

An Assessment Towards the Impact of Online Communication Tools Used by The National Irrigation Administration – Upper Pampanga River Integrated Irrigation Systems’ (NIA – UPRIS) Employees to Boost Work Productivity

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Abstract— Work productivity is crucial to every organization in meeting targets and accomplishing goals within a given timeframe as the performance of every member contributes to the attainment of its progress on a daily basis thus an assessment of the impact manifested by establishing an innovative way of imparting development through attached groups and partnering firms is pivotal inasmuch as reviewing its efficiency towards fulfilling the objectives, improving the quality of work done, mandating and enhancing proficiency within employees, and defining its boundaries to where the interest and intention sets apart for the benefit of both personal and organizational gains. Part of the objectives of the National Irrigation Administration – Upper Pampanga River Integrated Irrigation Systems (NIA-UPRIIS) is to provide adequate level of irrigation service on a sustainable basis in partnership with the farmers and local government units as well as to give technical assistance to institutions in the development of water resources for irrigation; catering further the improvement of agricultural productivity to more than 150,000 hectares of agricultural lands in Central Luzon. Relative to this, the agency executes processes to establish coordination of plans and programs to each of its Irrigation Management Offices across the jurisdiction of its service area alongside with its attached agencies and associating government institutions as aligned with its vision to be a professional and efficient irrigation agency contributing to the inclusive growth of the country and in the improvement of the farmers' quality of life. NIA-UPRIIS then employs workforce responsible for the implementation, supervision and monitoring of all of its in-progress activities and operational processes aimed to serve its corresponding farmer beneficiaries and organized irrigator's association. After carefully analyzing the survey results, the majority of the NIA – UPRIS Head Office employees already established digital connection within their colleagues from different agencies though recognizing its impact as somewhat

considerably helpful and convenient towards daily communication and collaboration through obtainment of essential information needed, conveyance and accessibility of data, and maximized reach of sending important announcements and memorandum, the undoubted conventional way of imparting ideas, thoughts, and discussion reflects the division of employees' perspective on which way they prefer to effectively and efficiently perform such task.

Index Terms—Online communication tools, Digital Communication, Work Productivity, Irrigation System.

1. Introduction

Throughout the age of technological advancement towards various fields that evidently brought the world closer and better connected, online communication tools have been extensively used for daily transactions and operations of businesses, agencies, and organizations more significantly during the height of the pandemic as any face-to-face dealings, arrangements, and meetings are prohibited due to the occurring virus disease threats and other health hazards.

Manuscript revised December 09, 2023; accepted December 10, 2023. Date of publication December 12, 2023.

This paper available online at www.ijprse.com
ISSN (Online): 2582-7898; SJIF: 5.59

Private companies and government offices have already resorted to the modern way of conveying data, disseminating information, consulting urgent matters, and even conducting system management processes as delivery to the person/s and group/s concerned is prompted in a short amount of time compared to the conventional and traditional way of sending either a private message or a formal letter though productivity level and efficiency range are quite debatable prior to existence of several erroneous interpretations and conflicts within standard procedures and methodologies.

This research aims to assess the impact of online communication tools and to present vital its effectiveness towards fulfillment of irrigation management duties and obligation throughout the service area under the jurisdiction of the National Irrigation Administration – Upper Pampanga River Integrated Irrigation Systems.

2. Review of Related Literature

Productivity and social networking in the modern economy Bernolak (1997) defined productivity as 'how much and how well we produce from resources used. If we produce more or better goods from the same resources, we increase productivity. Or if we produce the same goods from lesser resources, we also increase productivity'. In this article, 'productivity' refers to the time spent by an employee actively executing the job he or she was hired to do, in order to produce the desired outcomes expected from the employees' job description.

Recent studies, for example, Golder, Wilkinson and Huberman (2007), Arvanitis and Loukis (in press) and Coyle and Vaughn (2008:13-17) concur that social networks are typical characterizations of human behavior to fulfil the need to communicate and connect with people they know, meet new people who share a common interest, collaborate, participate and share information and knowledge as well as gain new knowledge. Generally, these are also the reasons why individuals engage in social behavior via the Internet.

A. Online social networks and social networking

The concept of social networking is not new. Human interaction inherently promotes the formation of networks through social contact (Tapscott and Williams 2007:10). Collaboration used to take place on a much smaller scale between relatives, friends and associates in households and communities. The present situation has changed substantially and today one rarely finds an organization that functions without group collaboration and accordingly applies ICT in its collaboration space. In this space, social networking technology, for example, allows members to create personal profiles and network with other members, as well as with other organizations. Members network by adding other members as 'friends', posting public and private messages, participating in discussion forums and engaging in other forms of digitally mediated social interactions (Vander Veer 2008). Through the development of OSN technologies, it is now possible to

network much quicker and reach a much larger expert audience.

B. Digital communications (DC)

Pearce (2009) has stated that in the past decade, communication in crisis was reactive; once the disaster happened, communication would follow. This put employers in a challenging situation during a pandemic when the working environment shifted to telecommuting. For organizations, telecommuting may decrease costs and increase productivity, but it is an increase in employee responsibilities or downsizing. This is further substantiated by Chan et al. (2020) and Simon et al. (2015) in which synchronously, the humanitarian organization projects use different digital communication tools, from emails to social media, that are effective during Covid-19 lockdown. Dingel and Neiman (2020) added that the purpose of digital communications tools is to connect socially and professionally during a lockdown. Apart from leadership, effective and transparent communication is a crucial element identified while working on the projects as cited by Orangefiery (2020). However, Nguyen et al. (2022) mentioned that digital transformation could mean a higher or lower presence in the digital space.

C. Ease of use of digital tools

Das (2018) elaborated that with the influx of information and technological advancement, people are prone to use different mediums for efficiently connecting and being productive. Every day, new technologies like augmented reality (AR), artificial intelligence (AI), virtual reality, and machine learning are helping to create and innovate new technological tools for sharing, curation, and content marketing. Artificial intelligence (AI) supports language and content generation, customer-oriented chatbots, and human voice search.

Goodhue and Thompson (1995) concurred that different technological mediums help employees and users achieve personal and professional goals. If the technology adopted has a rugged user face and staff face challenges in using it, the tool would be unimportant to individual and team/ Organizational performance. It may cost the organization financially, but it will not contribute to achieving the goals on the ground; the performance may get affected. Furthermore, the organizations can improve the perceived ease of use of digital communications tools users face that they opt for using during the initial design. The argument that low user acceptance is due to the user's high efforts contrasts with the belief that the same user may put more effort if the system would help meet the desired outcome.

Conclusively, in research conducted by Sudhakar (2012): it shows that communication also plays a salient role in project success. Communication has been continuously evolving with technological advancements. Social media's proliferation has made a simple message evenly essential and critical when coming from the official handle of a company or an organization. In the current digitalized time, digital

communications have affected performance management, which is why organizations are moving to cloud-based networks and working remotely. The rise in cloud spending is 37% as the Pandemic accelerates the virtual workplace.

Sayegh (2020) further expressed that moving to a virtual workplace project needs the latest digital communication and performance measures tools, as traditional performance management models are redundant, especially during a pandemic. Lacking good communication policies and strategies has often resulted in miscommunication between the stakeholders and management, leading to project failure.

D. About NIA-UPRIIS

The National Irrigation Administration (NIA) is a government-owned and controlled corporation primarily responsible for irrigation development and management. Its mandate is to provide irrigation services to the farmer-clientele and stakeholders it serves to improve agricultural productivity and increase farmer's income.

Upper Pampanga River Integrated Irrigation Systems (UPRIIS) is an Integrated Irrigation Systems Office of the agency that supplies irrigation water to most part of the Province of Nueva Ecija and portions of Bulacan, Pampanga, and Tarlac. It draws out irrigation water from Pantabangan Dam and other National Irrigation Systems (NIS). The dam was established in 1974, providing efficient irrigation services to more than 150,000 hectares of agricultural lands in Central Luzon.

The UPRIIS Head Office provides the overall supervision of the operations & maintenance of the irrigation systems, covering six (6) division offices including Interim Division VI, as well as the construction of irrigation projects, and restoration and rehabilitation of existing irrigation systems. In line with these functions, the Irrigators' Associations (IAs) are considered as valued partners. The distribution and control of irrigation from its main source, the Pantabangan Dam, down to the lowest irrigation area are being efficiently taken care of at various levels.

This research focuses on the assessment of the impact of presently accessible online communication tools already utilized by the employees of the National Irrigation Administration – Upper Pampanga River Integrated Irrigation Systems Head Office that supplements their way of coordination and collaboration to other offices and agencies aligned within the intention to further speed up accomplishment and therefore enhance work productivity. Specifically, this aimed to answer the following questions, to wit:

- What is the percentage of NIA-UPRIIS Head Office employees having substantive knowledge and adequate proficiency on employing online communication tools to hasten their accomplishment within the day? Accordingly, what does it signify?
- What does the NIA-UPRIIS Head Office employees' experiences on exploring and applying online

communication tools for their daily work denotes in terms of effectivity and efficiency of generating progress towards their accomplishments under a given timeframe?

- What can be concluded within obtained percentage of NIA-UPRIIS Head Office employees corresponding to each question asked with respect to their practices and strategies on adopting online communication tools as means of coordination to division offices and other attached agencies to further enhance work productivity?

The purpose of this study is to assess the impact of administering widely accessed online communication tools that are being handled by the employees of National Irrigation Administration – Upper Pampanga River Integrated Irrigation Systems. This study is aimed at examining the current impact of employing these online communication tools upon its application towards daily transactions, coordination to division offices, and collaboration with linking agencies. Associated with this, the questionnaires provided with the target respondents are intended to gauge and scrutinize the effect of modern-day digital communication beyond performance of the employees. The results may also promote significance of establishing necessary policies and further training that shall guide the employees for effective and efficient communication relevant to their coordination and collaboration within irrigation agencies, other government institutions, and even private organization through application of technological advancement.

3. Methodology

A. Research Design

The study incorporates a quantitative approach in determining and analyzing the problems encountered relevant to being descriptive in terms of research design as description of the characteristics of the population or phenomenon studied is obtained and assessed based on the percentage quantified upon feedback from the respondents throughout questionnaires being given to them that reflect their knowledge, experiences, and practices towards administration of online communication tools throughout performing their main functions relevant to coordination and further collaboration in an effort to boost work productivity.

The methodology being presented entails majority of its concepts on finding the corresponding interpretations within numerical data gathered from the responses of the employees than the implications of its existence and causality. Moreover, the technique of data gathering shall be structured thus the researcher has chosen a quantitative approach for the study. On the other hand, to further study and describe the importance and management of construction safety, the research is suited for a descriptive approach intervention.

Therefore, descriptive quantitative research is fitted to the study considering the outline of the data collection advantage on which produces a substantial information and data that can be utilized for future research or even developing a hypothesis of a research object. Additionally, the quality and integrity of data is secured through conduct of the research in the respondent's natural environments and field of supposed expertise.

B. Research Locale

The study focused on the vicinity to where the National Irrigation Administration – Upper Pampanga River Integrated Irrigation Systems (NIA – UPRIIS) Head Office Administration Building and its appurtenant offices at Maharlika Highway, Cabanatuan City, Nueva Ecija is located; catering a total of 136 employees including the 81 of the workers who are currently performing their duties and upholding necessary transactions within their designated stations.

C. Population and Sampling

Inasmuch as the researchers identified the population to be the employees of the National Irrigation Administration – Upper Pampanga River Integrated Irrigation Systems (NIA – UPRIIS) Head Office and found out that only those employees whose major duty and whose part of their main function incorporates coordination and collaboration within irrigation agencies, other government institutions, and even private organization is subjected for the assessment, a Simple Random Sampling Technique is applied in view of making a statistical inferences about the said population thus ensuring high internal validity as randomization is the best method to reduce the impact of potential confounding variables and high external validity as it represents the characteristics of the larger population.

D. Research Instrument

The researcher established and distributed questionnaires administered through Google Forms to gather the suitable and relevant information necessary for the quantitative analysis as part of the assessment of the impact of online communication tools as reflected through the responses of the employees under NIA – UPRIIS Head Office on their knowledge, experiences, and practices upon processing daily work activities. The organized questionnaire is utilized to obtain the information concerning their comprehension, engagement, and procedure of administering online communication tools that involves a structured way of aiming to arrange the gathered data. The survey shall be transcribed for superior evaluation of the information. The target respondents will be given a set of essential questions for them to answer on either a “Yes” if they agree or confirm or “No” if not. The content of questionnaire is for the employees assigned and whose part of their main functions is consistent communication to offices concerned.

E. Data Collection

The survey questionnaire manifests a simplest and most directed process in terms of data gathering relevant to a quantitative approach. Following the accomplished questionnaire from the respondents comes the formulation of a percentage technique correspondingly on each answer to the following questions. Thereafter the researcher plotted the obtained data on a graph consistent with the project-in-charges' responses within each question asked.

F. Data Analysis

The data obtained and consolidated through the response from the survey questionnaires were statistically analyzed with the application of percentage technique which is utilized for the quantification and calculation of the knowledge gathered in this study predicated on the responses of the determined respondents as it is the most commonly used for the measurement of average percentage corresponding to each detailed answer towards a single question.

The formula to be used was: $\% = F / N \times 100$.

Where,

F = answer

% = percentage

N = number of respondents

4. Results And Discussion

A. Presentation, Analysis, and Interpretation of Data

Table 1. This table shows the number of respondents with their corresponding office/division who answered the survey questionnaires from the NIA-UPRIIS Head Office. Among population of 81 employees involved in daily communication and coordination towards other irrigation management offices and attached agencies as part of their duties and responsibilities at work, a sample size of 68 or more measurements/surveys entails a confidence level of 95% that the real value is within $\pm 5\%$ of the measured/surveyed value. Furthermore, it reflects that forty-seven (69.10%) of the respondents are from the Engineering and Operations Division (EOD), fourteen (20.60%) are from the Administrative and Finance Division (AdFin), and seven are from the Office of the Department Manager (ODM). Overall, the results of table 1 show that there is a just representation of respondents considering that the majority corresponds to the core function of the agency. This suggests that the findings of the study are likely to be generalizable to the wider population of NIA-UPRIIS Head Office Employees involved mostly in coordination and collaboration across division offices and other attached agencies relevant to the main objectives of the agency.

Table.1.

The number of respondents with their corresponding office/division who answered the survey questionnaires from the NIA-UPRIIS Head Office.

Office/Division	No. of Respondents	Percentage
EOD	47	69.10%
AdFin	14	20.60%
ODM	7	10.30%
Total	68	100.00%

Table 2. This table shows the age range of the respondents with a given generational classification. Twenty-one from it are from “Gen Z” which ages falls between 18 – 26 years old (30.90%), thirty-four of them are so-called “Millennials” which ages are within 27 – 42 years old (50.00%), twelve are under so-called “Gen X” ranging from 43 – 58 years old (17.60%), and one falls from the category of “Boomers II (also known as ‘Generation Jones’)” who ages from 59 – 68 years old (1.50%). This is consistent with the fact that throughout emergence of technological advancement, the gap between generations tends to define a different outlook on social norms or what a career path should look like, every generation has their values and beliefs, often influenced by their experiences. One of the most noticeable generational differences is in communication styles. Over time, there is a clear transition from in-person communications to email, text, and emojis. And with that transition comes differences in how the generations communicate at work. However, workplace communication can be fraught with unintended innuendo, power plays, and miscommunication. Learning how to navigate generational divides can streamline team communications between different generations in the workplace.

Table.2.

The age range of the respondents with a given generational classification.

Age/Generation	No. of Respondents	Percentage
18 – 26 years old (<i>Gen Z</i>)	21	30.90%
27 – 42 years old (<i>Millennials</i>)	34	50.00%
43 – 58 years old (<i>Gen X</i>)	12	17.60%
59 – 68 years old (<i>Boomers II</i>)	1	1.50%
Total	68	100%

Table 3. This table shows the types of online communication that the respondents from the NIA – UPRIIS Head Office consistently use at work for coordination and collaboration

purposes. Chats (online text messages) garnered the most responses from the employees as this entails the use of their mobile phones at hand whenever urgent communication and immediate responses is needed at a specific task. Majority of them harness the accessibility to internet connection and wireless fidelity or hotspot through their personal computers provided by the office to further employ such activity and perform the duties assigned to them. Chats can be explained like online text messages which occur in real time. This shows that the accessibility of this primarily depends on the employee's accessibility. This tool is availed by technical members. Instant messaging is a downloadable program which people avail to communicate. Web based chat are online chats that are accessed through a normal browser.

Table.3.

The types of online communication that the respondents from the NIA – UPRIIS Head Office consistently use at work for coordination and collaboration

No. of Projects	No. of Respondents	Percentage
Video Conferencing	7	10.30%
Chats (online text messages)	50	73.50%
Electronic mail	2	2.90%
Social networks	9	13.30%
Total	68	100%

Table 4. This table shows the answers of the respondents. The survey results indicate that the majority of the employees agreed that online communication tools provide a groundbreaking impact towards their daily performance at work and therefore enhances productivity as to effectiveness and efficiency of digital communication is evidently marking upon duration of task implementation. However, still the respondents are divided as to whether they find online spaces more convenient and effective for collaboration than meeting with them face-to-face.

5. Conclusion

From the 68 respondents of the National Irrigation Administration – Upper Pampanga River Integrated Irrigation Systems (NIA – UPRIIS) Head Office employing online tools for daily communication and coordination purposes, the impact that surrounds the willingness and strategy to boost work productivity based on established knowledge, gathered experiences, and repetitive practice was assessed and further determined.

At the expanse of emerging digitalization of every means to become innovative and productive to boost performance at work, the effectivity and efficiency of the presently-used online

Table 4
The answers of the respondents.

No.	Question	YES	NO	Interpretation
1	Does application of such online communication tool make it easier to distribute information at scale?	68 (100.00%)	0 (0%)	It signifies that all of the respondents corresponds to the appreciation of a more dynamic and advanced distribution of information at scale through the application of online communication.
2	Do you establish necessary employee communications within just a few minutes through the use of digital communication tools?	68 (100.00%)	0 (0%)	It indicates that all of the respondents employs prompt communications towards each other even those from other offices through the use of digital communication tools.
3	Do you get the essential information quicker by automating messages than the conventional way of receiving it through a written memorandum?	67 (98.50%)	1 (1.50%)	Almost all of the respondents coincide with obtaining the essential information sooner than receiving it through a written memorandum. A sudden directive from the Central Office of other superior agencies requires speedy compliance and rapid consolidation of data suggesting means to convey the documented information needed as soon as it is available in any way possible.
4	Do you consider digital communications a reliable workplace information hub in terms of bigger storage capacity and accessibility from nearly any device?	68 (100.00%)	0 (0%)	This reflects that all of the respondents already adapts within occupying the online world as a workplace information hub manifests reliability and accessibility in terms of a larger storage capacity and proximity even not within the office premises.
5	Provided that the information obtained is really accessible, do you think it's easier now to keep employees constantly up-to-speed?	65 (95.60%)	3 (4.40%)	It reveals conformingly to the aforesated interpretation based on the previous question that all majority of the respondents greatly affects their way of access through data and information at the expanse of an established digital world.
6	Do you feel more engaged in the workplace throughout the existence and intervention of online communication tools towards coordination to other offices and agencies?	64 (94.10%)	4 (5.90%)	Throughout the influence of the constantly changing and consistent inclined efforts to bring the advancement of technology between two employees coordinating with each other, the greater proportion of the respondents believe they have felt more engaged in the workplace upon the existence and intervention of online communication tools .
7	Do you find online spaces more convenient and effective for collaboration than meeting with them face-to-face?	31 (45.60%)	37 (54.40%)	This perspective draws a line as to who consider the presently emerging online space more convenient and effective for collaboration than those still prefer meeting with them face-to-face. Though attainment of online information is secured, there are drawbacks as to mutually conveying thoughts and ideas divides those who are in favor of personally seeing each other with more than 50% of the respondents agreeing with it.
8	Do digital feedback tools provide a channel for employees to continuously share their ideas, opinions, and concerns?	61 (89.70%)	7 (10.30%)	It shows that the majority of the respondents still concurs to the way these digital feedback tools traverses a channel of ideas, opinions, and concerns considering the distance and travel time between two communicating agencies.
9	Do you perceive these digital communication tools helping to strengthen employee bonds by making it easier to facilitate virtual team building and communication?	57 (83.80%)	11 (16.20%)	The impact of online communication tools represents an innovative pattern to strengthening employee bonds by making it easier to facilitate virtual team building and communication with more than 80% of the respondents agreeing with its support towards enhancement of work productivity.

communication tools demonstrate how the proximity of two employees working and coordinating with each other upon two different offices becomes closer each day inducing connection and camaraderie with application of professionalism and strategic management on maximizing its use without compromising the grounds for operational policy and work ethics at hand.

6. Recommendation

Based on the evaluation of impact of online communication tools used by the NIA – UPRIIS’ employees to boost work productivity, the following recommendations are put forth to enhance efficiency and effectivity of their performance:

- Conduct seminar-trainings that shall tackle data privacy orientation and cyber security application further to raise awareness within confidentiality of every information shared through online communication.
- Develop strategic plans that encompasses all possible way to minimize interruption within the internet connection to further assure the smoothness of discussion and conveyance of ideas through simultaneous interaction.
- Invest on accrediting application software and online tools that shall guarantee an active collaboration of data and files shared within a unified digital space.
- Implement exploration of features embedded within digital communication tools to maximize its use and therefore calibrate the level of output produced and the quality of performance comprehended.
- Encourage other employees to adapt with constantly changing trend of digital communication through establishing an overview of the whole systems of application and assisting them upon implementation.

Acknowledgment

We, the researchers, would like to express their heartfelt gratitude to all those who have contributed to the completion of this research paper. First and foremost, our deepest appreciation to our supervisor, Dr. Joefil C. Jocson. Your expertise and unwavering support throughout this research have been indispensable. We are also extending our gratitude to the participants who generously dedicated their time and shared their honest responses. Their willingness to contribute to this research has been invaluable in gaining insights and findings.

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