel preference during emergencies is made even clearer by the fact that Facebook, Twitter and email which offer less of immediate interactivity and quick response time received the lowest preference rate. And expectedly the statistical analysis indicated also that the characteristics of these channels did not correlate with channel choice during emergencies. However, it is important to note that emailing followed SMS



closely probably due to cost or as a support channel where immediate response is delayed on the channel of first choice.

These findings partially support the assumptions of the SMCC theory to the extent that audiences truly use social media during crises for information and for checking up with family and friends and to the extent that convenience and involvement encourage channel choice while information overload influences poor choices (Austin, Liu & Jin, 2012). But it contradicts the SMCC in the sense that a majority of the respondents would rather make phone call if cost is not an impediment. The findings also partially align with the media richness theory which states that more difficult information should be disseminated via a richer channel whereas less complex information should pass through leaner channels. Though Whatsapp is rich in terms of instant feedback, usage of multiple cues, personal focus and language variety, the fact that messages could be easily lost or glossed over due to overload in the Whatsapp environment diminishes its instant feedback potential as Ishil, Lyons and Carr argued (Ishil, Lyons & Carr, 2019).

The question on how far emergency channel choice could be predicted from the characteristics of a channel or from the nature of each emergency type is answered from the statistical analysis showing that the B-weight of channel characteristics was 0.707, higher than that of emergency characteristics (0.225). In other words, if the perceived channel characteristics such as response speed, security, cost and convenience should improve by one unit, the usage level of phone call, SMS and Whatsapp for emergencies would increase beyond what it is currently.

This suggests that the future of emergency communication lies in channels that offer quick response characteristics, message security, cheap cost, convenience as well as availability. These factors would aid the decision process in a world where the multiplicity of channels has compounded the problem of information overload and increased the need for media literacy.

### **Conclusion and Recommendations**

This study set out to ascertain student channel preference for emergency messages, the role of channel characteristics and emergency characteristics in determining channel preference during emergencies, as well as the relationship between channel characteristics, emergency characteristics and channel preference. The findings show that students who generally rely more on whatsapp

messages for daily communication indicated phone call as channel of first choice, whatsapp as their second choice and SMS as a third channel of choice for emergency messages. The statistical analysis shows that there is a positive significant correlation between channel choice and perceived channel characteristics and emergency characteristics; and the model resulting from the relationship was statistically significant in predicting channel choice. In light of these findings, the following order is recommended for choosing channels in emergencies:

**First Choice:** During emergencies, phone calls are recommended as the first line of communication, except in a dangerous situation where the sound of a voice could attract more danger.

**Second Choice:** During emergencies, if phone call is ruled out due to the nature of the emergency, the sender could resort to Whatsapp chat or SMS provided there are data or call credit for these channels. But where data and call credit are lacking, the sender may have no choice but to resort to channels with reduced chances of immediate feedback and interactivity, that is, email for instance

**Toll Free Emergency Lines:** In the alternative, toll-free lines for emergencies should be provided in university campuses to avoid a situation where students choose wrong channels due to lack of funds for calls and chats in life-threatening emergencies.

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