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Symmetric Modeling of Communication Effectiveness and Satisfaction for Communication Software on Job Performance

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Abstract: Job performance is an issue highly related to the repetition of one enterprise. Because of the popularity of the Internet, consumer electronics have boomed rapidly and remove the space limitation stems. Users in the Taiwanese community send messages or share information through communication software that leads to more dependence from business. Various business problems have been solved and job performance has increased through the diversified functions on communication software. Thus, this research supposed that staff are willing to continuously use communication software LINE(a new communication app which allows one to make FREE voice calls and send FREE messages), and they agree that the varied functions of communication software would mean that information delivery more symmetrically affects their job performance. According to the research outcomes, communication effectiveness significantly influenced communication satisfaction and job performance, and communication satisfaction significantly influenced job performance. As organizational communication must be conducted through media that disseminate information, and different media have different communication effects, the relationship between communication effectiveness and job performance was completely mediated by communication satisfaction. The research suggested companies or organizations use LINE as a symmetric communication method to not only help employees improve their job performance, but also help enterprises achieve their goals or raise the profit, or even steady development for enterprises.

Keywords: symmetric model; communication effectiveness; communication satisfaction; job performance

1. Introduction

Exchanging information by multiple roles connects the social activities in our daily life, such as commercial activities, academic activities, and personal activities. This information or message exchanges often relay thoughts and emotions, and this kind of behavior is called communication. The way of information exchange is quite diverse; formal ways of exchanging information include through writing or language. Since the Internet network has been developed, electronic communication began to prevail, breaking the limitation of time and distance, which means both sides can perform information exchange without time and place limitations. Mobile devices have become more and more popular and broken through the limitation of space. With the use of the network, users can transmit instant messages anywhere using applications. The transmission methods of information have also become more diverse, such as multi-person consultations or discussions, instant image or

video transmissions, and even paying function that has been extra added on some communication software. As the public displays increasing reliance on mobile devices, using instant communication applications as the pipeline in commercial applications can not only solve many business problems in an instant, but also help enterprises improve their business performance.

A team of Taiwan Institute for Information Industry (FIND) surveyed and analyzed the usage behavior on a Taiwanese community website. The survey found that the top two most frequently used by Taiwan people were LINE and Facebook [1], as shown in Figure 1.
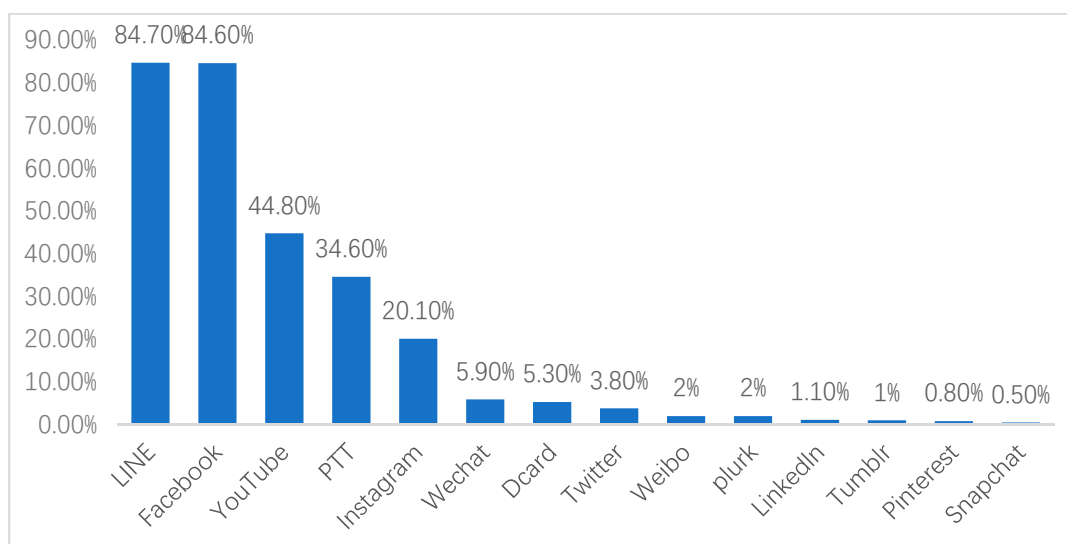

Figure 1. Frequency of using communication application more than three times a week [1].

As the most frequently used communication application, another survey about LINE, which was done by The Nielsen Company, found that LINE is a combination of communications, payments, entertainment, and other features [2]. Making calls or sending instant messages is the users' primary behavior, as shown in Figure 2.

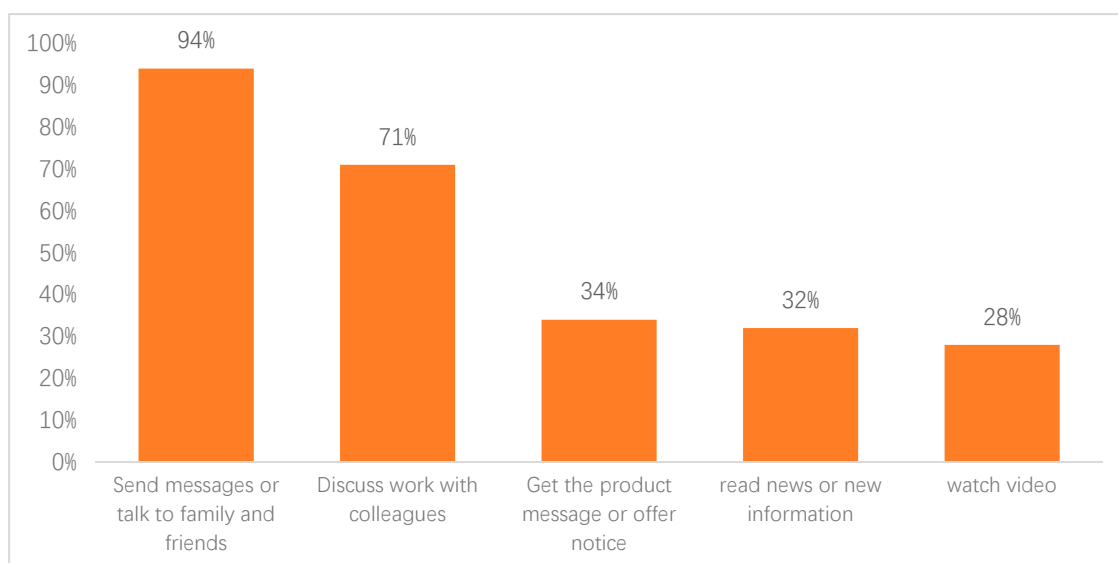

Figure 2. Most frequently used features of LINE [2].

LINE is a mobile application that can be used in mobile devices like smart phone, tablet, or even computer. LINE was first developed for individual users, which means individuals can send

texts, stickers, or pictures to each other. With the development of the program, users can also make real-time video and set up a group. Group members can send messages, stickers, pictures, videos, audios, or even files; make audio or video calls with other members; and create albums or notes within the group. Many companies or organizations, thus, set up groups for different departments or units. They even set up groups for business partners or cooperators. The main intention is to facilitate communication and to reduce misunderstanding or mistakes.

According to the 2016 survey from Taiwan Institute for Information Industry, the application most people visit weekly was LINE, whereas Nielsen's 2016 survey also found that 91% of Taiwan people had used LINE in the last seven days, which means LINE was the most used communication application in Taiwan. At the same time, according to the same Nielsen's 2016 survey mentioned above, two of the most engaged behavior on LINE was to communicate with family and friends (94%) and to discuss work (71%). Unlike the traditional phone or application with text-only messaging, LINE has become the first choice to make contact with people in Taiwan. Therefore, it is worth exploring whether LINE's competence in communication effectiveness and for commercial communication can positively affect job performance.

As LINE is a new and recent software that has just appeared in Taiwan since 2012 [3], there is no other research discuss about the communication effectiveness, communication satisfaction, or job performance about LINE. Due to the lack of previous research, this research held that the more willing the workers from different levels of enterprises of different occupations, such as education organization, vehicle industry, and financial industry are to continuously use LINE as communication, the more they can use LINE's diversified function of information transmission, and certainly they are satisfied with the results of the information transmission, thereby continuously improving their job performance. Symmetrically, if the communication effectiveness is high enough to accurately and smoothly transmit messages, people within the company will be satisfied with the results of communication, and ultimately lead to improved job performance.

2. Literature Review

2.1. Communication Effectiveness

Carl Rogers, an American psychologist, said that active listeners not only listened to what the other person was saying, they also tried to understand and respond to the feelings behind those words, and would place themselves in the speaker's position to understand the message deeply [4]. Whether expressing one's opinions or ideas, or consulting or discussing with others at work, effective communication is essential, and effective communication can not only bring the membership closer, but also help members build a commitment to the organization, willing to contribute to the organization [5]. According to the Sproull and Kiesler's study of the situation about users self-exposing on the Internet, the Internet did help users expose themselves faster and deeper [6]. Yang believed that language cues can compensate for the lack of non-verbal cues, and that both parties could use online communication to subtly arrange the meaning of language and words. As people interact on the Internet over time, intimacy can also be created between the parties and help people expose themselves [7]. Levinger suggested that the transition in self-disclosure relationships begins with a shift from superficial revelations to intimate revelations, which means that the longer people communicate with friends on the Internet, the more intimate they feel [8].

Effective organizational communication depends on appropriate communication mechanisms and media [9]. As organizational communication must be conducted through media that disseminate information, and different media have different communication effects, the communication media chosen to be used by the organization affects their ability to process information, to learn, and determines the results of communication. In addition, the medium and methods of communication used by organizations also influence their behavior patterns [10]. Comparing to an environment with a high

social presence, there is usually more information hiding and untrustworthy behavior in a low social presence environment [11].

In addition to exploring people's feelings of the existence of other participating individuals through digital media, in recent years, social presence has also begun to study the social cues contained by the digital media itself through interactive forms, so that people can produce a presence of a social actor. This social perception does not come from others involved in the media, but from the social cues provided by the media itself [12]. Instant messaging tools are mostly used in text-based communication, but there are also emoticons (emojis) available to users. Social context cues can be divided into two categories: dynamic and static. Emoticons (emojis) are dynamic and a substitute for facial expressions, it should be able to achieve more communication help at the social context level. Ambler believed that communication effectiveness could be assessed from the degree to which the sender can select and match the appropriate communication medium according to the situation and the extent to which the recipient correctly understands the message [13]. Gray believed that only by mastering the goal of communication can it be able to further measure the effectiveness of communication, and if the sender is not clear enough about the communication objectives, then there is no basis for measurement of communication effectiveness [14].

The key to successful communication is the correctness of information transmission, which was not easy to occur if there are different perceptions between the sender and the recipient. Successful communication can also be called effective communication. Effective communication can help deliver the correct message between employees, solve problems, and successfully achieve organizational goals.

2.2. Communication Satisfaction

Hargie and Dickson clearly pointed out that communication was the process of conveying a message that allowed two parties to understand and influence each other through sharing and building common perspectives [15]. Li and Tsai defined communication satisfaction as the different communication levels and forms in an organization, and the satisfaction levels of the individual members with their perception of quality and quantity [16]. Communication satisfaction relays a level of recognition. Communication was also a marketing process, marketing itself in the workplace to give cognitive subjective feelings. Communication helped employees to improve their productivity, the main purpose not only was meant to increase mutual understanding, avoiding misunderstanding between superiors and colleagues but also let one's professional ability to be found and one's job performance was able to be seen. Communication in the modern workplace symbolized as a positive image. Hecht defined communication satisfaction as an emotional response to the achievement of communication goals and expectations [17,18].

Krone, Jablin, and Putnam believed that there are four characteristics of communication: communication frequency, communication mode, communication content, and communication direction [19]. Communication frequency refers to the number of contacts between members of the organization. The more frequent communication involves between supervisors, volunteers, and full-time personnel; the closer the relationship between the members of the organization and the organization will perform. Communication mode refers to the channel used to convey information, that is, how the supervisor delivers the information to the members of the organization. According to the organizational structure, organizational communication can be divided into two categories, formal communication and informal communication. Formal mode refers to non-private pipelines, such as memos, group meetings, and other communication pipeline and methods that the supervisors trust or depend on. In contrast, the informal mode is very private, and it is often like a verbal, face-to-face individual teaching, and a temporary and improvisational communication pipeline [20]. The communication content is not referring to actual messages conveyed, but is related to the extent of direct communication to which the sender used in order to change the recipient's actions. Further, command-style information is direct communication, and vice versa. The communication

direction refers to the change or flow of information horizontally and vertically within an organization. The communication flow between supervisor and subordinate initially occurs in a single direction, but the current human management environment has changed a lot. Schmuck and Runkel believed that the direction of communication has changed to be a loop with feedback, and communication is rarely one-way, it should be two-way.

Robertson pointed out that ideal communication can establish a good connection between managers and employees, but not only for sharing information and ideas [21]. Therefore, the level of leadership communication behavior was different comparing with other organizations. If the leader could understand the leadership's organizational communication characteristics, along with the communication technology, communication would be easier to succeed naturally.

After the employees started to use the communication software as the communication channel, they were able to produce a sense of satisfaction in communication when they achieved a communication smoothly and completed the tasks delivered by the organization, which was the main purpose of communication as they were able to gain satisfaction through the effectiveness of message transmission in communication.

2.3. Job Performance

Job performance results from the actions of the members in the organization and is expected by the organization and its members to be achieved with minimal resources [22]. According to Campbell's research structure, Borman and Motowidlo proposed that job performance is divided into task performance and contextual performance [23]. Task performance refers to the outcome of an individual's work that directly relates to the organization expects, and is judged by whether it meets the requirements of a formal role [24]. Contextual performance refers to the actions of an individual who voluntarily performs informal activities; adheres to complete the task; is willing to cooperate with others; follows rules and procedures; and is able to endorse, support, and defend the organization's goals.

Wright and Boswell measured job performance in five perspectives, which are support, goal Emphasis, team building, workshop facilitation, and global rating [25]. Castro, Dounlas, Hochwasser, Ferris, and Frink represented employees' performance with eight characteristics: work habits, planning and analytical skills, job knowledge, management skills, communication skills, developments in other aspects, interpersonal relationships, and overall assessment [26]. If a performance assessment could be performed properly, it would not only enable the employees to understand the benefit of executing it, but also affect the work efficiency and the mission direction in the future [27].

The pursuit of an enterprise is to maximize job performance with limited resources. Under such conditions, the joint efforts of all members are necessary. Therefore, it is necessary for all members to stay together and achieve their goals.

3. Research Design

3.1. Research Assumptions

As discussed in the previous section, Levinger [8] suggested that the longer people communicate with friends on the Internet, the more intimate they feel. Krone, Jablin, and Putnam [19] believed that the more frequent communication occurs between supervisors, volunteers, and full-time personnel, the closer the relationship between the members of the organization and the organization will perform, meaning higher communication satisfaction, and both Borman and Motowidlo [23] and Wright and Boswell [25] pointed out that job performance was mostly resulted from different communication form.

Based on the research purposes and the framework presented in Figure 3, the following hypotheses are developed.
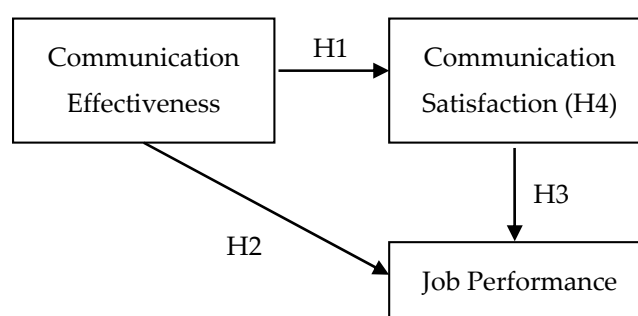
Figure 3. Research framework.

Hypothesis 1 (H1). *Communication effectiveness has significant effects on communication satisfaction.*

Hypothesis 2 (H2). *Communication effectiveness has significant effects on job performance.*

Hypothesis 3 (H3). *Communication satisfaction has significant effects on job performance.*

Hypothesis 4 (H4). *Communication satisfaction has a mediation effect between communication effectiveness and job performance.*

3.2. Sample of Research

The subjects of this research are the members who have used communication software to explain, distribute, and communicate at work in different levels of enterprises from all occupations. The convenience sampling method was used and conducted for the qualified anonymous samples. The questionnaires were used to collect data, and to understand the respondents' views on the research issues and to analyze their behaviors. The questionnaires were distributed in paper and the number of distributed questionnaires in detail as shown in Table 1.

Table 1. Detail of distributed questionnaires.

	Distributed	Response	Valid	Invalid	Valid Response Rate
Paper Questionnaires	480	455	445	10	92.7%

3.3. Instrument and Procedures

Based on the aforementioned research purpose and structure, the research questionnaire was divided into four parts: basic data, using behavior, communication satisfaction, and job performance. A 5-point Likert Scale was used to score and quantify, on a scale of 1–5, respectively, in five categories: strongly disagree, disagree, no opinion, agree, and strongly agree. The first part of the questionnaire was basic data, including four basic questions: age, gender, the amount of salary, and work area. The second part was the using communication effectiveness scale, the third part was the communication satisfaction scale, and the fourth part was the job performance scale.

Yan suggested that effective communication in an organization refers to the ability of communication showed within an organization, and that communication effectiveness can be explained from two aspects, "people" and "things", respectively. "People" refers to communication satisfaction and communication harmony, and "things" refers to the effectiveness and correctness of the messages. The purpose of communication within an organization is to enhance understanding, build consensus, coordinate actions, brainstorm ideas, meet the needs of members, and thus achieve predetermined objectives. The achievement of the above objectives can be used as a judgment on effective communication [28].

There were many pieces of research on communication effectiveness, and the factors of it in this research were based on the findings of Yan [29], which measured communication effectiveness in four factors, communication satisfaction, communication harmony, messages effectiveness, and messages timeliness (correctness). The findings had been revised to develop suitable dimensions and questions for the purposes and subjects of this research, as shown in Table 2.

Table 2. Dimensions and questions of communication effectiveness.

Dimensions	Questions
Harmony	1. I am satisfied with the overall harmonious communication in my department.
Effectiveness	2. I am satisfied with the overall effective communication in my organization.
Timeliness	3. I am satisfied with the overall timely communication in my organization.
Satisfaction	4. I am satisfied with the overall communication in my organization.

Communication satisfaction is a degree of awareness, defined by Price as a kind of emotional orientation that members of society produced towards their group [30]. Crino and White defined communication satisfaction as "one individual's perception of different forms of communication and its respective satisfactions in the organization" [31]. According to the previous literature of various studies, the communication satisfaction scale had been revised and developed as shown in Table 3.

Table 3. Dimensions and questions of communication satisfaction.

Dimensions	Questions
	1. I am satisfied with the information from LINE about my job compared to my colleagues' job.
	2. I am satisfied with the information from LINE about the judgment of me from my supervisors.
	3. My supervisors know about my effort from LINE.
	4. I am satisfied with the report on how my work problems were handled.
	5. The extent to which my supervisors know and understand the problems the staff is facing through LINE.
	6. The extent to which my supervisors can listen and pay attention to me
	7. My supervisors are able to provide guidance on solving work-related issues.
Communication Satisfaction	8. The extent to which my supervisors are willing to listen with an open mind.
	9. The extent of correct and fluent communication with my colleagues though LINE.
	10. Using communication software (LINE) can achieve smooth communication.
	11. Using communication software (LINE) can clearly deliver information about work.
	12. Using communication software (LINE) can clearly deliver company policies and goals.
	13. Because of organizational communication, I feel that I am a very important part of the organization.
	14. Conflict can usually be resolved through an appropriate communication pipe (LINE).
	15. Communication through LINE is very important for productivity.

Edwards integrated the views of several scholars and argued that individual job performance can be studied in terms of demand and ability, and demand and supply [32]. Demand and ability refer to the fit between the abilities the work demanded and an individual's abilities, whereas demand and supply refer to the fit between an individual's needs and the job attributes. Based on the above studies, this research defined job performance as individual job performance, which measures the behavior of members and the results of their work. According to the relevant researches and previous literature, this research revised Robbins [33], Liu, and Liao's questionnaires [34] to measure job performance, and developed the questions of the job performance scale, as shown in Table 4.

Table 4. Factors and questions of job performance.

Dimensions	Questions
Job Performance	1. I appreciate the results of the members' work.
	2. I can continuously improve my work quality and efficiency by using LINE.
	3. I am willing to assist my colleagues in the extra work and strive for organizational performance.
	4. I can comply with the organization's rules through LINE.
	5. I can carry out orders or works through LINE.
	6. I have many skills to handle works.
	7. I can offer specific proposals for my job through LINE.
	8. I can solve work problems alone.
	9. I can handle emergent works through LINE.
	10. I can participate in organizing affairs or meetings with a positive attitude.
	11. I understand my job and responsibility through LINE.
	12. I value my job.
	13. I offer my help to my colleagues through LINE.

To increase the stability and reliability of the questionnaire, a reliability analysis was used to identify the Cronbach's α coefficient in each dimension. The Cronbach's α of the variable communication effectiveness was 0.791. The Cronbach's α of the variable communication satisfaction was 0.815. The Cronbach's α of the variable job performance as 0.758. The reliability of each variable was passed.

4. Results and Discussion

This research used regression analysis to explore the explanation and relationship among the variables. One independent variable was used to explain or predict another variable by building and testing the regression equation. Therefore, this research used regression analysis to examine whether communication effectiveness influenced communication satisfaction and job performance, to examine whether communication satisfaction influenced job performance, and to examine whether communication satisfaction had an intermediary effect in communication effectiveness and job performance.

To explore whether there was a correlation between two variables—communication effectiveness and communication satisfaction—regression analysis was carried out with communication effectiveness as independent variable and communication satisfaction as the dependent variable. Through regression analysis, it could be found that the coefficient of the independent variable was 0.711. The *p*-value was 0.021, which was less than 0.05, so the result was significant, indicating that communication effectiveness had a positive effect on communication satisfaction. The coefficient of determination was 0.601, which meant 60.1% of communication satisfaction could be explained by communication effectiveness. The date was shown in Table 5.

Table 5. Regression analysis of communication satisfaction on communication effectiveness.

Mode		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	**Std. Error**	**Beta**		
1.	(Constant)	1.011	0.093		10.881	0.000
	CE	0.711	0.027	0.775	25.853	0.021
		R	**R^2**	**Adjusted R^2**	**Std. Error of the Estimate**	
		0.775 [a]	0.601	0.600	0.32125	

Coefficients (a) a. Dependent variable: CS

Next, we discuss whether communication effectiveness is related to job performance by, first, taking communication effectiveness as the independent variable and job performance as the dependent variable for regression analysis. The coefficient of the independent variable was 0.753. Its *p*-value was 0.005, which was less than 0.05, so the result was significant, indicating that communication effectiveness had a positive effect on job performance. The coefficient of determination was 0.665, which meant 66.5% of job performance could be explained by communication effectiveness. The date was shown in Table 6.

Table 6. Regression analysis of job performance on communication effectiveness.

Mode		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1.	(Constant)	0.815	0.086		9.504	0.000
	CE	0.753	0.025	0.816	29.660	0.005
		R	R^2	Adjusted R^2	Std. Error of the Estimate	
		0.816 [a]	0.665	0.664	0.29670	

Coefficients (a) a. Predictors: (Constant), CE.

According to Baron and Kenny's view of defining the mediator [35], as shown in Figure 4, there are three conditions for meeting the mediator. The first is that the variation of the independent variable can significantly explain the variation of the mediator, which means path a is significant. The second one is that the variation of the mediator can significantly explain the variation of the dependent variable, which means path b is significant. The last one is when controlling independent variables and mediators are being considered at the same time, the relationship effect of the independent variable for the dependent variable (path c) is less significant, and in the case, the mediation effect of the mediator becomes strongest which c = 0. In other words, the independent variable can significantly explain the variation of the dependent variable, which means path c is significant. However, when both the independent variable and mediator are considered, the effect of the previous argument is reduced. As a result, the mediation effect of the mediator can be examined by four regression patterns.
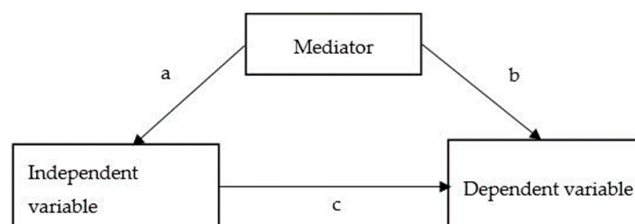

Figure 4. Defining the mediator [35].

Model 1: The effect of the independent variable on the mediator is significant.
Model 2: The effect of the independent variable on the dependent variable is significant.
Model 3: The effect of the mediator on the dependent variable is significant.
Model 4: Examine the effect of the mediator and the independent variable on the dependent variable at the same time, and compare the result of model 2, at which point the independent variable of model 4 should have less effect on the dependent. There should be two scenarios:

1. Complete mediation: If only the effect of the mediator is still significant, the effect of the independent variable is no longer significant, and then the mediator has a complete mediation effect between the relationship of the independent variable and the dependent variable.

2.   Partial mediation: If the effect of the mediator and the independent variable are both still significant, then the mediator has a partial mediation effect between the relationship of the independent variable and the dependent variable.

In this section, to explore the mediation effect of communication satisfaction on communication effectiveness and job performance, regression analysis was taken to verify the hypotheses, and the communication satisfaction was used as a mediator to analyze to understand whether communication satisfaction has an impact on communication effectiveness and job performance.

To examine the mediation effect of communication satisfaction between communication effectiveness and job performance, four steps were carried out. The first step was the regression analysis of communication effectiveness on communication satisfaction. The *p*-value was 0.021, and the coefficient was 0.711, which had reached a significant level. The second step was the regression analysis of communication effectiveness on job performance. The *p*-value was 0.005, and the coefficient was 0.753, which had also reached a significant level. The third step was the regression analysis of communication satisfaction on job performance. The *p*-value was 0.000, and the coefficient was 0.922, which had reached a significant level. The last step was the regression analysis of communication effectiveness and communication satisfaction on job performance. The *p*-values were 0.182 and 0.002, and the coefficient was 0.245 and 0.715, which meant only communication satisfaction had reached a significant level. Based on the above four-step analysis results, the research found that communication satisfaction had a complete mediation effect between communication effectiveness and job performance. The analysis result can be found in Table 7.

Table 7. Mediation effect analysis.

Dependent Variable	Communication Satisfaction		Job Performance		Job Performance		Job Performance	
	Model 1		Model 2		Model 3		Model 4	
Dependent Variable	Coe.	Sig.	Coe.	Sig.	Coe.	Sig.	Coe.	Sig.
Communication Effectiveness	0.711	0.021	0.753	0.005	—	—	0.245	0.182
Communication Satisfaction	—	—	—	—	0.922	0.000	0.715	0.002

According to the above-mentioned analysis, the analysis results were used to review the research hypotheses and were explained. This research contained four research hypotheses, which were summarized and verified, as shown in Table 8.

Table 8. The result of hypotheses verification.

Hypothesis	Result
H1: Communication effectiveness has significant effects on communication satisfaction.	valid
H2: Communication effectiveness has significant effects on job performance.	valid
H3: Communication satisfaction has significant effects on job performance.	valid
H4: Communication satisfaction has a mediation effect between communication effectiveness and job performance.	Complete mediation

According to the research result, three hypotheses developed by this research were valid. As pointed out by Levinger [8], communication effectiveness can make people feel more or less intimate with each other and lead to a level of communication satisfaction. As job performance was mostly affected by different kind of communication, as mentioned by Borman and Motowidlo [23] and Wright

and Boswell [25], this research assumed that both communication effectiveness and communication satisfaction would affect job performance, which was later proved by the research result as valid.

5. Conclusions and Discussion

Because of the popularity of the Internet, consumer electronics have boomed rapidly and break the space limitation stems. Users send messages or share information by communication software that leads to more dependence from businessmen. Various business problems have been solved and job performance has been risen up through the diversified functions on communication software.

In this study, the communication effectiveness is validated by the results of communication and led to the improvement of one's job performance by our proposed symmetric model. This research held that the more willing the workers are to use LINE as communication, the more they can use LINE's diversified function of information transmission, and certainly, they are satisfied with the results of the information transmission, thereby improving their job performance. Relatively, if the communication effectiveness is high enough to accurately and smoothly transmit messages, people within the company will be satisfied with the results of communication, which ultimately leads to an improvement in job performance. Therefore, the researchers believed that communication effectiveness has significant effects on communication satisfaction and job performance.

5.1. Conclusions

The results showed that communication effectiveness had a positive effect on communication satisfaction, and its explanatory power was 60.1%. Communication effectiveness had a positive effect on job performance, and its explanatory power was 66.5%. As communication effectiveness had significant positive effects on both communication satisfaction and job performance, and the explanatory power was both higher than 60%, when organizations or enterprises use communication software to communicate, they should pay attention to and strengthen the effectiveness of using LINE or other communication software to strengthen workers' communication satisfaction and job performance.

As there was only the variable communication satisfaction remained significant after the four-step regression analysis for the mediation effect, it was proved that communication satisfaction had a complete mediation effect between communication effectiveness and job performance, which meant the satisfaction of using LINE as a communication software would affect communication effectiveness and job performance. Therefore, organizations or companies should pay more attention of the usage of LINE, or even consider the utilization of communication software as the primary communication pipe, such as how their employees think about using LINE as the major communication pipe. As mentioned in the above chapters, LINE users can send texts, stickers, or pictures to each other. They can also make real-time video and set up a group. Group members can send messages, stickers, pictures, videos, audios, or even files; make audio or video calls with other members; and create albums or notes within the group. Many companies or organizations, thus, set up groups for different departments or units. They even set up groups for business partners or cooperators. The main intention is to facilitate communication and to reduce misunderstanding or mistakes. As the results of this research showed that employees were satisfied with using LINE as a major communication pipe in work place, it was suggested that employers can make good use of LINE continuously to improve employees' communication effectiveness and job performance. Communication software often improve their usefulness by updating their software functions, employers or supervisors can always make good use of the updated functions to assign tasks, establish to-do lists, establish personal memo, or any others ways to improve communication satisfaction, communication effectiveness, and job performance. As every company or organization must have the needs of communication to keep their work ongoing or keep their business developing, the results of this research (using communication software like LINE could ultimately improve job performance) could even help companies or organizations for their steady development.

5.2. Discussions

According to the findings of the research, future researchers could further the research by conducting follow-up discussions on the above phenomena and exploring other variables that can affect job performance. In addition, this research suggested that future researchers could continue to expand the sample size or add some new influence variables, or adjust the causal sequence between the variables in the framework or re-establish the research structure for re-discussion. It is also possible to lock in the comparison of industry differences, such as high-tech and traditional industries, it might result in giving some professional advice on work communication. Finally, future researchers can introduce more updated variables into the research structure, such as salary, benefits, and so on. It is believed that these future research results could provide some valuable information and the strategic direction of implementation.

Future research is suggested to explore the negative effect on employees of continuously using communication software as the major communication methodology in the work place, such as privacy issues, messiness of information, taking up non-working hours, etc.

5.3. Limitation

Although the results of the research were satisfied and the findings could contribute to help steady development of companies, there were two major limitations should be noted: First, the number of samples could be larger to strengthen the persuasiveness of the research or be more widespread to different levels of position or areas of industry to ensure the credibility of the results. Second, the research also limited to the users of communication software in Taiwan. The results of other countries might different from Taiwan's.

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