Post-Pandemic Usage of Collaboration Tools: Influencing Factors

Aulia Rido Salsabila[1], Nori Wilantika[2]*, Ibnu Santoso[3], Achmad Syahrul Choir[4]
Statistics Polytechnic College of Statistics[2]*,[3],[4]
Indonesian Central Statistics Agency[1]
Jakarta, Indonesia
aulia.rido@bps.go.id[1], wilantika@stis.ac.id[2]*, ibnu@stis.ac.id[3], madsyair@stis.ac.id[4]

***Abstract*—The distance existed due to the COVID-19 pandemic drove people to utilize collaboration tools to continue communication, coordination, and collaboration. The increasing use of collaboration tools during WFH impact on our way of working. The collaboration tools also offer efficiencies, allow workers to break silos, and increase the quality of communication at the company-wide level. As we recover from the pandemic, the government revoked the social distancing policy and it is assumed to influence the continued use of collaboration tools as people fully carry out their activities face-to-face again. This study aims to understand the continuance usage of collaboration tools after no more social distancing. This study also seeks to identify the factors influencing the ongoing use of collaboration tools by integrating the Technology Acceptance Model (TAM) and Expectation Confirmatory Model (ECM). The method of data analysis employed was the partial least squares structural equation model (PLS-SEM). The findings indicated that most of 437 respondents kept using collaboration tools after no more social distancing. However, there was a decrease in the frequency of use. Our study findings have also proved that Actual Continued Usage is influenced by Continuance Intention by 43%. Factor that influences continuance intention the most is the attitude toward using collaboration tools, which is influenced by users' perceived usefulness of the collaboration tools. The results of this study also support the integration of TAM and ECM to examine user intentions and behavior regarding the continuance use of a technology.**

Keywords—Social Distancing; Collaboration Tools; ECM; TAM; PLS-SEM

I. INTRODUCTION

On March 11, 2020, the World Health Organization (WHO) issued the Public Health Emergency of International Concern (PHEIC) status for COVID-19. The Indonesian government responded by enacting the Social Distancing policy on March 31, 2020, because the country had a comparatively high number of COVID-19 cases and deaths. This policy limited people's activities, including work and school activities. Throughout 2020 until the first half of 2022, teaching and learning activities and work activities in Indonesia were mainly carried out from home. Not only in Indonesia, since the COVID-19 pandemic started, several large companies in the United States, China, and Japan have also embraced Work From Home (WFH) [1].

The distance that existed during WFH due to the pandemic raises challenges to communication and coordination among workers. Therefore, people are looking for ways to utilize various software to continue communication, coordination, and collaboration while doing WFH. Software that enables two or more people to work together virtually on a project regardless of where they are physically located is called collaboration tools [2]. Collaboration tools are intended to make multi-person work easier. They enable people to work together on projects, share files, diagrams, photos, papers, and other materials, edit an object or file simultaneously, and view the most recent version of the editing or the same content [2]. Collaboration tools are divided into several types of categories, which are communication (e.g., Slack, Discord) [3], video conference (e.g., Zoom, Google Meet, Microsoft Teams) [3][4][5], cloud storage (e.g., Google Drive, Microsoft OneDrive, Dropbox) [4][6], document construction (e.g., Google Docs/Sheets/Slides) [5], project management (e.g. Jira, Trello, Asana) [2][3], online calendar (e.g. Google Calendar, Microsoft Outlook) [6][7], design (e.g. Figma, Canva, Sketch) [8][9], and software development (e.g. GitHub, GitLab, Bitbucket) [3].

Data shows that there has been an increase in the use of collaboration tools due to social distancing during the pandemic. A study [4] that surveyed German workers shows that 80.7% of respondents' digital tool usage increased during the home office or WFH due to the COVID-19 pandemic. The digital tools are video conference and project management tools [4]. Meanwhile, the software development team in the United States increasingly adopted Slack as a collaboration hub during remote work due to the COVID-19 pandemic [10]. In Indonesia, based on a survey conducted by [11], there has also been an increase in the duration of internet use during the pandemic to work or to do school from home, and the most used app for online meetings is Zoom.

The increasing use of collaboration tools triggered by the shift to WFH during the social distancing has had a remarkable impact on our way of working, especially in communicating and collaborating. Experiences of using collaboration tools make workers no longer rely on face-to-face interaction to discuss [10]. Collaboration tools allow workers to break silos [2] and increase the quality of communication at the company-wide level [6]. They also improve the habit of documenting, organizing, and sharing across the team [2]. Realizing the efficiencies offered by the remote-working concept using collaboration tools, many companies restructure their way of working and transform their working environment [4], as was done by the Indonesian Ministry of Finance, which adopted WFH during the pandemic to become permanent Flexible

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Working Space and Hours as the new way of agile working [1]. In short, the sustainable use of collaboration tools brings many benefits to the company, mainly to stay competitive.

However, as the conditions of the COVID-19 pandemic got better, since the second half of 2022, the Indonesian government has allowed people to return to the office and school. In the end, on December 30, 2022, the Indonesian government revoked the Social Distancing policy, so people fully carry out their activities face-to-face again. Therefore, it comes to a question: will collaboration tools still be used after no more social distancing? Some researchers expect the increased use of technology during the pandemic will persist even after the pandemic has ended [4][10]. Nevertheless, several researchers argue that although people initially embrace technology, they may eventually stop using it [12]. Thus, this study investigates whether people continue to use collaboration tools even after no more social distancing due to the COVID-19 pandemic. Another purpose of this research is to determine what factors affect people's continued use of collaboration tools.

Previous research on collaboration tool continuance are limited by a particular category or software. For example, [13] and [14] restricted their study to the continuance use of video conferencing apps, [15] only focused on the continuance of cloud storage service, and [12][16] examined the continuance use of Google Docs only. Meanwhile, the use of collaboration tools can't be limited to specific categories because the use of collaboration tools usually combines several types, as mentioned in previous studies like [1],[4], or [10]. This research comprehensively examines the continuance of collaboration tools without being limited to specific categories or software. Additionally, this study looks at the ongoing use of collaboration tools to ascertain whether there have been any changes in their usage following the end of the COVID-19 pandemic. This research extends the literature regarding collaboration tools and the continuance usage of technology, especially thriving technologies during the COVID-19 pandemic.

Most studies on the continuance of collaboration tools use the Technology Acceptance Model (TAM) [12][17][15] and the Expectation Confirmatory Model (ECM) [13][16] as the research model. TAM is mainly used to determine factors contributing to users' initial acceptance and rejection of technology [18]. On the contrary, the ECM model focuses more on factors influencing user retention and loyalty to technology after the initial acceptance [19]. Although there are differences in perspective between TAM and ECM, both are designed to explain various aspects of user perception of system continuance. According to [19], TAM can also be used to examine sustainability intentions and behavior after the initial use of a technology. Moreover, there is an intersection between the ECM and TAM constructs, namely the Perceived Usefulness. Therefore, this research proposes the integration of ECM and TAM to examine the continued use of collaboration tools after social distancing. The integration is expected to provide additional information and increase understanding regarding the continuance use of a system [24].

II. METHODOLOGY

A. Research Model and Hypotheses

Several previous studies on the continuance of collaboration tools used the TAM as the research model, for example, research conducted by [12] to determine the factors that influence the continued use of Google Docs from the perspective of students in Taiwan. Using TAM as a basis, research [17] examines the influence of trust and risk variables on cloud storage usage, specifically Google Drive, in Indonesia. Then, a study by [15] discusses the intention to continue using cloud storage in Taiwan using the Task-Technology Fit (TTF) and TAM models and adds opinions of reference groups and privacy risk variables. Other research used the ECM as the research model. The study conducted by [13] used the ECM model with the addition of several other variables to determine the factors influencing the satisfaction and continuance of video conferencing in Indonesia. At the same time, research [16] used the ECM model by adding prior experience and IT skills variables to investigate factors influencing perceptions of acceptance of Google Docs with the case study in the United States.

However, several research combined TAM and ECM into one research model. Previous research by [20] used TAM and ECM integration to predict the intention of continuing web-based video conferencing for teaching in the post-COVID-19 period from the perspective of academic staff in the United Kingdom (UK). Other studies used ECM and TAM integration to understand the continuance of e-learning [21], ride-hailing apps [22], and cloud-based hospital information systems [23]. Although unrelated to collaboration tools, [21], [22], and [23] show the ability of TAM and ECM integration to explain various aspects of user perception regarding the continuance usage of a technology.

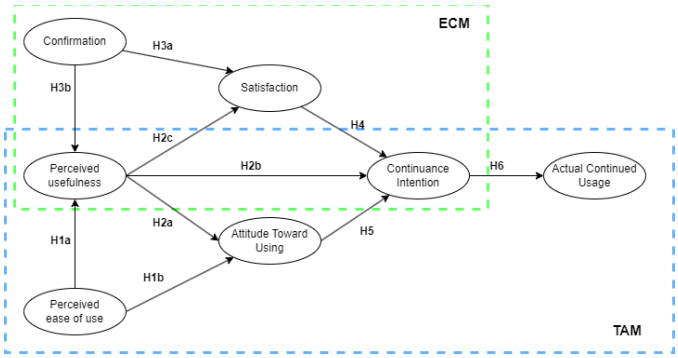

Fig. 1. Research Model.

The research model is based on the integration of the Technology Acceptance Model (TAM) and the Expectation Confirmation Model (ECM), as depicted in Figure 1. This model comprises key constructs such as Perceived Usefulness, Perceived Ease of Use, Attitude, and Continuance Intention, which are essential for understanding user behavior regarding collaboration tools. Based on the research model, we developed the following hypotheses.

H1a: Users' perceived ease of use positively affects their perceived usefulness of collaboration tools.

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According to [24][25][26], Perceived Usefulness is the measure of how users see the advantages of utilizing collaboration tools. At the same time, the term Perceived Ease of Use describes how users feel about how simple it is to use collaboration tools [24]. Perceived Ease of Use affects Perceived Usefulness in TAM. Theoretically, users consider technology to be beneficial when they find it convenient [24][25]. This hypothesis is also stated in [12][17][20].

H1b: Confirmation of the expected performance of collaboration tools positively affects users' perceived usefulness.

When a user compares the performance they expect from collaboration tools with the performance they actually experience, that user's suitability assessment is known as Confirmation [26]. According to ECM, Confirmation boosts the user's perception of its usefulness [26]. Previous research by [13] and [20] has also confirmed the impact of Confirmation on Perceived Usefulness.

H2a: Users' perceived ease of use positively affects their attitude toward using collaboration tools.

H2b: Users' perceived usefulness positively affects their attitude toward using collaboration tools.

Users' attitudes toward using collaboration tools are influenced by their salient beliefs about the outcomes of their actions [24]. The presumption is that users' perceived usefulness and ease of use positively affect their attitudes toward using the collaboration tools. If users' perceive the ease of use and advantages of using the collaboration tools, users' attitudes toward the tools will be more positive [12][17][24].

H3a: Perceived usefulness positively affects users' intention to use collaboration tools.

H3b: Attitude toward using collaboration tools positively affects users' intention to use them.

The user's intention to keep using collaboration tools is known as continuance intention [25][26]. Users' perceived usefulness and attitude toward using collaboration tools are believed to affect users' continuance intention directly. Users will intend to keep using collaboration tools if they perceive the advantages of the tools [13][15][20][27]. Similarly, the user's intention to continue will be influenced by their positive attitude toward using collaboration tools [12][17][25].

H3c: Users' satisfaction with collaboration tools positively affects their continuance intention to use the tools.

Satisfaction is a pleasurable or positive emotional state resulting from collaboration tools [26]. According to ECM, user satisfaction plays a significant role in determining the user's Continuance Intention [13][12][27].

H4a: Perceived usefulness positively affects users' satisfaction with collaboration tools.

H4b: Confirmation of the expected performance of collaboration tools positively affects users' satisfaction.

Perceived Usefulness is considered to affect Continuance Intention, and therefore, Perceived Usefulness is expected to influence Satisfaction as well [26]. In other words, if users feel that using collaboration tools is beneficial, they will be satisfied with them. This hypothesis also has been hypothesized by [13][20][27]. Besides that, the compliance between user expectations and user experiences when using collaboration tools is expected to increase user satisfaction [26]. The influence of Confirmation on Satisfaction has also been previously hypothesized by [13],[20], and [27].

H5: Users' continuance intention positively affects actual continued usage of collaboration tools.

The last hypothesis, Continuance Intention, significantly influences the Actual Continued Usage of collaboration tools [25]. If users intend to use a particular technology, they will use it [17][28].

B. Research Instrument

. Validated items from prior studies were utilized to define the measurement items for each construct in the research model. Each item was modified to align with the specific context of this study. All items were scored on a five-point Likert scale. To ensure clarity, a draft questionnaire was pre-tested with nine respondents similar to the target population. Detailed items are available in the Appendix.

C. Data Collection Method

This study targets Indonesians who have used collaborative tools since March 2020, with "After Social Distancing" defined as post-December 30, 2022, when the Indonesian government revoked the Social Distancing policy. Data were collected over 15 days from May 1 to May 15, 2023, using online questionnaires. A non-probability convenience sampling technique was employed due to the unknown population size, facilitating rapid participant recruitment [29].

For sample size determination, we follow the Ten Times rule for PLS-SEM [30][31], requiring a minimum of 30 respondents based on the maximum number of arrows to the latent variable. However, using Cochran's formula stated in formula (1), we calculated a minimum sample size of 385 to ensure statistical robustness.

$$n = \frac{(z_{\alpha^*/2})^2\, p\, q}{e^2} \quad (1)$$

where n is the minimum sample needed, z is the value in the Normal Distribution curve for deviation α^*, p is the probability of using collaboration tools, q is the probability of not using collaboration tools, and e is the margin of error [29]. The α^* deviation used in this study was 5%, so the z(0.025) was 1.96. The chance that someone uses and does not use collaboration tools is assumed to be 50%. The margin of error used is 5%.

D. Data Analysis Method

Data analysis was conducted using PLS-SEM, chosen for its effectiveness in evaluating complex models. The analysis involved two main stages: measurement model evaluation and structural model evaluation.

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Measurement Model Evaluation

This stage assesses the validity and reliability of the research model through four evaluations:

1. ***Indicator Reliability****: Assessed via Outer Loading, with acceptable values above 0.7 [31].*
2. ***Internal Consistency Reliability****: Evaluated using Cronbach's Alpha and Composite Reliability, both requiring a minimum threshold of 0.7 [30].*
3. ***Convergent Validity****: Measured by Average Variance Extracted (AVE), with an acceptance limit of 0.5 [30].*
4. ***Discriminant Validity****: Assessed through Cross Loading and Fornell-Larcker criteria [30].*

Structural Model Evaluation

The inner model evaluation explores construct relationships and includes:

1. ***Collinearity Assessment****: Evaluated by Variance Inflation Factor (VIF), with values below 5 indicating no multicollinearity.*
2. ***Path Coefficient Analysis****: Hypotheses are supported if t-statistics exceed critical values and p-values are below 0.05.*
3. ***Coefficient of Determination (R^2)****: Indicates prediction accuracy, with values of 0.75, 0.5, and 0.25 signifying strong, moderate, and weak correlations, respectively.*

III. Result and Discussion

A. Demographic Information

From the data collection stage, 437 responses were obtained, with 403 valid entries from 164 males and 237 females. Table 1 displays the demographic information of the participants. Most of the respondents, 75.4%, were between the ages of 18 and 25. Most respondents were also domiciled and worked/studied in Java (76.9%). From the occupation status, it can be seen from Table 1 that half of the respondents (59.6%) are workers who work as civil servants (excluding teachers/lecturers). From educational background, most respondents of this research have completed diploma 4 or a bachelor's degree.

TABLE I. Respondent Characteristics

Variable	Indicator	Frequency	Percentage (%)
Gender	Male	164	40.9
	Female	237	59.1
Age	<18 years old	6	1.5
	18-25 years old	304	75.4
	26-35 years old	48	11.9
	36-45 years old	20	5
	46-55 years old	19	4.7
	>55 years old	6	1.5
Domicile	Sumatera	40	9.9
	Java	310	76.9
	Bali & Nusa Tenggara	13	3.2
	Kalimantan	27	6.7
	Sulawesi	10	2.5
	Maluku	2	0.5
	Papua	1	0.2
Education	Elementary School	0	0
	Junior High School	0	0
	Senior High School	113	28
	Diploma 1/Diploma 3	39	9.7
	Diploma 4/Bachelor	219	54.3
	Magister	32	7.9
	Doctor/PhD	0	0
Occupation Status	Not Working	30	7.4
	Student	133	33
	Work	240	59.6
Occupation	Civil Servant (Exclude Teacher/Lecturer)	108	45
	Private Employees	54	22.5
	Entrepreneur	9	3.8
	Freelancer	21	8.8
	Teacher/Lecturer	29	12.1
	Other	19	7.9
Location of School/ College/ Work	Sumatera	35	9.4
	Java	287	76.9
	Bali & Nusa Tenggara	11	2.9
	Kalimantan	26	7
	Sulawesi	11	2.9
	Maluku	2	0.5
	Papua	1	0.3

B. Outer Model Evaluation

The purposes of evaluating the measurement or outer model is to assess the validity and reliability of the proposed research model. The evaluation consists of 4 stages: indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Table 2 shows the Outer Loading, Cronbach's Alpha, and Composite Reliability for the first, second, and third evaluation. Two indicators had outer loading values below 0.7, namely PEOU2 and CI2. Therefore, these two indicators should be considered for removal by analyzing the impact of removal on the Composite Reliability and AVE [30].

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Because there was no significant change in the Composite Reliability and AVE values before and after removing the PEOU2 and CI2 indicators, shown in the last three columns in Table 2, these two indicators are still used in this study. Including PEOU2 and CI2 didn't impact the Composite Reliability and AVE values; for all constructs, Composite Reliability and AVE values have met the threshold. Moreover, several studies show that an indicator with an outer loading value below 0.7 is still acceptable as long as the value is above 0.5 [33][15][21].

TABLE II. OUTER LOADING, CR, CA, AND AVE VALUES

Variable	Indicator	Outer Loading	After PEOU2 and CI2 Removal		
			CR	CA	AVE
Perceived Ease of Use	PEOU1	0.833	0.835	0.884	0.604
	PEOU2	0.691			
	PEOU3	0.739			
	PEOU4	0.740			
	PEOU5	0.826			
	PEOU6	0.821			
Perceived Usefulness	PU1	0.764	0.894	0.919	0.656
	PU2	0.861			
	PU3	0.841			
	PU4	0.825			
	PU5	0.836			
	PU6	0.723			
Confirmation	CONF1	0.827	0.829	0.897	0.745
	CONF2	0.864			
	CONF3	0.897			
Satisfaction	SAT1	0.889	0.850	0.909	0.769
	SAT2	0.874			
	SAT3	0.869			
Attitude Toward Using	ATT1	0.872	0.804	0.884	0.718
	ATT2	0.864			
	ATT3	0.805			
Continuance Intention	CI1	0.802	0.800	0.883	0.715
	CI2	0.614			
	CI3	0.863			
	CI4	0.835			
Actual Continued Usage	ACU1	0.926	0.849	0.930	0.869
	ACU2	0.938			

Note: CR=Composite Reliability, CA=Cronbach's Alpha, the red color indicates the outer loading value below 0,7

TABLE III. FORNELL-LARCKER VALUE

	ACU	ATT	CI	CONF	PEOU	PU	SAT
ACU	0.932						
ATT	0.506	0.848					
CI	0.656	0.555	0.784				
CONF	0.327	0.576	0.398	0.863			
PEOU	0.396	0.550	0.335	0.539	0.777		
PU	0.437	0.600	0.476	0.585	0.613	0.810	
SAT	0.494	0.705	0.537	0.640	0.663	0.663	0.877

Last, the fourth evaluation was discriminant validity by looking at the Fornell-Larcker value. It is evident from Table 3 that every construct's Fornell-Larcker value in our research model satisfies the necessary criteria. In conclusion, from the four stages of measurement model evaluation, all measurement items of each construct in this research have good validity and reliability. The AVE value > 0.5 shows that all measurement items can explain more than 50% of the construct.

C. Inner Model Evaluation

The inner model describes how research constructs relate to one another [32]. The first step of inner model evaluation was checking collinearity by looking at the variance inflation factor (VIF) value. The VIF value must be below 5 to ensure no multicollinearity issues in the research model [32]. VIF values of all indicators in this study are below 5, meaning there is no multicollinearity problem in this research model.

The next step was assessing the path coefficient value to describe the hypothetical relationship between the research constructs [30]. Table 4 shows that the t-statistics of all variables are more than z(0.05)=1.64, and the the p-value of path coefficient values for all variables are less than 0,05, which means that the hypothetical relationship between the research constructs is statistically significant. Based on the evaluation of R2 involving 5 endogenous variables, it can be seen that the value of R2 is between 0.360 and 0.536 (Table 5). This value is considered a moderate to strong relationship [32]. The Q2 value in Table 5 also shows that the exogenous variables in this study have an excellent predictive relevance to the endogenous variables.

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TABLE IV. PATH COEFFICIENT VALUE

Hypothesis		Path Coefficient	t-statistics	p-value	Sig.
H1a	PEOU→PU	0.420	8.574	2.8422E-14	Yes
H1b	CONF→PU	0.358	6.879	9.0097E-12	Yes
H2a	PEOU→ATT	0.292	5.753	7.6349E-09	Yes
H2b	PU→ATT	0.421	8.096	2.8422E-14	Yes
H3a	PU→CI	0.140	2.313	0.01056	Yes
H3b	ATT→CI	0.314	4.875	7.3235E-07	Yes
H3c	SAT→CI	0.222	2.898	0.00196	Yes
H4a	PU→SAT	0.439	8.492	2.8422E-14	Yes
H4b	CONF→SAT	0.383	8.392	2.8422E-14	Yes
H5	CI→ACU	0.656	21.105	2.8422E-14	Yes

TABLE V. R^2 AND Q^2 VALUES

Variable	R^2	Q^2
Perceived Usefulness	0,467	0,300
Satisfaction	0,536	0,407
Attitude Toward Using	0,413	0,289
Continuance Intention	0,360	0,209
Actual Continued Usage	0,430	0,368

D. Use of Collaboration Tools

From 403 valid responses, 401 or 99.5% of respondents still use collaboration tools after revoking the social distancing policy. Only two respondents stopped using the collaboration tools because their jobs didn't need them. This data indicates that most people still sustainably use collaboration tools even after no longer engaging in social distancing. However, the collected data shows that the frequency of using collaboration tools decreases. After social distancing, most respondents use collaboration tools 2-3 times a week with a duration of less than 4 hours per use. This frequency has decreased significantly compared to the period when social distancing policy was still imposed, where most respondents usually used collaboration tools more than once a day for 4 to 9 hours. Although there is a decrease in the use of collaboration tools, in the future, collaboration tools may replace face-to-face as the primary media of collaboration or meetings. This presumption is indicated from the response to the CI2 measurement item: "I intend to continue using collaboration tools than any alternative (face-to-face)". Only 21.09% of all respondents answered Disagree and Very Disagree with that question item.

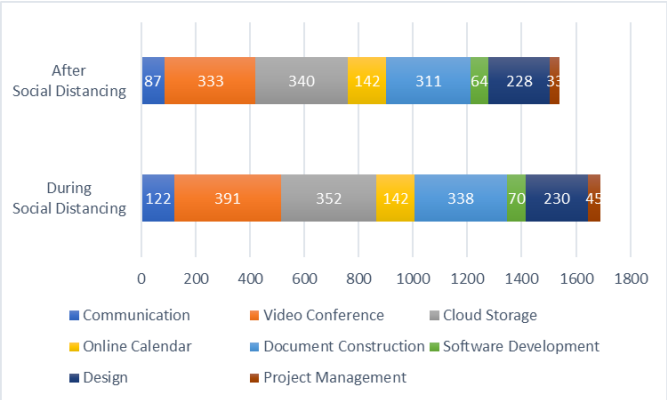

Fig. 2. Most Used Collaboration Tools Based on Category

Then, the categories of collaboration tools that respondents most frequently used were video conferencing, cloud storage, and document construction. As shown in Figure 2, there is no difference in the collaboration tools most frequently used during and after social distancing. More specifically, the most commonly used software in each video conferencing, cloud storage, and document construction category are Zoom, Google Drive, and Google Docs.

E. Factors Influencing Continuance Intention

The purpose of this study is also to find out the factors that influence the intention of the Indonesian people to continue using collaboration tools after social distancing due to the COVID-19 pandemic. This study proves that the use of collaboration tools or Actual Continued Usage (ACU) after social distancing was influenced by the user's Continuance Intention (CI) by 43% (can be seen from R2 in Table 5). Previously, in TAM, it was stated that people's intention affects their future acceptance of the systems [24]. Our research finding shows that intention also influences post-acceptance use as it affects the actual continued usage.

Meanwhile, the Continuance Intention itself is influenced by Perceived Usefulness (PU), Attitude Toward Using (ATT), and Satisfaction (SAT) towards the collaboration tools. In Table 4, among the path coefficient value of H3a, H3b, and H3c, the path coefficient value of H3b is the greatest, followed by H3c and H3a. It means that the Attitude Toward Using is the factor that most influences continuance intention to use collaboration tools, followed by Satisfaction and Perceived Usefulness. This finding is similar to previous research by [12] and [17], which explains that user attitudes affect the user's intention to continue using the system. The attitude toward using collaboration tools itself is influenced by Perceived Usefulness and Perceived Ease of Use (PEOU), which was also proven in research by [12] and [17]. Although both factors significantly and positively affect attitude toward using collaboration tools, users' perceived usefulness has a more significant role than users' perceived ease of use of using the collaboration tools.

Furthermore, Satisfaction is positively influenced by Perceived Usefulness and Confirmation (CONF). In this study, Perceived Usefulness has a more significant role in Satisfaction when compared to Confirmation, as can be seen from the path coefficient in Table 4. This result is following previous research

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by [13],[20], and [27]. If the user feels that using collaboration tools is beneficial, then the user will be satisfied with the collaboration tools. Last, Perceived Usefulness itself is influenced by Perceived Ease of Use and Confirmation of 46.7%, as shown from R2 in Table 5. However, Perceived Ease of Use has a more significant influence than Confirmation, as shown in Table 4 by the greater path coefficient values. This means that if the user feels the easiness of using collaboration tools, then the user feels the benefits of using collaboration tools. Research using the TAM model that has been carried out by [12],[17],[20] also explains that perceived benefits are influenced by ease of use.

IV. CONCLUSION

This study aimed to examine the continuance of collaboration tool usage in Indonesia following the lifting of social distancing measures due to the COVID-19 pandemic. Our findings reveal that a significant majority of respondents (99.5%) continue to use these tools, albeit with a notable decrease in frequency and duration compared to the pandemic period. Specifically, respondents now use collaboration tools 2-3 times a week for less than 4 hours, whereas during the pandemic, most utilized them more than once a day for 4 to 9 hours.

The analysis indicates that users' continuance intention, which influences ongoing usage by 43%, is primarily driven by their attitudes towards these tools. Furthermore, while both perceived usefulness and perceived ease of use affect user attitudes, perceived usefulness plays a more critical role.

This research contributes to the integration of the Technology Acceptance Model (TAM) and the Expectation Confirmation Model (ECM) in understanding the sustainability of technology usage, particularly in the context of collaboration tools in Indonesia post-social distancing. However, it is important to note that the respondent distribution was concentrated in Java, suggesting a need for broader sampling in future research to enhance the generalizability of these findings. Future studies could explore different methodologies and geographic areas to provide a more comprehensive understanding of collaboration tool usage across Indonesia.

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