

Digital Communication: An Overview

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ABSTRACT

Digital communication essentially refers to the use of digital devices to send information electronically. It is the way in which people communicate through a digital medium. It is a means of communicating in the digital age. It involves the use of online tools like email, text messaging or social media to share a message with others. Most organizations today use a variety of digital communication channels to connect employees, customers, and other stakeholders. The digital communications field is ever-expanding with new career opportunities. The constant development of digital tools leads to opportunities for digital communication specialists. This paper provides an overview on digital communications.

KEYWORDS: technology, digitalization, digital technology, digital communication, analog communication, wireless communication

How to cite this paper: Matthew N. O. Sadiku | Uwakwe C. Chukwu | Abayomi Ajayi-Majebi | Sarhan M. Musa "Digital Communication: An Overview"

Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-6 | Issue-6, October 2022, pp.2072-2076, URL: www.ijtsrd.com/papers/ijtsrd52244.pdf



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INTRODUCTION

The transmission of information is called communication. Communication may also be regarded as a means of connecting people to information, news, feelings, and so forth. There are two types of communication: engineering communication (or communication networks) and mass communication. Engineering communication, which can be wired or wireless, provides the technology on top of which mass communication takes place.

The communication that occurs in our daily life is generally analog in nature. Traditional analog communication dominated for decades, but it is slowly fading away. It uses analog signals and suffers from many losses such as distortion and interference. In order to overcome the limitations of analog communication, the signals are digitized. Figure 1 shows examples of analog and digital signals [1]. The advantages of digital communication over analog communication include the following [1]:

➤ The effect of distortion, noise, and interference is much less in digital signals as they are less affected.

- Digital circuits are easy to design and cheaper than analog circuits.
- The occurrence of cross-talk is very rare in digital communication.
- The probability of error occurrence is reduced by employing error detecting and error correcting codes.
- Digital signals can be saved and retrieved more conveniently than analog signals.
- The capacity of the channel is effectively utilized by digital signals.

A communications system consists of a transmitter (TX), a receiver (RX), and a transmission medium. As shown in Figure 2, in analog communication, data is transferred with the help of analog signal in between transmitter and receiver. As illustrated in Figure 3, in digital communication digital, digital signal is used rather than analog signal for communication in between the source and destination [2]. This implies that digital communication involves the transmission of information in digital form (0s and 1s).

WHAT IS DIGITAL COMMUNICATION?

The digital age has changed the way people communicate. Digital communication is a means of communication where information is encoded digitally. It has become the primary way people communicate with one another. Digital communication refers to the use of online tools like email, texting, app, and social media messaging to communicate and share a message. It has replaced traditional forms of communication like writing, sending letters, and face-to-face communication.

Digital communication includes the communications that take place via [3]:

- Email
- Instant messaging
- Online productivity tools
- Company intranets
- Employee discussion forums
- Intranet apps
- Videoconferencing software
- Digital whiteboard tools
- Social media

It has been estimated that Americans spend around 23 hours a week engaging in digital communication. The number will only continue to increase.

The COVID-19 pandemic caused friends and family to rely only on texts, social media, and video calls to stay connected [4]. Providing face-to-face classes to students was impossible and keeping them in the loop was another challenge posed by the pandemic. Regardless of whether a college or university resumes face-to-face classes, remains online, or adopts a hybrid model, or turns to block scheduling, it will need an effective communication strategy to address students issues such as food insecurity, lack of transportation, mental health challenges, and general anxieties around higher education [5].

Modern digital communication systems include communication controlling your water heaters, washing machines, surveillance of house/offices, and automated workflows in the home. Digital communication platforms include dropbox, Netflix, amazon prime, Youtube, skype, Google, Facebook, Twitter, and other display technologies [6]. A typical communications network is depicted in Figure 4 [6].

Digital communication has changed dramatically over the last few years. The rapid advancement digital communication is being felt in nearly all disciplines and industries.

Adopting digital communication in business increases employee satisfaction, productivity, and efficiency. Digital communication can completely open up new ways of working for some employees and attract top

talent. It can create a flexible and adaptable workforce.

APPLICATIONS OF DIGITAL COMMUNICATIONS

Digital communication is being used more and more as technology advances. Businesses, organizations, industries, and government all use digital communications. The following are typical applications of digital communication.

➤ *E-Commerce*: Today, most businesses use a range of online channels to connect with customers, employees, and stakeholders. Communication is at the heart of e-commerce. Businesses long for customers to visit their portals. eCommerce stores can benefit from using live chat, chatbots, or social media to chat with consumers or resolve their problems. Consumer communication preferences are rapidly changing as consumers look for immediate responses via social media, apps, live chat, and other digital communication channels. Consumers (majority of them are digital natives) are looking for faster, more efficient, and automated responses via chatbots, intelligent voice assistants, As a result, businesses that provide several options are gaining a competitive advantage over others [7].

➤ *Workplace*: Communicating in the digital workplace is an integral component of any modern organization. Improving digital communication in the workplace is a major task, but the benefits outweigh the challenges. Due to the pandemic, face-to-face communication with remote employees was impossible for all workers are stuck at home. Digital communication between employees has been the only choice. Employees use daily communications tools like email, collaboration software, video and voice chat, etc. Properly training for the employees is important.

➤ *Education*: Students as well as teachers use technology in the classroom as a means of communication. It is important that students learn the proper way to communicate using technology. Most educators believe that digital communication has enhanced their ability to communicate with their students. During the COVID-19 pandemic, colleges and universities started relying on technology for providing remote learning to students. Digital communication channels such as email, mobile push notifications, and text messaging (SMS) became indispensable to teachers and students.

- **Government:** In the digital age, when nearly everyone has an Internet-connected device, there's never been an easier time for government to communicate with citizens. Digital communication is important for governments because governments can get citizens more meaningfully engaged by using digital communication. Digital communication can make communication between governments easier. It also allows a number of different processes to be automated [8].
- **HR Automation:** Time-consuming processes like management, employee recruitment, employee records, and employee benefits can all be automated. This frees up staff to devote their time to more important tasks.
- **Healthcare Communications:** Digital messaging can let patients receive everything from medication details to self-help videos. Healthcare professionals should harness these new tools for the benefit of patients and staff alike.

Other applications of digital communications include public relations, digital marketing, church, consumer relations, banks and financial institutions, advertising, journalism, multimedia, photography, audio and video production, computer graphics and animation, web authoring, videography, image manipulation, professional writing, social media management, and web design.

BENEFITS

In the digital age, most people live their lives online. Everything is digitized now, which means that businesses are better off using digital communication. Embracing automated digital communication can make a business to be more competitive and relevant. Digital communication helps generate sales leads, retain customers, handle customer queries, help businesses engage profitably with customers, establish credibility, and demonstrate leadership. It allows businesses to have access to a global talent pool that can connect across borders, languages, or time zones. It is good for business as well as their employees, who are now expecting to communicate digitally.

As customers' expectations change, innovation changes, leading to the development and advancement of digital communication platforms. Digital communication does not cost very much. Social media and calling via the Internet are free. With increasing focus on the rural market in places like India, digital communication needs to be simple, low tech, and concise. Digital communication is often grounded in the art of persuasion.

CHALLENGES

With automated digital communications, there are concerns about data privacy in collecting customer personal data. There may be legal and ethical concerns of when customers are not how the information collected is used. Companies must ensure that they share customer data judiciously and only when it is absolutely necessary. Several online businesses continue to underestimate the importance of customer experience and how it can impact their businesses [7].

CONCLUSION

The digital age has changed the way we interact and communicate. Digital communication is just one aspect of the huge acceleration of digital transformation initiatives. The digitalization transformation has begun and every organization should embrace it fully.

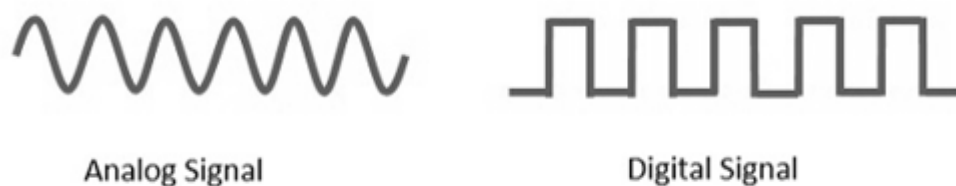
With communication increasingly becoming digitized, organizations in the private and public sectors are looking for talented professionals with a solid background in digital communication. Some colleges and universities are now offering programs and providing an outstanding foundation for digital communication careers in the 21st century. The programs also foster leadership skills, ethics, and media/communication policy in view of the fact that communication is a vital leadership skill. Careers in digital communications include design, video, animation, broadcasting, and writing. More information on digital communication can be found in the books in [9-21] and the following related journals:

- *International Journal of Communication*
- *Digital Communications and Networks*

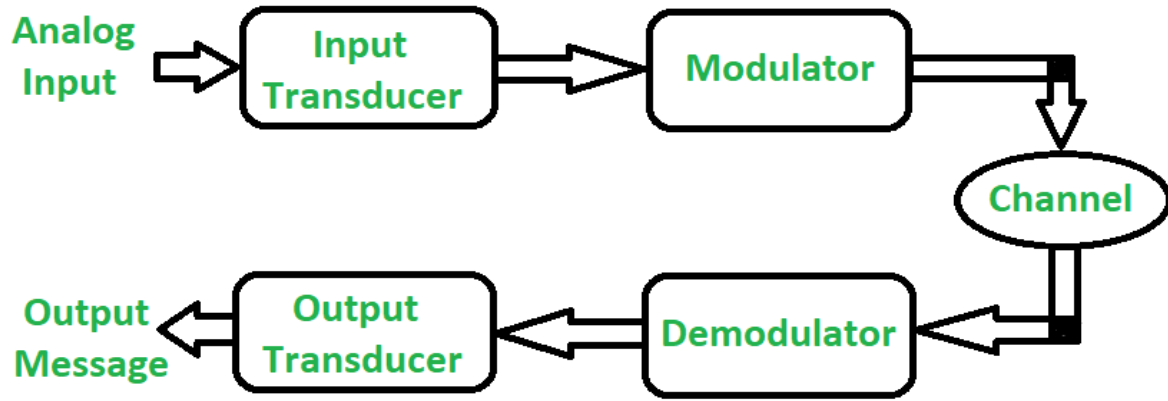
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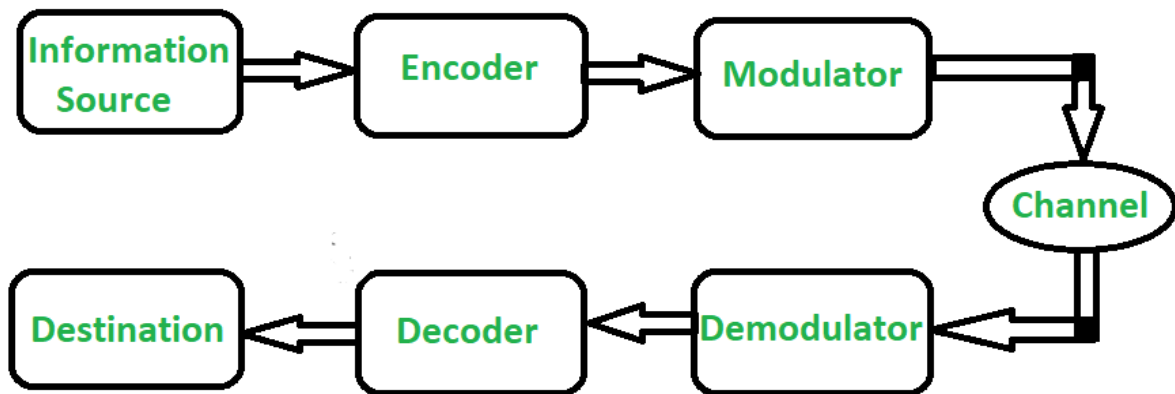


Representation of Signals
Figure 1 Examples of analog and digital signals [1].



Analog Communication System

Figure 2 Analog communication system [2].



Digital Communication System

Figure 3 Digital communication system [2].



Figure 4 A typical communications network [6]