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## Leveraging technological tools in facilitating effective intergenerational communication in project management

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### Abstract

Effective communication is crucial for successful project management, yet challenges often arise due to diverse stakeholder preferences and the proliferation of communication tools. This study investigates the impact of age on communication tool preferences within project teams. Through a survey of professionals from various fields, we analyzed the communication tools used in their projects and their perceived effectiveness. Our findings reveal that age significantly influences tool preference, with younger generations favoring newer, more technologically advanced options, while older generations often prefer more traditional methods. To optimize communication in diverse project teams, project managers should carefully consider the age demographics of their team members and strategically select a combination of tools that cater to the preferences of all participants. By understanding these age-based preferences, project managers can foster more effective collaboration and enhance overall project outcomes.

**Keywords:** Project Management; Communication; Information Technology (IT); Project lifecycle; Communication tools; Project team

### 1. Introduction

In recent times, many developing organizations have realized that executing business processes successfully requires specific skills, knowledge, and tools. This realization birthed the emergence of project management. Project management has enabled organizations to achieve competitive advantage in their industry. Although there are many success factors attributed to project management, communication management is regarded as one of the most important because understanding the objectives and goals is dependent on communication that is concise and exact[1]. Professionals have constantly mentioned that projects that lack effective communication are doomed to fail.

The importance of communication in managing projects cannot be overemphasized. It spans through every phase of a project no matter the complexity, from initiation of the project idea to closeout stage. This is because a project is made up of a team of people who combine skills, knowledge and ability to achieve stakeholder expectations and goals [2]. These groups of people need to interact and communicate regularly to ensure their activities are aligned towards achieving a common goal. We can then define effective communication as the ability to convey information from a person, place, or group to another.

In past decades, oral/face to face communication was the most common mode of instant communication. Over the years, new modes of communication emerged, such as email, instant messaging and so on. From observation we can see that communication preference varies among generations. While some Generation X and Baby Boomers prefer oral/face to

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face communication, Millennials prefer emails, and Generation Z would rather use modern technology. The dynamics in different generations has contributed to the setbacks in communication management. However, modern technology has improved communication/knowledge sharing in project management.[3]

The purpose of this study is to recommend a more effective way to manage communication in project management, by utilizing emerging technologies and tools to achieve effective communication within various project management teams. Communication tools have contributed largely to the success of many projects in organizations by sharing real time information on a project as it progresses. As changes occur within the project, all team members and stakeholders need to be informed as well as kept up to date with the implementation of those changes. In project management, effectively engaging stakeholders is a major challenge that occurs as a result of varied interest and influence they have on the project. Understanding each stakeholder's interest in the project and implementing effective communication methods to meet their needs is very important to the success of a project. Project managers need to incorporate tools and techniques that enhance and support effective communication with stakeholders and team members, to minimize conflict.

To analyze people's perception on communication in project management, we surveyed a random sample of the employed population. The respondents consist of people from different age groups, industry, and sex. We compared different people's preference for emails and physical meetings to the use of technological communication tools, as well as different tools they often use for communication in projects. This information is helpful for understanding the project team and the communication tools that work best for them. In IT project, team members work interdependently, interact, and constantly exchange information. To effectively communicate, project managers need to understand the goals of the project, the project team and how to communicate using the most effective tools.

The outcome of this analysis and study reveals that the preference for communication tool varies among age groups and technological tools are most preferred by the younger generation compared to the older generation. This simply means that the use of technological communication tools is gaining more popularity as technology evolves. There is a drastic shift from people's preference for emails or commuting to a particular location to communication via the use of more advanced technological tools. In the latter part of this study, we suggest how project managers can utilize technological tools and techniques to effectively communicate with team members and stakeholders, such that the goals of the project are achieved.

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## 2. Understanding Project Communication Management

To discuss project communication management, we need to discuss what communication is. Communication is the ability to convey information from a person, place, or group to another. It is a two-way means of passing information in the form of thoughts, opinions, and ideas between two or more individuals with the purpose of building an understanding. What then is project communication management?

- It is a set of activities concerned with the generation, collection, presentation, distribution, secure and storage of information within a project and its environment. (2)
- Project communication management is the backbone to effective decision making and successful project.
- A large percentage of a project manager's time is spent on communication.

### 2.1. Principles of Communication in Project Management

There are certain principles that need to be considered when communicating with people within a project. They include:

- **Complete:** The communication should contain all the information required for the receiver to make the same conclusion as the sender.
- **Correct:** It is crucial that appropriate vocabulary and grammar is employed in addition to accurate facts. If one of these are inaccurate, the stakeholders may be distracted from the main objective.
- **Clear:** During project management communication is incomplete when project information is conveyed unless it is comprehended clearly, which is something that project managers must recognize. Since most project groups are made up of people from different disciplines, jargons should be avoided, the language and the structure should be kept simple [2].
- **Coherent:** To ensure information is consistent across all communication channels, the details of the information should have a logical flow and meet the needs of the audience.

- **Concise:** The key objectives need to be highlighted when communicating in a project, information should be non-repetitive to ensure that time is maximized..

## 2.2. Importance of communication in Project Management

When it comes to communication, there are two goals that are important when executing a project:

- The first goal is to keep the stakeholders informed about the project tasks, plan and changes that occur.
- The second goal is to create a cooperative and supportive culture within the project.

Therefore, having effective communication is an essential part of the project.

## 2.3. Stakeholder Engagement

Every project exists within a political environment that consists of people who have interests or stake in the outcome of the project. These people influence the scope, brief, budget, and outcome of the project either negatively or positively, to suit their own needs or requirements. They are called the stakeholders. When you engage stakeholders, you can identify and analyse their interest and impact on the project, as well as the areas of the project that they have concerns about, which may affect the project. This will help to focus on improving engagement and communication in those areas and achieve cooperation for project success.

## 2.4. How to Engage Stakeholders

To engage stakeholder, we can utilize a power interest grid to categorize the stakeholders based on those who have high interest and high influence on the project down to those who have low interest and low influence. For the stakeholder that have high interest and high influence, we have to ensure that they are actively participating at every stage of the project as they have much to gain or lose depending on the turnout of the project. Stakeholders that have either high interest and low influence or high influence and low interest need to be consulted as decisions are being made. Those that have low interest and low interest also need to be informed about areas of the project that concerns them.

When project objectives and requirements are well communicated, the project is most likely to succeed. However, if not properly managed, communication can go wrong. Galli [4] identified different ways communication can go wrong:

- Wrong mode of communication.
- Communication to the wrong person.
- Communication in the wrong form.
- Communication at the wrong time.
- Using the wrong communication tools.

All these factors must be greatly considered for the successful completion of a project. For instance, stakeholder engagement in project management requires intensive communication patterns. With varying degrees of interest and influence, it is important to understand when to communicate, how to communicate, the mode of communication, who should be informed and what should be communicated. Project managers should be able to understand the mode of communication that suits each stakeholder, team members and the project itself. In [5], project teams were formed from different departments within and outside the organization and were allowed to choose different communication tools to work with. This method helped to enhance effective communication, as team members were comfortable passing useful information as needed for the project to be successful. The tools used by different groups in this case include Google Drive, Hangout, Slack, Asana, Video Skype, etc.

In recent years, information technology advancement has developed more communication tools for effectively managing communication in project management [3]. Examples of these tools include Proofhub, Filestage, Chanty, Bit.ai, Microsoft Teams, Hipchat, Troop messenger, Zoom, G suite, Task world, Bloom fire, MediaFire, Jive, Yama, Krisp.ai. These types of tools support knowledge sharing and knowledge management activities vital to success in software projects and project management generally.[6]

In this study, our focus is on examining different communication tools to improve communication in project management internally and externally [2]. Information technology enhances connection of teams and people all over the world, positively impacting projects, businesses, and individual lives with the ability to communicate easily and at

an exceptional speed in a progressive digital world. In summary, as project managers and team members design communication management, choosing the most desired and favourable tools and methods of communication should be greatly considered [7]. When team members and stakeholders are not comfortable with the communication tool, it may lead to unnecessary barrier to the project.

## 2.5. Problem statement

Communication management in project management is not just about creating a communication plan but there should always be a way for team members to personally connect with each other with the aim of communicating in a clear and positive manner [1]. Even with the existence of Information Technological tools and systems, coupled with existing principles that guide project management, projects can still fail because of the lack of proper communication management. The aim of this study is to suggest to the project management community the best way to utilize emerging technologies to seamlessly work in a cohesive unit and achieve utmost clarity in communication within different project management teams.

## 2.6. Related Works

Alsulaimi and Abdullah [8] explained that when undertaking a project, it is important that the objectives of all stakeholders and participants are unified. No matter the audience, information concerning the project should be clearly communicated to everyone. The methods used involved here was taking surveys about 102 people. A Chi-Square test was conducted on the population from range 20-29 years old to range 60-69 years old and showed that the level of engagement in the project varied between those ranges. The same test was conducted to see how level of involvement will vary across education levels and it was seen that level of involvement across educational levels did not significantly vary. It was concluded that age affects communication/engagement level, and education level does not affect the communication/involvement level.

R Ganis and Waszkiewicz [5] discusses the experience of project teams with members from different disciplines and highlights the effects of choices made on communication channels and tools that affect the project deliverables. The method used here was analyzing two case studies of two interdisciplinary projects: SQUAD and BIM. Analyzing these projects. It was found that the common communication tool was Slack. Since the teams came from different disciplines, it was encouraged that each team choose the tool that suited them. It was noted that these teams chose understandable, easy to use, mobile tools. It was concluded that to adopt an agile and hybrid project management approach, teams have to pick tools instead of it being assigned by the project manager or organization.

Muszynska, et al. [1] explained that many organizations carry out their business tasks in a project-based approach, hence needing some way to manage it. One of the key things needed in a successful project is communication management as it helps the participants of these projects understand the goal to be achieved. However, with the existence of various communication tools, a lot of projects still fail. The method used in this paper is identifying and categorizing different communication management practices based on previous research and the categories was as follows:

- Strategic: This was linked with communication planning and project development. It ensures that team members are aware of their responsibilities up front and there is no room for ambiguity.
- Informational: This is linked with ensuring that information is properly collected and shared with everyone. It involves emails, chats, phone calls, sharing time zones and availability of individuals to enable others to contact them at the appropriate time.
- Emotional: Concerns building relationships and trust. This will entail more face to face, either through physical meetings or virtual video meetings.
- Practical: Setting clear rules, like response times, mode of scheduling appointments, etc.

Eriksson and Chatzipanagiotou [3] focus mainly on projects in software engineering. The method used here is analyzing the communication tools used on projects uploaded on Github. Even though project management teams may consist of individuals, the research focuses on what software engineers prefer to use when communicating with one another in a project. Information was obtained by querying GitHub Archive. To get data, the researchers concentrated on projects that were within 6 months at the time this research was carried out (2017/2018), it had at least 3 commits and 10 contributors. A python tool was developed using a series of regular expressions to extract the details about the communication tools used for the different projects. It found that the most popular were enterprise tools like Slack and Gitter. Emailing was on the lower end of the communication tools used. It concludes enterprise chat systems are playing a significant role in successful software engineering projects.

### 3. Methods and solutions

The method of data collection used here is a Likert scale. However, the option of being neutral is removed to avoid individuals from standing on the fence. We followed the work of R Ganis and Waszkiewicz [5] where case studies were reviewed on how individual teams picked their own tools leading to the success of a project. We also examined Alsulaimi and Abdullah [8], where the age and profession were brought into account while evaluating how these factors affect the level of engagement. We have conducted a survey on a random population of working-class professionals. We focused on three questions that would help us understand the respondent's most preferred communication tool. The three questions considered when surveying the sample population are:

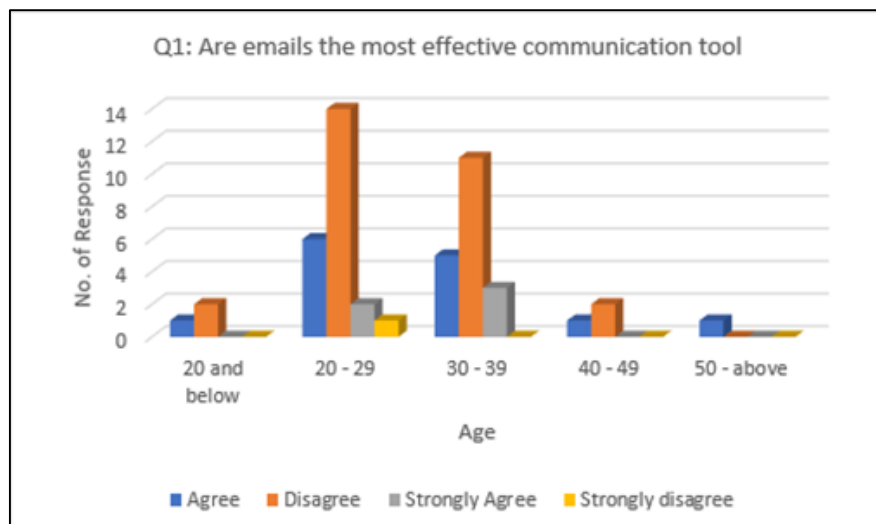
- Q1: Are emails the most effective communication tool?
- Q2: What communication mode do you prefer
- Q3: What communication tools have you used in a project?

Using the above method, we were able to analyze the responses gotten to understand the respondents' perception of what their most effective communication tool is. We went ahead to weigh the options of current technological tools against other communication methods like the standard emailing, physical meetings, and phone calls. There was difference in the consistency of tools used across the age groups. Finally, the results from the questionnaire helped to identify the tools commonly used by these professionals when working on projects.

### 4. Experiment and results

The data used for this study was generated from a survey of 48 people. These people consist of different age groups, fields, and gender. From the survey carried out on a random population, the following data was gotten:

- 8.33% of the response were from 20 and below
- 43.75% of the response were from 20 to 29
- 39.58% of the response were from 30 to 39
- 6.25% of the response were from 40 to 49
- 2.08% of the response was from 50 and above

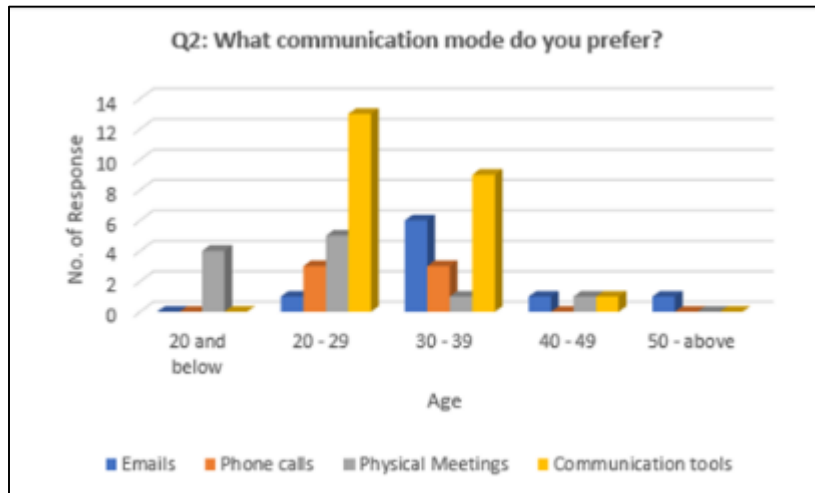


**Figure 1** Effectiveness of emails to other communication tools

From the survey question on the effectiveness of emails compared to other communication tools:

- 59.18% of respondents disagreed to Q1
- 28.57% of the respondents agreed to Q1

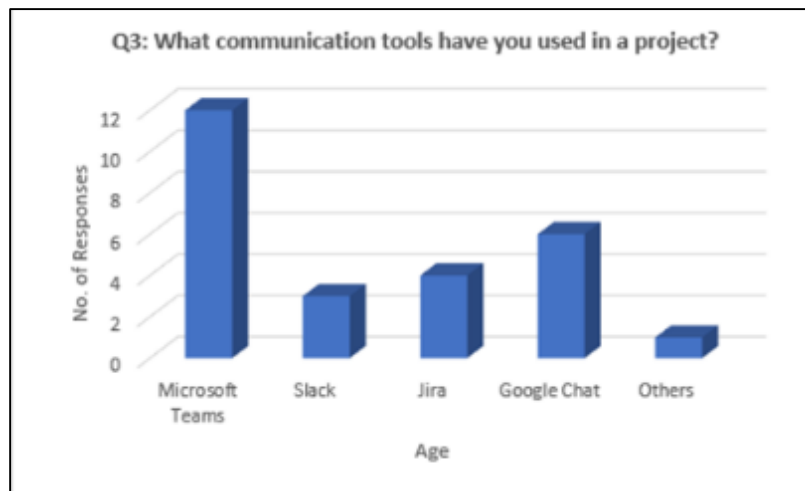
Based on this result, we can deduce that all age grades disagree to the effectiveness of emails over technological tools.



**Figure 2** Preference of Communication Modes across age groups

From the survey question on the preferred mode of communication while engaging in projects:

- 44.90% of respondents chose communication tools
- 22.45% of respondents chose physical meetings
- 18.37% of respondents chose emails
- 12.24% of respondents chose physical meetings



**Figure 3** Frequency of Communication Tools used in Various Projects

From the survey question on the preferred mode of communication:

- 35.63% of respondents use Microsoft Teams
- 22.99% of respondents use Google Chat
- 19.54% of respondents use Slack
- 12.64% of the respondents use Jira
- 9.20% of respondents use other tools

## 5. Conclusions

Analyzing the outcome of our survey we found that a great percentage of the randomly selected population disagree to emails being more effective than other technological communication tools. However, looking into the age groups we find that this answer is only averagely consistent between the age groups of 20 to 49. For individuals above 50, the

response may likely be the other way around. When looking at the preference of each in terms of the mode of communication, most of the population preferred using other technological tools compared to the standard emailing, physical meetings, and phone calls. Analyzing the data, we can see that the older the age group, the more chances that other modes of communication will be used as well.

Evidently, technological tools in project management have become more popular in the workforce than email, physical meeting, and phone calls. Communicating with stakeholders have become more effective than before because real-time information and reports can be easily shared to meet their expectations. Communication in project management is inevitable because it runs from the initiation of the project to the close out stage. From our experiment, we suggest that the choice of communication tools should be dependent on the project and what works for the project team members. Project objectives tend to be more effectively executed using what suits the project and the team members.

The integration of emerging technologies like wireless sensor networks (WSNs) and machine learning can revolutionize various industries. For instance, WSNs and machine learning can enhance animal tracking and decision-making [9]. Similarly, big data and predictive analytics can transform healthcare by predicting disease outbreaks and personalizing treatments. Furthermore, decentralized predictive models, supported by blockchain, can optimize procurement strategies in manufacturing networks. These technologies promote transparency, security, and compliance, essential for effective project management.

#### Future work

For future works, we would like to investigate how well organizations integrate the communication component within their project management tools and find out if this helps with increasing the chances of project success or failures.

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### Compliance with ethical standards

#### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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