

The Effect of Task Technology Fit Toward Individual Performance on the Generation X (1956-1980) using Information Technology

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Abstract - The generation is defined as a group of individuals who were born in the same birth ranges, which at that time had formed the uniqueness of the experience, history or the same era. The rapidly evolving technological developments lead to Generation X (1956-1980) having different perspectives, thoughts, ideas in using information technology to complete its work. This study aims to the relationship between the task-technology fit (TTF) affecting utilization and individual performance impact on Generation X in the usage of information technology. The method that is used is PLS-SEM with 101 respondents from Generation X in Mulawarman University. The results showed the empirical model is able to explain 64.7% of the variance of individual performance impact on Generation X in using of information technology at the Mulawarman University. The research proves task-technology fit are factors that affect the generation x in the use information technology services, task-technology fit and utilization is a factor that has a significant positive relationship effects on individual performance improvement the generation x in using of information technology services at the Mulawarman University. The results of this study revealed that the better the suitability of the information technology to the user's tasks (task-technology fit) in Generation x at the Mulawarman University, influence in increasing the utilization and improving the performance of individuals impact on generation x in using information technology.

Keywords— *task-technology fit; generation-x; individual; performance.*

I. INTRODUCTION

Development of Information Technology (IT) that grows rapidly at this time have an important role in helping the sustainability of the company or organization. information technology previously only regarded as the driving force and proponent organization's strategy is currently regarded as an integration part of business strategy in the organization. The life of the organization experienced a shift in jobs ranging influenced by technological advances. At present, although the user looks advanced technologies, users will not adopt if users think that this technology is not suited to the task and not be able to improve the performance [1,2].

In knowing of the performance of individuals impact in using information technology in organizations, many previous studies using Task Technology Fit models. Task-Technology Fit (TTF) Model is a suitability between functions technology used for needs of the user tasks, where the existing technology used to support tasks of daily users [3]. Age differences have been known to play an important role in understanding human perception and behavior in various of domains of research, including psychology, organizational behavior, and marketing [4]. The role of age is equally or more important for the research domain information systems (IS) that have an influence on the attitudes and behavior of individuals with regard to the use of information technology.

Based on previous research, The effect of age has a direct effect on the perception usefulness of information technology for the use of short-term and long-term [5]. The effect of age is greater for workers, where workers with older age tend to reject in terms of willingness or acceptance to adopt new information technology [6]. Using the Theory of Planned Behavior (TPB) to examine age as a determinant of the use of technology moderator. Based on the results of the study, they found that older workers are more affected by attitudes toward the use of technology, subjective norms, and perceived behavioral control [7].

Generation X is the generation that was born in the period 1965 - 1980. This generation grow in the middle crowded video games and MTV, and spent their teenage years in the 1980s. Generation X tends to be very patient, attitude seniority for them is not important. Generation X expect any recognition for the work they do through praise, promotion and salary. For generation X life outside of work is very important, especially family, generation x do not want to sacrifice their lives to work longer in the company because they want to go home and interact with the family. This may be based on the experience of their parents who are too busy working [8]. Generation X Ability is they are easy to adapt to change and prefer to find their own way in dealing with problems. Generation X is not structured and they prefer to achieve in their own way, this makes them a poor worker in a team.

In an effort to achieve optimal individuals performance, organizations must be able to manage all aspects relating to the suitability of technology in support of user generation everyday tasks. Therefore, this study will provide empirical evidence of the correlation between the suitability of task technology fit towards the utilization and the impact on individual performance on Generation X (1956-1980) in using information technology in Mulawarman University. These research result will assist organizations in Indonesia in the policy and strategic decisions in an effort to improve the utilization of information technology which resulted in increased individual performance at Generation X.

II. RESEARCH MODEL

This study using a Task Technology Fit model by Goodhue and Thompson (1995) refer to Fig. 1. This research uses a quantitative method by distributing questionnaires based on variables that are found from the study literature. Respondents are the Generation X (1956-1980) users of information technology services consisting of lecturers and staff at the Mulawarman University. The analytical method using Partial Least Square Structural Equation Modeling (PLS-SEM).

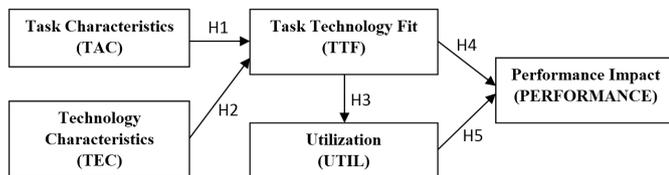


Fig. 1. Research Model Task Technology Fit [3]

III. HYPOTHESIS

Tasks are more broadly defined as the actions carried out by individuals in turning inputs into outputs. The task characteristics significantly influence task technology fit. Several other studies also show the task characteristics is a factor that affects task technology fit [2,3,9,10]. Someone who is often involved in non-routine tasks in the job will be able to assess the suitability of the technology to the task when using information technology [5]. Therefore, in this study proposes:

"H1: Task Characteristics influence Task Technology Fit on the generation x in the use of information technology".

Based on Goodhue and Thompson (1995) research proves the technological characteristics are factors that affect the Task Technology Fit. Several previous studies have shown the technological characteristics are factors that affect task technology fit [5, 9, 11]. Characteristics of the technology are the basis for the evaluation of the use of information technology in the assessment of the level of technological suitability to the user (task technology fit) daily task. Task technology fit is a rational perspective on whether the technology used can optimize user work or task. It is affected by the nature of the task and practicality of the technology to complete the task [10]. Therefore, this research proposes:

"H2: Technology Characteristics influence Task Technology Fit on the generation x in the use of information technology".

Based on Goodhue and Thompson, (1995) research stated that the suitability of the technology to the task (Task Technology Fit) affects the use (Utilization) information technology. Several studies have also demonstrated the task technology fit is a factor that affects utilization information technology [11,12]. Technological suitability to the task is the deciding factor beliefs about the usefulness, the importance of use, and advantages of the use of information technology [5]. Sophisticated technology is not always able to increase productivity and information technology should have compatibility in helping individuals to accomplish these tasks [2,13]. Based on that the study proposes:

"H3: Task Technology Fit influence Utilization on the generation x in the use of information technology".

The performance impact is a consideration in the success of the research information system relating to the performance of management and strategic IT decision making. The model Task Technology Fit and utilization as a predictor of the performance individuals impact in using information technology. Users who are on the job depends on the information system that is prone to interruption (downtime) will be able to assess that the system can not be relied upon to improve the performance. Therefore, the suitability of the technology to the task of course, will affect the performance of individual if the functions of information technology in the organization are able to support the daily tasks of the users. Several studies have also demonstrated the suitability of the technology related to the task (Task-Technology Fit) effect on the performance impact of individuals in using information technology [5,14]. Based on that the study proposes:

"H4: Task Technology Fit effect on the impact of Individual Performance in the generation x in the use of information technology".

Utilization of information systems in general, is based on the attitude and behavior (beliefs, affect) the user to predict the benefits of information technology. Individual performance is a function of usage and user satisfaction which aims to show how to improve the performance of information technology [15]. The implication is that the increased use will lead to a positive effect on the impact of individual performance. Some previous studies have proved the existence of a positive relationship between the Utilization of the impact of performance on an individual level using information technology [5,15]. This relationship is further enhanced by research, which identifies the model's success as an antecedent to the information systems that emphasize performance impact on the relationship between the use of information systems by individuals against the impact of organizational performance in subsequent studies [16,17]. Based on that the study proposes:

"H5: Utilization effect on the impact of individual performance on the generation x in using information technology".

IV. DATA ANALYSIS AND RESULT

The study samples were randomly conducted on Generation X (1956-1980) at the Mulawarman University. Data from questionnaires were collected and processed using PLS-SEM analysis methods with the help of software SmartPLS 3.2. Processing of questionnaire data and then do the test data of the analysis of the measurement model (Outer Model) and structural model (Inner Model). Results of the analysis of the research model used to get an explanation based on quantitative data used to answer the research hypothesis. Total respondents in this study were 101 respondents (Table I).

TABLE I. DEMOGRAPHIC RESPONDENTS GENERATION X (1956-1980)

		N	Percentage (%)
Gender	Male	64	63
	Female	37	37
Job	Staff	63	62
	Lecturer	38	38
	High School	8	8
Education	Diploma	4	4
	Bachelor's Degree	49	49
	Master's Degree	37	37
	Doctoral Degree	3	3

A. Analysis of Measurement Model (Outer Model)

Analysis of the measurement model (Outer Model) was done by testing the convergent validity and discriminant validity. Convergent validity is a measure of internal consistency used to ascertain the factors that are assumed to measure any action latent variable itself and does not measure other latent variables [18,19]. Table II shows the outer loadings, Average Variance Extracted (AVE), composite

reliability (CR), and Cronbach alpha (CA). For grades outer loadings all had a valid indicator to measure the latent variable that has a value of outer loadings > 0.6 . So based on these results indicators can be used as a measuring tool that is appropriate to measure latent variables.

Average Variance Extracted (AVE) Value is a measure used to assess the internal consistency of the construct by measuring the number of variants that capture the latent variables of measurement indicators relative to the amount of variance [18]. In Table II the Average Variance Extracted (AVE) value can be seen that each latent variable is greater than 0.5. AVE should be greater than 0.5. It explains the latent variables are able to explain an average of at least 50% of the variance of the indicators that measure [20].

Composite Reliability (CR) Value and Cronbach Alpha (CA) is a measurement used to examine how well the model is measured by set indicators. However, the interpretation score Composite reliability and Cronbach Alpha is the same. According to [20,21] suggest larger CA and $CR \geq 0.7$ as a standard sufficient or acceptable, whereas if the larger 0.8 and 0.9 means very satisfactory [22]. Based on Table II almost all known indicators consistent / reliable in measuring latent variables (CA values ≥ 0.6) used are said to be reliable.

Discriminant validity is used to indicate the extent to which a given construct different from other constructs. Discriminant validity testing is done by looking at the Cross loadings value each indicator with higher variability has been correlated with their own variables compared to other variables. Based on the analysis of the measurement model (outer model) has been qualified and reliable validity to then do the analysis on the structural model (inner model).

TABLE II. VALUE NILAI OUTER LOADINGS, T-STATISTIK, AVE, CR, DAN CA.

Variable	Indicator	Measurement Model (Outer Model)				
		Outer Loadings	t-statistics	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach Alpha (CA)
Task Characteristics (TAC)	NRO.1	0.753	3.568	0.594	0.815	0.663
	NRO.2	0.772	3.322			
	NRO.3	0.787	3.107			
Technology Characteristics (TEC)	ACS.1	0.737	13.886	0.562	0.953	0.948
	ACS.2	0.683	9.557			
	ACS.4	0.768	19.513			
	ACU.1	0.702	10.636			
	ACU.3	0.762	14.214			
	COML.1	0.867	37.472			
	COML.2	0.775	15.928			
	COML.3	0.807	21.605			
	FLX.2	0.731	12.019			
	FLX.3	0.695	12.646			
	FLX.4	0.758	15.340			
	FORM.1	0.800	16.126			
	FORM.2	0.740	12.720			
	FORM.3	0.769	13.870			
	FORM.4	0.698	11.386			
STB.2	0.671	9.261				
Task Technology Fit (TTF)	AUTH.5	0.675	9.045	0.636	0.972	0.970
	COMP.1	0.824	22.460			
	CONS.2	0.780	15.105			
	EASE.1	0.775	12.543			
	EASE.2	0.815	15.405			
	EASE.4	0.783	15.925			
EASE.5	0.784	13.915				

Variable	Indicator	Measurement Model (Outer Model)				
		Outer Loadings	t-statistics	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach Alpha (CA)
	INDN.1	0.887	42.526			
	INDN.2	0.841	28.287			
	PERF.1	0.772	12.513			
	RELY.1	0.767	13.616			
	RELY.2	0.848	27.499			
	TIME.1	0.719	10.129			
	TIME.2	0.842	24.071			
	TIME.3	0.799	18.208			
	TTF.1	0.867	25.276			
	TTF.3	0.762	8.259			
	TTF.4	0.811	16.815			
	UNBS.1	0.765	13.948			
	UNBS.2	0.802	16.116			
Utilization (UTIL)	UTIL.1	0.931	55.496	0.848	0.944	0.912
	UTIL.2	0.888	19.990			
	UTIL.3	0.942	70.892			
Individual Performance (PERFORMANCE)	IP.1	0.865	28.108	0.774	0.932	0.903
	IP.2	0.907	50.803			
	IP.3	0.862	14.721			
	IP.4	0.884	24.348			

B. Analysis of Structural Model (Inner Model)

Evaluation of structural models (Inner Model) was performed to assess the relationship between exogenous and endogenous latent variables in terms of variance [19]. Analysis of the structural model (Fig.2) is the analysis of the pattern of the relationship between the variables of the analysis of this research hypothesis. The path coefficient between variables is said to be statistically significant, if the value of t-statistic of the relationship between latent variables showed a positive direction with a value of t-statistic that is compared to the value of the t-table and the result is greater (t-statistic ≥ t-table). The value of t-statistic (critical ratio) obtained from bootstrapping (resampling method) of the PLS.

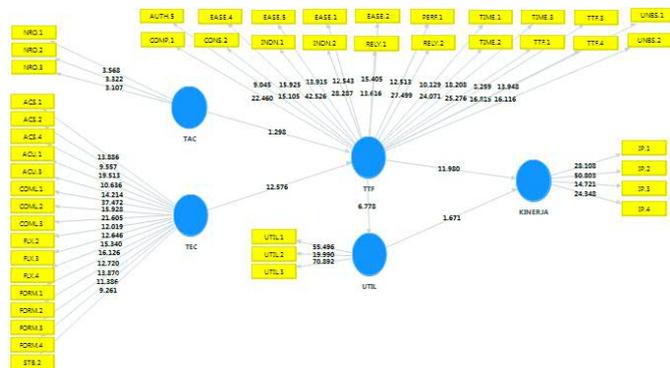


Fig. 2. Results Structural Model with SmartPLS 3.2

This study uses a significance level (α) of 0.1 and a t-table value is 1.660. The confidence level of this research is 90%. Table III shows the correlation of the coefficient test task characteristics (TAC) has no effect on Task Technology Fit (TTF) (β = 0.100, p > 0.1, t-statistic = 1.298) so that Hypothesis 1 was rejected. Technological characteristics (TEC) positive and significant impact on Task Technology Fit (TTF) (β = 0.735, p < 0.01, t-statistic = 12.576) so that the second hypothesis is accepted. Task Technology Fit (TTF)

positive and significant impact on utilization (UTIL) (β = 0.473, p < 0.01, t-statistic = 6.778) so that the third hypothesis is accepted. Task Technology Fit (TTF) positive and significant impact on individual performance (PERFORMANCE) (β = 0.737, p < 0.01, t-statistic = 11.980) so that Hypothesis 4 is accepted. Utilization (UTIL) effect positive and significant impact on individual performance (PERFORMANCE) (β = 0.126, p < 0.1, t-statistic = 1.671) so that Hypothesis 5 accepted.

The R2 is used to indicate the percentage of variance constructs in the model or how much ability all the independent (free) variables in explaining the variance of the dependent variable. Criterion limits of R2 value can be determined based on three levels : 0.67 (substantial), 0.33 (Moderate), and 0.19 (Weak) [21]. The results of the analysis describes the task characteristics (TAC) and the technological characteristics (TEC) was able to explain the task technology fit (TTF) amounted to 56.7% (moderate), the task technology fit (TTF) was able to explain the utilization (UTIL) amounted to 22.4% (moderate), the task technology fit (TTF) and utilization (UTIL) is able explain the performance individual impact (PERFORMANCE) amounted to 64.7% (moderate).

TABLE III. PATH COEFFICIENT VARIABLE AND HYPOTHESIS VALUE

Path Variable (Hypothesis)	Path Coefficient (β)	t-statistics	p-value	Info
TAC → TTF (H1)	0.100	1.298	0.194	Rejected
TEC → TTF (H2)	0.735	12.576***	0.000	Accepted
TTF → UTIL (H3)	0.473	6.778***	0.000	Accepted
TTF → PERFORMANCE (H4)	0.737	11.980***	0.000	Accepted
UTIL → PERFORMANCE (H5)	0.126	1.671*	0.095	Accepted

Significan levels : *p < 0.1; **p < 0.05, ***p < 0.01 (two-tailed)

GoF is used to describe the overall performance of the studied model, both on the measurement model (Outer Model) and the structural model (Inner Model) with a focus on the overall performance of the model predictions [23]. The value of the interpretation GoF Small GoF = 0.10, GoF Medium =

0.25 and GoF Large = 0.36 [24]. GoF value of this model is 0.571 (Large). These results explain the model task technology fit on the generation x (1956-1980) in Mulawarman has a great strength of models to represent the variables studied.

Value F2 (Effect Size) is used to describe the effect of certain latent independent variable value toward the latent dependent variable whether if it has substantial influence. Divides the F2 (Effect Size) in three criteria: 0.02 (small), 0.15 (medium) and 0.35 (large) [25]. Based on the analysis, task characteristics (TAC) has little influence (0.023) on the task technology fit (TTF), technological characteristics (TEC) have a major influence (1.232) on the suitability of the technology task fit (TTF), the task technology fit (TTF) has the effect of being (0.288) on the utilization (UTIL), the suitability of the technology task fit (TTF) have a major influence (1.195) on the performance individual impact (PERFORMANCE), and the utilization (UTIL) has little influence (0.035) on the performance of individual impact (PERFORMANCE).

V. DISCUSSION AND IMPLICATIONS

The results of the research in Generation X (1965-1980) suggest that the task characteristics have no significant effect on the task technology fit for the generation x at Mulawarman University in using information technology. These results are expected because the characteristics of the task of Generation X tend to be daily works routines. Task characteristics faced by Generation X is more manual and less reliant on information technology services in completing tasks. When the characteristics of the task of fairly regular user, then the need for information technology devices will be low because of the low degree of variability in one's duties and the job will be easy to analyses. To fulfilling routine tasks, a technology can be programmed and standardized to meet the needs of routine tasks. At the individual level higher the characteristics of non-routine tasks will make it difficult to find appropriate information technology tools to support the work.

The influence of technology characteristics shown to have a positive and significant effect relationship with Task Technology Fit in the generation x at Mulawarman University. the technological characteristics have a stronger direct effect than the characteristics of the task to technology suitability to the task, because the technological characteristics that meet the requirements of the task will depend on the focus of the activities of a company [26]. The technology Characteristics is the basis for implementing the evaluation by Generation X on the information systems they use, where the user can assess the technology characteristics of the system they use [27]. The task technology fit model consider the importance of the suitability of the functions and characteristics of the technology used to suit the individual needs [28].

Factors task technology fit affect utilization in the generation x in the use of information technology at Mulawarman University. Nowadays though users see the technology is sophisticated, users will not adopt or use if the user thinks that the technology is not in accordance with the duties and did not improve performance [1,2]. The better the compability between task and technology will generate and

increase intentions to use information technology [26]. The task technology fit is the decisive factor beliefs about the usefulness, the importance of use, and advantages of the use of information technology [28]. So based on the results of this study explains the higher the suitability of the technology to the tasks (task-technology fit) of generation x it will affect the use of information technology services in Mulawarman University. The higher level suitability of the task technology fit of generation x will affect utilization of information technology services in organizations.

Task technology fit proved to affect the performance of individual impact on the generation x in the use of information technology at the University of Mulawarman. These results were confirmed by previous studies that the task technology fit (TTF) is a suitability between the functions of the technology to the needs of user tasks, where information technology that is used has an influence on the performance of the individual if there is a match between the functionality of the technology and the requirements of user tasks. Size of the effects that increases an individual's performance implications of the relationship between increased efficiency, effectiveness and productivity with the use of information technology in accordance with the user's tasks [3]. Some previous studies also show that the impact of the individual performance from task technology fit is when technology has provided the features and support in accordance with the requirements of the tasks [15,28]. Preferably Mulawarman University in developing information technology services adjust to the needs of the user tasks of generation x proven effect on the performance impact of individual.

Utilization affect the performance of individual impact on the generation x in uses of information technology at the Mulawarman University. Differences over the decision to use the technology of various ages by generations Y, X, and Baby Boomers and the improved performance of each generation is also different [5]. The impact of individual performance is a function of usage and user satisfaction, which in turn indicates that uses of information technology to add value to the individual performance and operational effectiveness in helping individuals to accomplish their tasks more effectively and increase productivity [15]. Increased utilization and the suitability of the technology to the task increases will have an impact on improvement the performance of an individual [27]. In an effort to increase the utilization of information technology of generation x should have to develop an information system that is easy to use and emphasis on the perceived usefulness of the use of information technology services in task.

VI. CONCLUSION

Conclusion This study empirically tested task-technology fit for individual performance on the generation x (1956-1980) using information technology at the Mulawarman University. The results from our study suggest that the model substantial is explanatory power and is robust under several circumstances. Task technology fit factors and utilization of information technology proved to have a significant effect on the performance of individuals in generation x at the Mulawarman University by being able to explain amounted to

64.7%. The study reveals that the most important constructs explaining task technology fit is one of the factors that affect the utilization and performance of individuals in generation X in the use of information technology at the Mulawarman University. In improving the information technology services organizations especially Mulawarman University there should be suitability to the needs of the task of generation X which has proved influential in increasing the use of information technology and the impact on individual performance. The study provides practical benefits that in the development of information systems in an organization or enterprise information technology should be adapted to the needs of the user tasks of generation X so that later can have an impact on the increased use of information technology and increasing the performance of individual.

Generation X respondents amount in this study is limited so for future research are expected to increased number of respondents so that the results obtained are valid and reliable. Suggestions for future research is Conduct research to other factors that have a relationship and influence on individual performance. This research can be developed on a larger object like a company, private, government, and others to determine the level of task technology fit and individual performance impact in using information technology. Subsequent research may also examine related to the generation Y (1981-2000) in which they are able to utilize technology and to make technology as the ease of working.

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