Analysis of acceptance and use of the NCX application using the UTAUT2 modification model at Telkom Indonesia

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Abstract
Purpose: This study aims to examine user evaluations of factors influencing the use of the NCX application and their impact on behavioral intention and usage. Using the modified UTAUT2 model, the study focuses on Telkom CFU Enterprise, which delivers ICT services such as connectivity, cloud, and digital platforms. NCX, a CRM application, supports CFU Enterprise operations.
Method: This application can be used to manage the customer data. This study uses the modified UTAUT2 model, which is a development of the UTAUT2 model that adds compatibility and personal innovativeness constructs.
Results: This study is expected to provide useful insights to increase the adoption and use of the NCX application in the Telkom CFU Enterprise environment.
Conlusion: Key variables from the modified UTAUT2 model, including compatibility and personal innovativeness, significantly affect user intention and behavior, providing guidance for improving NCX engagement.
Limitation: The research is limited to the CFU Enterprise environment and may not be generalizable to other units or industries. The use of cross-sectional data also restricts the ability to observe behavioral trends over time.
Contribution: This study contributes to the extension of UTAUT2 by validating additional constructs in a corporate CRM context. It also offers practical recommendations for improving technology acceptance within enterprise environments through strategic alignment with user needs and characteristics.

Keywords: *Effort Expectancy, Facilitating Conditions, Performance Expectancy, Social Influence, UTAUT2*

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1. Introduction

Digital transformation has now become one of several company strategies for staying relevant to customers(Huseynli, 2022). taken from Tricahyono & Indiyati (2023) defines digital transformation more deeply as a process where companies combine several new digital technologies, including increased connectivity on various sides, with the aim of achieving superior performance and sustainable competitive advantage by changing various business dimensions, including business models, customer experience, business operations and collectively impacting employees and the entire value system(Lu & Shaharudin, 2024). CFU Enterprise (CFUE) is the customer segment that was the focus of this study. CFUE has a variety of ICT services and platforms covering connectivity, IT and cloud services, outsourcing business processes, devices, satellite business, digital services, and adjacent services, such as e-health services and ATM management. CFUE currently has 1,481 corporate customers, 377,894 MSME customers, and 934 government institution customers (Yuwono, Suroso, & Novandari, 2024)

CFU Enterprise (CFUE) which is under the Directorate of Enterprise & Business Service (EBIS), has 11 Business Unit Subsidiaries and four Business Unit Divisions and is supported by seven Telkom Regionals. In addition, there are 34 subsidiaries, of which there is one subsidiary whose shares are mostly owned by Telkom Metra, but whose parenting is not under CFU Enterprise, namely Metra Digital Innovation(Abdilah, Usman, & Lesmono, 2021). Based on internal research conducted by the Directorate of Enterprise & Business Service (EBIS), where CFU Enterprise is located, the business process and bureaucracy in service delivery using the NCX application are currently relatively complex and long. In another study conducted by the digital business research team, there were obstacles in the fulfillment process for digital products that used the NCX application as a customer relationship management tool(Baqer & Al Mubarak, 2025).

A study by Telkom's consulting partners found that the NCX application, which was initially built to support Digital Connectivity services, had limited functionality in supporting other service pillars from Telkom, namely Digital Services. Another shortcoming is on the assurance side, where the NCX cannot monitor the service status of digital products. The obstacle on the billing side is that bills from digital products must be manually inputted into the NCX system. NCX application is currently mandatory application to use. However, this does not rule out the possibility of a new system being developed by Telkom to replace the NCX. The above findings indicate that NCX still has problems and shortcomings in terms of technology and the business processes that follow it. However, based on the researcher's search, no research or study has examined the level of adoption and factors that influence users in using NCX. This is needed to identify the factors that are important to users so that Telkom can focus on improving the priority aspects.

Currently, there are various models for studying users' adoption of technology. Venkatesh, Morris, Davis, and Davis (2003) introduced the Unified Theory of Acceptance and Use of Technology (UTAUT) model which is intended to study the factors that influence the acceptance and use of information technology by employees. Venkatesh, Thong, and Xu (2012) developed the UTAUT2 model by adding 3 constructs, namely hedonic motivation, price value and habit. In addition, (Tosuntaş, Karadağ, & Orhan, 2015) UTAUT is one of the most widely used models for the acceptance and use of technology in previous studies. Farooq et al. (2017) developed a modified UTAUT2 model by adding the construct of personal innovativeness in IT. (Agarwal & Prasad, 1998; Alayis, Abdelwahed, & Atteya, 2018) (Farooq et al., 2017)) stated that personal innovatveness in the information technology domain has an undeniable relationship with the acceptance and use of technology. The inclusion of personal innovativeness in IT in this study provides interesting insights into the factors that influence the acceptance and use of technology by executive business graduates (Farooq et al., 2017).

Blut, Chong, Tsiga, and Venkatesh (2022) also introduced the UTAUT2 modification model by adding four new constructs: compatibility, education, personal innovativeness, and cost. Blut et al. (2022) also added moderators such as national culture, technology, and controls. The UTAUT2 modification model from Blut et al. (2022) is a more comprehensive model based on the synthesis of various UTAUT modification articles (UTAUT2), which is also more flexible because it can be used for various contexts and object backgrounds. The UTAUT model and its modifications are expected to help researchers study the adoption of the NCX application in Telkom, Indonesia. Therefore, the research questions obtained based on the formulation of the problem above for the study "Analysis of Acceptance and Use of the NCX Application Using the UTAUT2 Modification Model at Telkom Indonesia."

2. Literature Review
2.1. Strategic Management
According to Yunus (2016), management science continues to develop rapidly, and various branches of science such as financial management, human resource management, production management, transportation management, and strategic management have emerged. Strategic management is the highest management activity, which is usually compiled by the board of directors and implemented by the CEO and executive team of the organization (Yunus, 2016). According to Pearce/Robinson (2008), Yunus (2016), several experts define strategic management as a set of decisions and actions that result

in the formulation and implementation of plans designed to achieve a company's goals. Yunus (2016) conveyed from several explanations from experts that it can be concluded that the strategic management process consists of three stages: strategy formulation, strategy implementation and strategy evaluation. The strategic management stages are shown in the following chart.
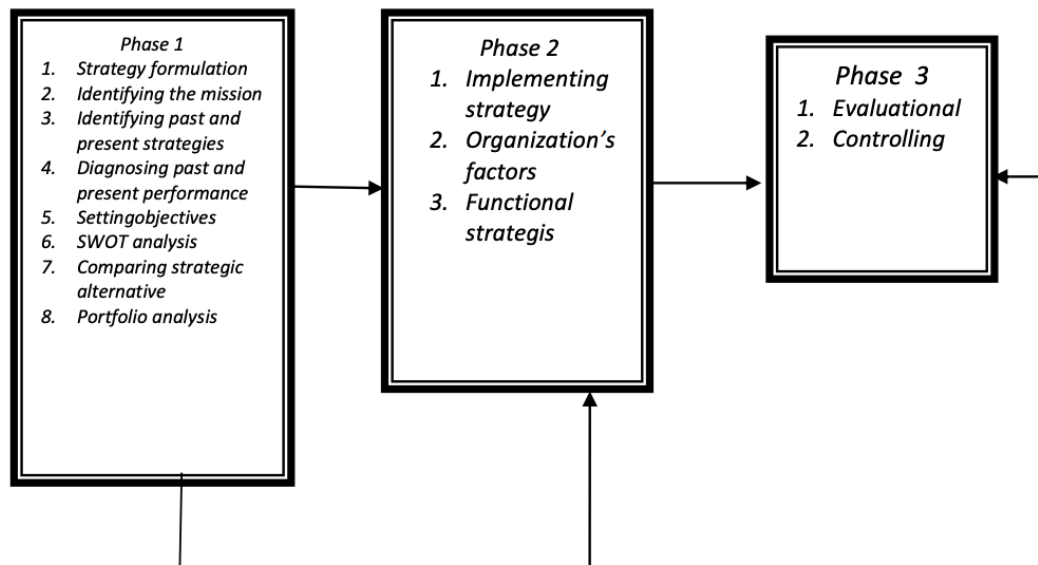

Figure 1. Stages of strategic management
Source: Strategic Management (Riva'i, 2004 taken from Yunus, 2016)

The implementation of NCX as a supporting application in the scope of CFU Enterprises is part of the implementation of the strategy that should have passed the strategy formulation stage. The implementation of the NCX application is expected to be evaluated based on the results of observations and research that have been carried out.

2.2. Enhanced Telecom Operations Map (Apriyanto, Oetomo, & Mudjanarko)
eTOM is a business process framework created by the TeleManagement Forum or TM Forum (2008) to group telecommunications companies' operational activities. The Telecommunications Industry uses the eTOM framework to guide management in managing its companies. eTOM consists of three main processes, namely "Strategy, Infrastructure & Product", "Operations, and "Enterprise Management, as shown in Figure 2.
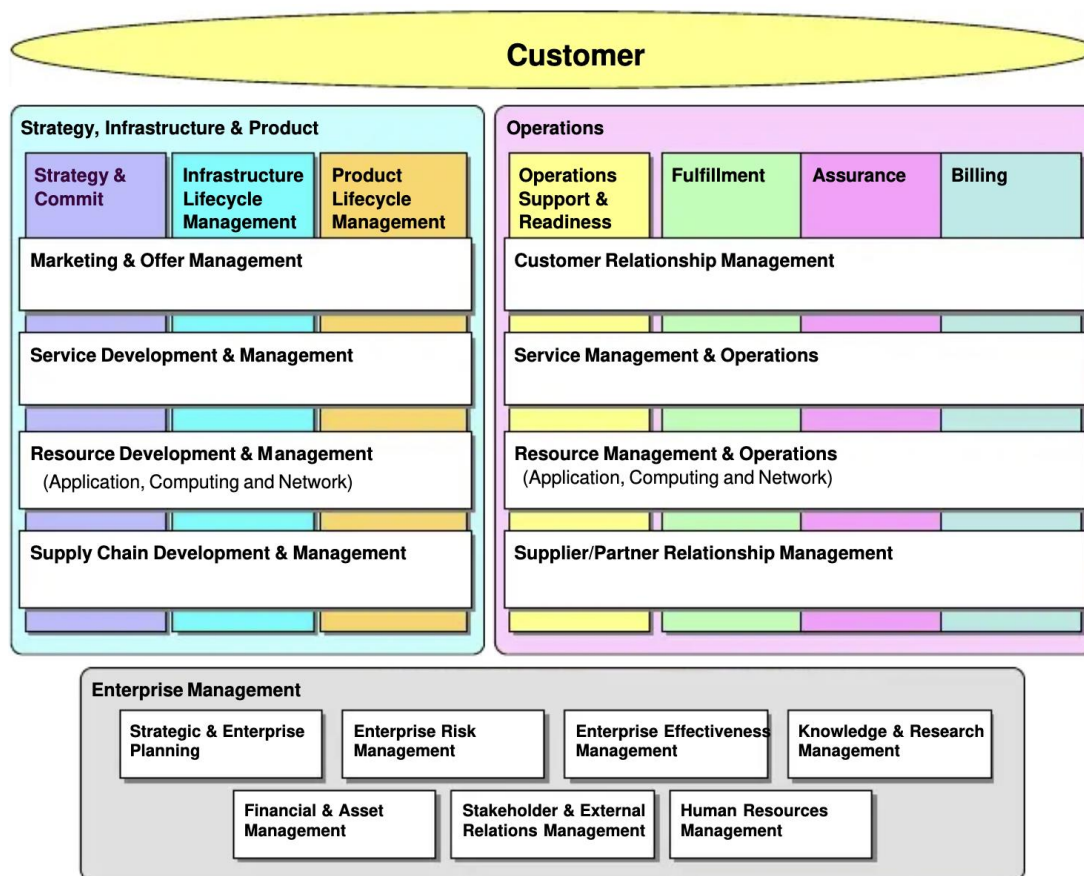
Figure 2. eTOM Framework Level-0
Source: eTOM Business Process Framework (TMForum, 2008)

The NCX, which is the object of this research, is included in the operations process starting from the scope of operations that support readiness, fulfillment, assurance, and billing.

2.3. Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) model was introduced by Venkatesh et al. (2003), entitled "User Acceptance of Information Technology: Toward a Unified View". The UTAUT model aims to explain and predict user acceptance and adoption of new technologies by integrating existing theories and models into a comprehensive framework. An explanation of the models and theories regarding individual acceptance studied by Venkatesh et al. (2003) is presented in Table 1.

This study, conducted by Venkatesh et al. (2003), aims to integrate fragmented theories and research on individual acceptance of information technology into a unified theoretical model that captures the essential elements of eight previously established models. Venkatesh et al. (2003) identified eight specific models related to intention and IT use of information technology. Second, these models were empirically compared using longitudinal data from subjects in the four organizations. Third, conceptual and empirical similarities across the eight models were used to formulate a Unified Theory of Acceptance and Use of Technology (UTAUT). Fourth, the UTAUT was empirically tested using original data from four organizations and then cross-validated using new data from two additional organizations.

2.4. Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

Neufeld (Quoted from (Venkatesh et al., 2012)) stated that there are various applications and replications of some or all of the UTAUT models in the organizational context. Generally, there are three types of UTAUT extension/integration. The first type of extension/integration tests UTAUT in

new contexts such as new technologies, collaborative technology, and health information systems. Venkatesh et al. (2012), new user populations such as health professionals, and new cultural settings such as China and India, Gupta et al. (Venkatesh et al., 2012).

The second type is the addition of new constructs to expand the scope of endogenous theoretical mechanisms described in UTAUT, as in Venkatesh et al. (2012). Finally, the third type includes exogenous predictors of UTAUT variables (Venkatesh et al., 2012) Thus, although various studies have contributed to understanding the application of UTAUT in different contexts, there is still a need for systematic investigation and theoretical development of the relevant factors that apply in the context of consumer technology use (Venkatesh et al., 2012).

Based on previous extensions of UTAUT, the purpose of the research conducted by Venkatesh et al. (2012) is to focus on the context of consumer use and develop the UTAUT2 model. In UTAUT2, Venkatesh et al. (2012) added three new constructs, namely hedonic motivation, price value, and habit. Venkatesh et al. (2012) removed voluntariness as a moderator and added a connection between facilitating conditions and behavioral intention moderated by age, gender, and experience.

2.5. Modification of the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2 Modification)

The Modified UTAUT2 Model is an extension of the UTAUT2 model introduced by Farooq et al. (2017), which uses eight determinants of technology acceptance, namely, performance expectancy, effort expectancy, social influence, facilitating conditions, habit, hedonic motivation, price value, and an additional construct, namely, personal innovativeness in IT (PI). PI in the IT domain has an undeniable relationship. According to Agarwal and Prasad and Dutta et al.Farooq et al., Karahanna et al.Rosen Quoted from Farooq et al. (2017), personality traits such as PI play an important role in technology adoption in the IT domain.

Schillewaert (Farooq et al., 2017) stated that PI in the IT domain refers to the perception of a person's predisposition or personal attitude that reflects their tendency to independently experiment and adopt new advances in information technology. PI can be defined as the willingness to adopt the latest technological gadgets or the propensity to take risks associated with trying new features and developments in the IT domain based on Agarwal and Prasad; Bommer and Jalajas (Farooq et al., 2017). The exploration of the role of PI in the IT domain answers the call for research from several researchers such as Rosen; Van-Raaij and Schepers (Farooq et al., 2017).

The findings of the study by Farooq et al. (2017) confirmed that personal innovativeness in IT (PI) is an important personal trait and plays a significant role in determining users' acceptance and use of technology. In addition, this study has tested the validity of the constructs in UTAUT2, and the findings of this study confirm that PE (performance expectancy), EE (effort expectancy), FC (facilitating conditions), SI (social influence), HM (hedonic motivation), PV (price value), H (habit), and PI (personal innovativeness in IT) have a significant role in the adoption of the latest technological advances. According to Farooq et al. (2017), the UTAUT3 model has 66% explanatory power in predicting technology adoption.

2.6. Revised UTAUT: A Synthesis of Extension

Additionally, Farooq et al. (2017), Venkatesh, Thong, and Xu (2016) and Blut et al. (2022) also conducted studies related to the extensions of the UTAUT and UTAUT2 models. Blut et al. (2022) add four new constructs: compatibility, education, personal innovativeness, and cost. Blut et al. (2022) also added moderators, such as national culture, technology, and controls, as shown in the figure.
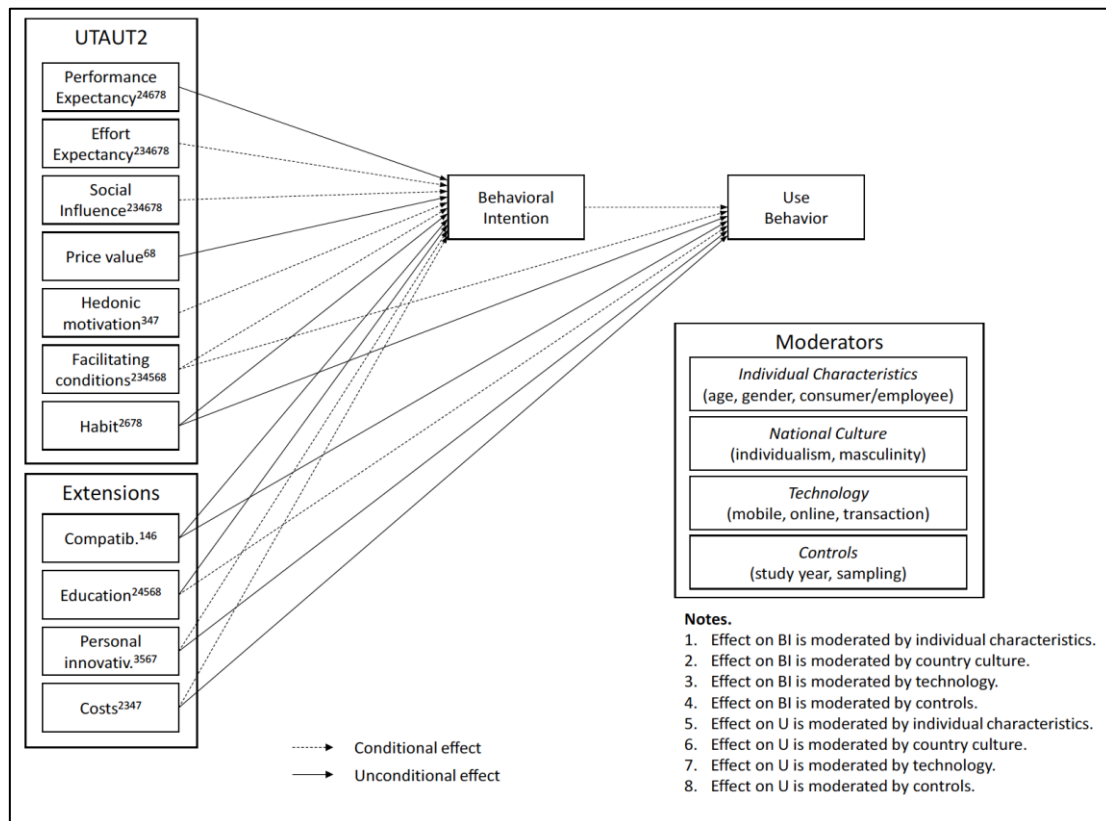
Figure 3. UTAUT2 Modification Model
Source: Meta-analysis of The Unified Theory of Acceptance and Use of Technology (UTAUT):
Challenging its Validity and Charting a Research Agenda in the Red Ocean (2022)

This study uses the UTAUT2 modification model by Blut et al. (2022), which is a more comprehensive UTAUT2 modification model developed through the synthesis of various UTAUT modification articles. UTAUT2 is more flexible because it can be used in various contexts and object backgrounds.

2.7. Framework

Farooq et al. (2017) introduced an extension of the UTAUT2 model by adding the construct of personal innovativeness in IT, because this variable was also stated in previous research to have an influence on the acceptance and use of information technology. Farooq et al. (2017) did not mention that the UTAUT2 extension model is the UTAUT3 model. However, several researchers used the extension model presented by Farooq et al. (2017) as the UTAUT3 model.

Based on the constructs and moderators above, a representation of the model is shown in Figure.

Figure 4. Modified UTAUT2 model
Source: Author's processing; Blut et al. (2022)

2.8. Research Hypothesis

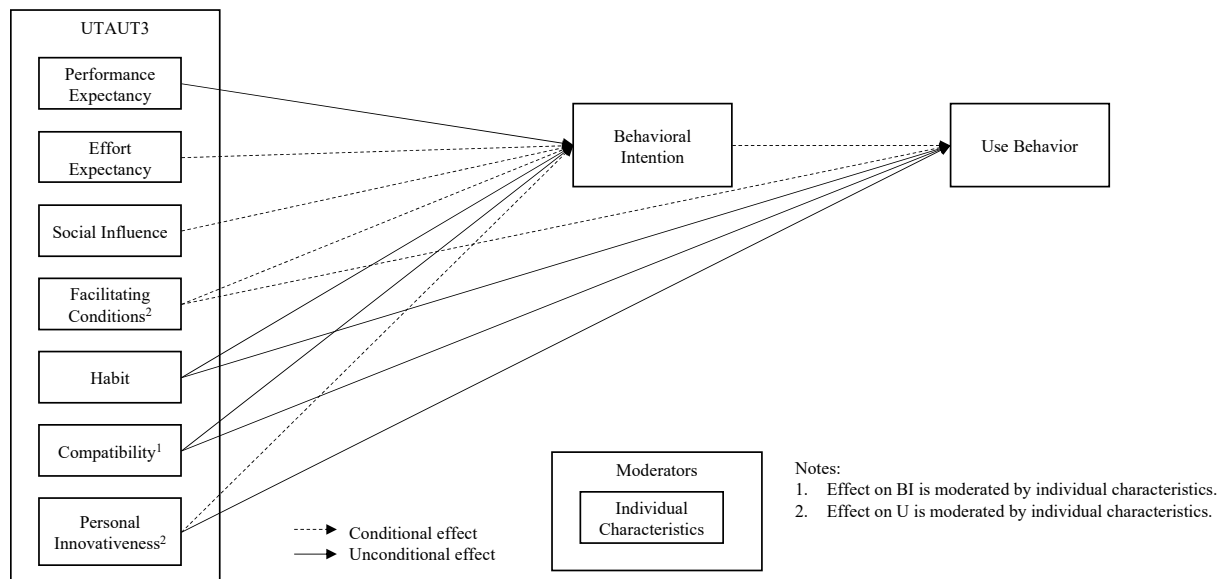Based on the above framework, the hypotheses of this study are as follows:

H1a: Performance expectancy has a significant positive effect on behavioral intention

H2a: Effort expectancy has a significant positive effect on behavioral intention

H3a: Social influence has a significant positive effect on behavioral intention

H4a: Facilitating conditions have a significant positive effect on behavioral intention

H4b: Facilitating conditions have a significant positive effect on use behavior

H4e: The influence of Facilitating conditions on usage behavior is influenced by individual characteristics

H5a: Habit has a significant positive effect on behavioral intention

H5b: Habit has a significant positive effect on use behavior

H6a: Compatibility has a significant positive effect on behavioral intention

H6b: Compatibility has a significant positive effect on use behavior

H6c: The influence of compatibility on behavioral intention is influenced by individual characteristics

H7a: Personal innovativeness has a significant positive effect on behavioral intention

H7b: Personal innovativeness has a significant positive effect on use behavior

H7c: Individual characteristics influence the influence of personal innovativeness on usage behavior.

H8a: Behavioral intention has a positive effect on use behavior.

3. Research Methodology

3.1. Type of Research

This research is included in research with quantitative methods, because it involves numbers and analysis using statistics on data with scientific principles, namely concrete, objective, measurable, rational, and systematic (Sugiyono, 2017). This study tests models and hypotheses; therefore, quantitative methods are suitable for use in this research (Indrawati, 2015). This study was classified as conclusive based on its research objectives. Conclusive research refers to, reads, or sees previous research that discusses the relationship between variables (Indrawati, 2015).

Based on this type, this research is classified as a causal research. Causal research is a scientific approach that aims to test one variable that causes changes to other variables. This research is classified as research that does not intervene in the data. According to Indrawati (2015), research is divided into two: research that intervenes in data and research that does not intervene in data. In this study, the author was not involved in data manipulation because he used a questionnaire data collection method.

3.2. Operationalization of Variables

According to Indrawati (2015), the operationalization of variables is a process of reducing the variables contained in the research problem into the smallest parts so that the classification of its size can be used to obtain the data needed to assess the research problem. In this study, the independent and dependent variables were as follows:

a. Independent variables: Performance expectancy, effort expectancy, social influence, facilitating conditions, habits, compatibility, and personal innovativeness in IT.

b. Dependent variables: Behavioral Intention and Use Behavior.

The indicators of each variable are taken from Blut et al. (2022) so that they can be adjusted to the research object, namely, the NCX application. The operational variables in this study are presented in Table 1.

Table 1. Operational Variables

No	Variable	Indicator	Statement Items	Item number
1	Performance Expectancy (PE) According to Venkatesh et al., (2003) Performance Expectancy is a person's belief that using a system will help them gain benefits for their job performance.	NCX app makes me more efficient	I feel the NCX application helps me to be more efficient	PE1
		NCX app makes it easier to find information	Using the NCX application makes it easier for me to access information related to product catalogs, customers and performance.	PE2
		NCX app makes me more productive	Using the NCX application makes me more productive	PE3
		Feeling the ease of using work-related features	Using the features of the NCX application helps me to complete my work	PE4
		NCX app is useful in everyday work	I feel the NCX application is useful for recording and reporting all my daily activities	PE5
2	Effort Expectancy (EE) According to Venkatesh et al., (2003) Effort Expectancy is the level of ease in using a system.	NCX is easy to learn	I found it easy to learn the NCX app	EE1
		NCX is easy to understand	I find the NCX app easy to understand	EE2
		NCX is easy to use	I find the NCX app easy to use	EE3
		Easy to become proficient in using NCX	I find it easy to become proficient in using the NCX app	EE4
		No problems with using NCX	I did not encounter any significant obstacles in using the NCX app	EE5
3	Social Influence (SI) According to Venkatesh et al., (2003) Social Influence is the level of a person's perception that important people around them believe	My co-worker thinks I should use NCX	My coworker suggested I use the NCX app	SI1
		A person who influences me suggests using the NCX app	My boss suggested I use the NCX app	SI2
		A person who is important to me feels I should use the NCX app	Someone important to me (close friend, family, etc.) suggested I use the NCX app	SI3

	that they should use a new system.			
4	Facilitating Conditions (FC) According to Venkatesh et al., (2003) Facilitating Conditions is the level of individual trust in the existence of organizational and technical infrastructure to support the use of the system.	Have enough devices to access the NCX application	I have enough devices to access the NCX application	FC1
		Have enough time to access the NCX application	I have enough time to access the NCX application	FC2
		Get help when facing difficulties in using the NCX application	I get enough help from other people when I have difficulty accessing the NCX application	FC3
		Have enough knowledge to use NCX	I have enough knowledge to use NCX	FC4
5	Habits (HA) According to Venkatesh et al., (2012) the level of a person in carrying out a behavior automatically based on learning.	Using the NCX app has become a habit for me	I feel like using the NCX app has become a habit for me	*HA1*
		Using the NCX app has become a necessity for me	I feel like using the NCX app has become a necessity for me	*HA2*
		Using the NCX app is a natural thing to do	I feel like using the NCX app is a natural thing to do	*HA3*
6	Compatibility (C) According to Moore & Benbasat (1991) quoted from Blut el al., (2022) is the level of consistency of an innovation to the values, needs and experiences of users According to Moore & Benbasat (1991) quoted from Blut el al. (2022) compatibility is the level of conformity of values, needs and experiences of users According to Im et al. (2011) compatibility refers to the level of conformity with existing technology	NCX application is still relevant to the technology used by the company	I feel that the use of the NCX application is still in accordance with the technology used at Telkom	*C1*
		NCX application is part of the platform or ecosystem that exists in the company	I feel that the NCX application is part of the existing platform or ecosystem	*C2*
		NCX application features are in accordance with business and technology needs	I feel that the NCX features and applications are in accordance with business and technology needs	*C3*
		Management shows commitment to the implementation of the application	I feel that Management shows commitment to the use of the NCX application	*C4*
7	Personal Innovativeness (PI) According to Agarwal & Karahanna (2000) quoted from Blut el al. (2022) PI represents individual	Desire to use new technologies	I feel like using new technology like NCX	*PI1*
		The desire to be an early adopter of new technologies	I feel like trying new technology and being an early adopter.	*PI2*

		characteristics that indicate a desire to try new technologies According to Agarwal and Prasad (1998) in Lu et al. (2005) personal innovativeness is the tendency to take risks that exist in some individuals in adopting technology According to Lu et al. (2005) personal innovativeness is an internal motivation to try and is an important stimulus for the perception of technology use			
8	Behavioral Intention (BI)	Intend to always use NCX	I intend to continue using NCX	*BI1*
		Plan to continue using NCX for daily work	I plan to continue using NCX for my daily work	*BI2*
		Expect to use NCX in the future	I expect to use NCX in the future	*BI3*
9	Use Behavior (UB)	Frequently use NCX to support work	I use NCX frequently to support my work	*UB1*
		Use NCX features (sales pipeline, project management, information, etc.)	I use NCX features (sales pipeline, project management, information, etc.)	*UB2*
		Rely on NCX every day	I depend on NCX every day	*UB3*

Source: Author's Data Processing (2023)

3.3. Population and Sample

The population of this study was Enterprise Enterprise employees in Telkom Indonesia. The number of NCX users in Telkom, Indonesia was 829. The total population of NCX users in Telkom, Indonesia was 829. There were 102 active NCX users.

3.4. Data Collection and Data Sources

This study obtained secondary data through literature studies from previous studies related to the use of the UTAUT modification model such as UTAUT2, especially on the object of research in the form of information systems within an organization. In addition, this study collected internal company data related to Telkom Indonesia and the NCX application. This study obtained primary data using an online questionnaire. A questionnaire is a data collection technique that asks respondents to answer a set of questions (Sugiyono, 2017).

3.5. Validity Test

The instrument used in this study was a questionnaire. According to Indrawati (2015), each question in a questionnaire must be measured for validity. Validity is an instrument test that shows the extent to which an instrument can measure what should be measured in a study (Indrawati, 2015). According to Indrawati (2015), the greater the validity value of a measuring instrument, the more the measuring instrument hits its target or shows what should be measured.

This study's validity test was conducted using a pilot test with 30 respondents. The pilot test was conducted by comparing the calculated r value with the table r value. A sample size of 30 and a significance level of 5% or 0.05. Therefore, the r-table in this study was 0.361. If the calculated r value is greater than the table r value, then the item can be declared valid. The results of the validity test are presented in the following table.

Tabel 2. Validity Test

Variables	Items	r-table	r-count	Results
Performance Expectancy	PE1	0,361	0,644	Valid
	PE2	0,361	0,774	Valid
	PE3	0,361	0,774	Valid
	PE4	0,361	0,846	Valid
	PE5	0,361	0,637	Valid
Effort Expectancy	EE1	0,361	0,578	Valid
	EE2	0,361	0,717	Valid
	EE3	0,361	0,771	Valid
	EE4	0,361	0,754	Valid
	EE5	0,361	0,560	Valid
Social Influence	SI1	0,361	0,646	Valid
	SI2	0,361	0,612	Valid
	SI3	0,361	0,641	Valid
Facilitating Conditions	FC1	0,361	0,530	Valid
	FC2	0,361	0,789	Valid
	FC3	0,361	0,398	Valid
	FC4	0,361	0,555	Valid
Habit	HA1	0,361	0,717	Valid
	HA2	0,361	0,754	Valid
	HA3	0,361	0,560	Valid
Compatibility	C1	0,361	0,525	Valid
	C2	0,361	0,572	Valid
	C3	0,361	0,685	Valid
	C4	0,361	0,611	Valid
Personal Innovativeness	PI1	0,361	0,617	Valid
	PI2	0,361	0,439	Valid
Behavioral Intention	BI1	0,361	0,851	Valid
	BI2	0,361	0,757	Valid
	BI3	0,361	0,687	Valid
Use Behavior	UB1	0,361	0,584	Valid
	UB2	0,361	0,582	Valid
	UB3	0,361	0,745	Valid

From the table above, it can be concluded that all construct variables are valid.

3.6. Reliability Test

According to Sujarweni (2015), a reliability test is a tool for measuring the stability, consistency, precision, and accuracy of respondents in answering matters related to the question construct, which is part of a variable and is arranged in the form of a questionnaire. Reliability means that a measuring instrument must have consistent and stable results if it is used repeatedly. According to Tavakol and Dennick (2011)reliability test can be used with the Cronbach Alpha formula, where the Cronbach Alpha coefficient value> 0.70 indicates that the instrument has a good reliability value. The reliability results of the pilot test are shown in the following table.

Tabel 3. Reliability Test

No	Model	Cronbach Alpha Value	Result
1	UTAUT2 Modified Model	0,951	Reliable

From the table above, it can be concluded that all construct variables are reliable.

3.7. Structural Equation Modelling (SEM)
Structural Equation Modeling (SEM) is a statistical technique for testing and estimating causal relationships by integrating factor analysis and path analysis (Martynova, West, & Liu, 2018). According toDamayanti (2024), SEM or structural equation modeling is divided into two types: covariance-based metric structural equation modeling (CB-SEM) and variance-based matrix structural equation modeling (VB-SEM).

SEM based on variance aims to develop a theory in research, whereas SEM based on covariance aims to test previous theories (Rigdon, 2016). According to (Hair, Ringle, & Sarstedt, 2011), partial least squares (PLS) is SEM based on variance, whereas AMOS and LISREL are SEM based on covariance. According to (Sarstedt, Hopkins, & Kuppelwieser, 2014), some of the advantages of using SEM PLS over SEM based on covariance are as follows:
a. Able to carry out modeling functions from many dependent variables and independent variables
b. Able to manage problems that arise when there is multicollinearity between several independent variables
c. The results are robust even though there are some data that are not normal or missing
d. The results appear as independent latent variables directly with a cross-product basis involving dependent latent variables as predictions.
e. It can be used in both reflective and formative forms.
f. It can be used for small samples.
g. It can be used for data with different scale types, namely normal, ordinal, and continuous scales.
h. It does not require data to be normally distributed.

3.8. Partial Least Square (PLS)
PLS-SEM or structural equation Modeling based on partial least squares is another alternative to structural equation modeling based on covariance, where this model provides flexibility in the rules for using SEM procedures (Putra, 2022). For example, Narimawati, Sarwono, Sos, Affandi, and Priadana (2020) PLS-SEM does not ignore the rules related to validity, reliability, and accuracy in data calculation. PLS does not require certain types of data and can be used to process data for small or large samples; it is used to make predictions (Indrawati et al., 2017).

According to Abdillah and Hartono (2015), PLS aims to make predictions between the independent and dependent variables. Therefore, this study conducted a model evaluation using SmartPLS. PLS was carried out using two tests: the measurement model test and the structural model test. The measurement model test was used to test the hypothesis using the prediction model (Abdillah & Hartono, 2015).

4. Result and Discussion
4.1. Research Results
4.1.1. Respondent Characteristics
This section explains the characteristics of the research respondents determined by the author as Telkom Indonesian employees in the CFU Enterprise scope and NCX application users. The total number of respondents who participated in this study was 62, with the following characteristics:

Table 4. Respondent Characteristics

Question	Amount	%
Have you ever used the NCX (New Customer Experience) application?		
Yes	53	85,5%
No	9	14,5%
How long have you worked at Telkom?		
< 1 year	2	3,2%
1 - 3 years	17	27,4%
3 - 5 years	11	17,7%
5 - 10 years	17	27,4%
10 - 20 years	14	22,6%
> 20 years	1	1,6%
How long have you been using or knowing about the NCX app?		
< 1 year	22	35,5%
1 - 3 years	19	30,6%
3 - 5 years	9	14,5%
> 5 years	12	19,4%
Your gender		
Male	39	62,9%
Female	23	37,1%

4.2. *Smart PLS Analysis*
This section explains the results of PLS-SEM testing using the SmartPLS 4 application.

4.2.1 *Measurement Model Test (Outer Model)*
In the test and analysis stage of the measurement model (outer model), two aspects will be analyzed: validity, which includes construct validity, discriminant validity, and convergent validity. In addition, reliability was analyzed, which consisted of Cronbach's alpha and composite reliability. The test was performed using SmartPLS 4.0 application. The diagram or Outer Model in this study can be seen in the following figure:
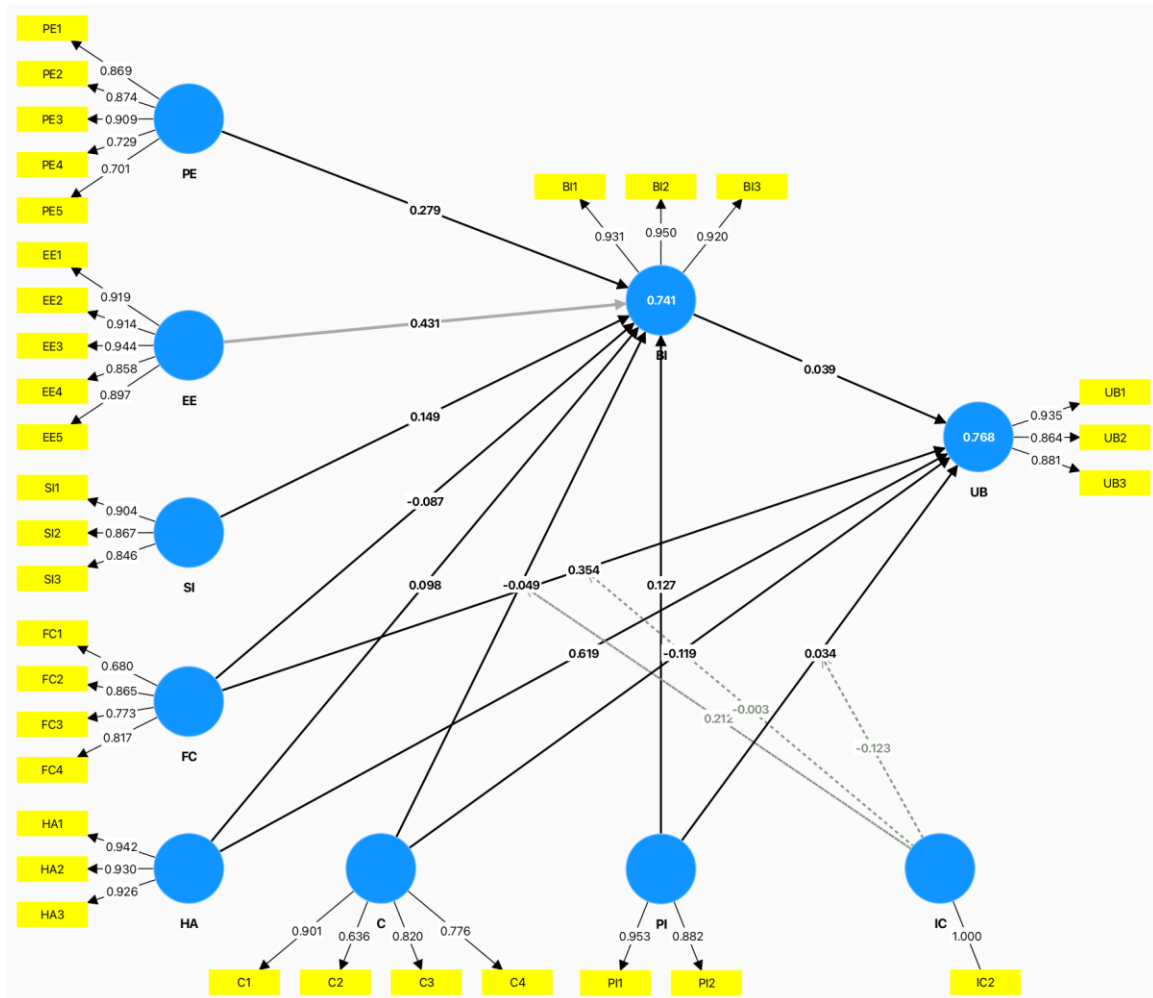
Figure 5. Outer Diagram of Initial Model

4.2.2. Convergent Validity Tes

According to Abdillah and Hartono (2015), the convergent validity test focuses on measures of a construct that must have a high correlation. Convergent validity assessment in PLS uses reflective indicators based on loading factors (correlation between item and construct scores). Thus, the higher the loading factor value, the more important the role of loading in interpreting the factor matrix. The rule of thumb used in convergent validity is outer loading> 0.7, and Average Variance Extracted (AVE)> 0.5 (Abdillah & Hartono, 2015). The following are the results of the convergent validity test with the loading factor values.

Table 5. Initial Convergent Validity Test Results

Variables	Items	Loading Factor	Conclusion
Performance Expectancy	PE1	0,869	Valid
	PE2	0,874	Valid
	PE3	0,909	Valid
	PE4	0,729	Valid
	PE5	0,701	Valid
Effort Expectancy	EE1	0,919	Valid
	EE2	0,914	Valid
	EE3	0,944	Valid
	EE4	0,858	Valid
	EE5	0,897	Valid
Social Influence	SI1	0,904	Valid

	SI2	0,867	Valid
	SI3	0,846	Valid
Facilitating Conditions	FC1	0,680	Tidak Valid
	FC2	0,865	Valid
	FC3	0,773	Valid
	FC4	0,817	Valid
Habit	HA1	0,942	Valid
	HA2	0,930	Valid
	HA3	0,926	Valid
Compatibility	C1	0,901	Valid
	C2	0,636	Tidak Valid
	C3	0,820	Valid
	C4	0,776	Valid
Personal Innovativeness	PI1	0,953	Valid
	PI2	0,882	Valid
Behavioral Intention	BI1	0,904	Valid
	BI2	0,867	Valid
	BI3	0,846	Valid
Use Behavior	UB1	0,935	Valid
	UB2	0,864	Valid
	UB3	0,881	Valid

Based on Table 5, it can be seen that there are two indicator items with a loading factor value <0.700, which means they are invalid. Therefore, they must be eliminated and retested using the convergent loading factor algorithm. The results of the retest are as follows:
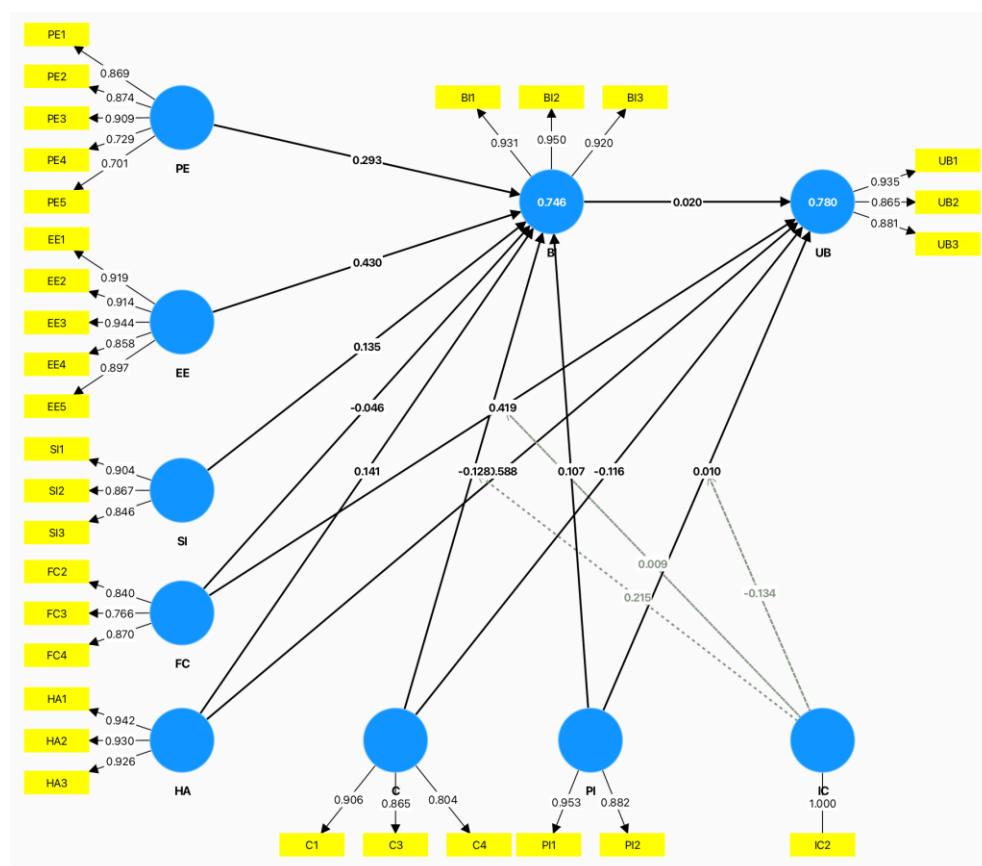

Figure 6. Final Outer Model Diagram

The results of the convergent validity test with the final loading factor values are as follows:

Table 6. Final Convergent Validity Test Results

Variables	Items	Loading Factor	Conclusion
Performance Expectancy	PE1	0,869	Valid
	PE2	0,874	Valid
	PE3	0,909	Valid
	PE4	0,729	Valid
	PE5	0,700	Valid
Effort Expectancy	EE1	0,918	Valid
	EE2	0,914	Valid
	EE3	0,944	Valid
	EE4	0,858	Valid
	EE5	0,896	Valid
Social Influence	SI1	0,904	Valid
	SI2	0,866	Valid
	SI3	0,846	Valid
Facilitating Conditions	FC2	0,840	Valid
	FC3	0,766	Valid
	FC4	0,870	Valid
Habit	HA1	0,942	Valid
	HA2	0,930	Valid
	HA3	0,926	Valid
Compatibility	C1	0,906	Valid
	C3	0,865	Valid
	C4	0,804	Valid
Personal Innovativeness	PI1	0,953	Valid
	PI2	0,882	Valid
Behavioral Intention	BI1	0,929	Valid
	BI2	0,950	Valid
	BI3	0,922	Valid
Use Behavior	UB1	0,935	Valid
	UB2	0,864	Valid
	UB3	0,881	Valid

From Table 6, it can be concluded that all indicators are valid because they have a loading factor greater than 0.7. Convergent validity can also be measured by calculating each indicator on the average variance extracted (AVE). The indicator for calculating AVE shows that if the AVE value is greater than 0.5, the items in the variable are considered to have adequate convergent validity. The AVE values are shown in the following table:

Table 7. Results of Average Variance Extracted (AVE) Values

Variables	*Average Variance Extracted* (AVE)
Performance Expectancy	0,872
Effort Expectancy	0,738
Social Influence	0,822
Facilitating Conditions	0,683
Habit	0,870
Compatibility	0,674
Personal Innovativeness	0,843
Behavioural Intention	0,762
Use Behaviour	0,799

Based on Table 7, the results of the calculation of convergent validity with AVE show that the AVE value of each variable was more than 0.5. Thus, it can be concluded that the data in this study meet the criteria for convergent validity.

4.2.3. Discriminant Validity Test
An indicator is said to have discriminant validity if the loading factor of each indicator that measures the latent variable is greater than the cross-loading value (the correlation of the indicator with other latent variables). The results of the discriminant validity test are listed in Table 8.

Table 8. Discriminant Validity Results

	BI	C	EE	FC	HA	IC	PE	PI	SI	UB	IC x FC	IC x C	IC x PI
BI1	0.931	0.436	0.748	0.611	0.621	0.038	0.714	0.549	0.632	0.599	-0.060	0.115	-0.059
BI2	0.950	0.453	0.775	0.643	0.588	0.087	0.713	0.591	0.590	0.584	-0.015	0.162	-0.006
BI3	0.920	0.372	0.748	0.597	0.467	0.170	0.674	0.492	0.585	0.502	-0.031	0.094	-0.086
C1	0.455	0.906	0.552	0.567	0.451	-0.027	0.420	0.246	0.619	0.367	-0.115	0.100	0.025
C3	0.440	0.865	0.458	0.426	0.629	0.048	0.374	0.289	0.418	0.488	-0.104	0.080	0.049
C4	0.235	0.804	0.426	0.569	0.443	0.016	0.390	0.235	0.605	0.410	0.062	0.267	-0.000
EE1	0.710	0.537	0.919	0.714	0.514	0.109	0.757	0.539	0.586	0.575	-0.143	0.017	0.016
EE2	0.798	0.424	0.914	0.584	0.557	0.085	0.682	0.561	0.560	0.556	-0.048	0.134	-0.034
EE3	0.769	0.582	0.944	0.732	0.672	0.013	0.807	0.573	0.657	0.715	-0.260	-0.057	-0.032
EE4	0.709	0.473	0.858	0.686	0.640	0.088	0.694	0.479	0.600	0.595	-0.219	-0.058	-0.063
EE5	0.677	0.521	0.897	0.774	0.582	-0.042	0.703	0.443	0.696	0.572	-0.165	0.032	-0.033
FC2	0.531	0.416	0.627	0.840	0.536	0.129	0.577	0.316	0.626	0.619	-0.183	-0.081	0.117
FC3	0.305	0.355	0.456	0.766	0.377	-0.050	0.540	0.323	0.562	0.534	-0.223	-0.125	-0.068
FC4	0.711	0.643	0.757	0.870	0.770	0.174	0.676	0.467	0.636	0.749	-0.255	-0.029	-0.146
HA1	0.559	0.568	0.650	0.670	0.942	0.041	0.541	0.436	0.557	0.808	-0.323	-0.042	0.018
HA2	0.470	0.526	0.505	0.635	0.930	0.095	0.417	0.246	0.568	0.749	-0.235	-0.014	0.039
HA3	0.644	0.584	0.665	0.687	0.926	0.075	0.629	0.390	0.622	0.744	-0.228	-0.064	0.012
IC2	0.103	0.016	0.057	0.124	0.075	1.000	0.185	-0.053	-0.054	0.035	-0.101	-0.133	-0.075
PE1	0.698	0.386	0.749	0.585	0.400	0.203	0.869	0.510	0.451	0.532	-0.183	-0.082	-0.106
PE2	0.732	0.359	0.747	0.605	0.575	0.171	0.874	0.630	0.499	0.681	-0.325	-0.211	-0.224
PE3	0.684	0.437	0.725	0.714	0.561	0.222	0.909	0.449	0.618	0.625	-0.259	-0.168	-0.110
PE4	0.482	0.361	0.516	0.564	0.384	0.157	0.729	0.394	0.514	0.474	-0.240	-0.166	-0.362
PE5	0.372	0.343	0.481	0.539	0.398	-0.095	0.701	0.340	0.576	0.415	-0.043	-0.080	-0.071
PI1	0.620	0.340	0.593	0.475	0.441	-0.054	0.643	0.953	0.465	0.481	-0.071	-0.010	-0.224
PI2	0.416	0.183	0.437	0.342	0.232	-0.041	0.374	0.882	0.358	0.289	0.018	0.086	-0.234
SI1	0.542	0.551	0.608	0.654	0.529	-0.045	0.594	0.437	0.904	0.545	-0.201	-0.034	-0.118
SI2	0.558	0.512	0.543	0.540	0.578	-0.122	0.548	0.502	0.867	0.536	-0.066	0.118	-0.200
SI3	0.586	0.567	0.630	0.728	0.528	0.022	0.511	0.264	0.846	0.531	-0.162	0.089	-0.161
UB1	0.564	0.503	0.676	0.792	0.761	0.078	0.714	0.455	0.568	0.935	-0.302	-0.127	-0.077
UB2	0.568	0.380	0.545	0.661	0.675	-0.084	0.575	0.463	0.543	0.865	-0.116	0.064	-0.179
UB3	0.485	0.435	0.556	0.637	0.770	0.094	0.519	0.254	0.542	0.881	-0.408	-0.227	-0.069
IC x FC	-0.038	-0.072	-0.183	-0.267	-0.282	-0.101	-0.272	-0.039	-0.164	-0.310	1.000	0.775	0.481
IC x C	0.133	0.159	0.017	-0.084	-0.044	-0.133	-0.176	0.030	0.068	-0.110	0.775	1.000	0.343
IC x PI	-0.053	0.032	-0.032	-0.047	0.024	-0.075	-0.208	-0.246	-0.184	-0.119	0.481	0.343	1.000

Based on Table 8, it is known that each indicator in each research variable has a greater cross-loading value than the correlation value of the indicator with the indicators in other variables. This shows that each indicator used in this study has good discriminant validity.

4.2.4. Reliability Test
Reliability testing in SmartPLS can be performed using two methods: Cronbach's Alpha and Composite Reliability. Cronbach's alpha measures the lower limit value of an item's reliability, whereas Composite Reliability measures the actual level of reliability of a construct. Therefore, reliability testing is needed to ensure that each item in the questionnaire meets reliability standards. An instrument is considered to have good reliability if the Composite Reliability value reaches ≥ 0.70, or if the Cronbach's alpha value

reaches ≥ 0.60. Based on the results of research data processing, the reliability results using Cronbach's Alpha and Composite Reliability are shown in Table 9.

Table 9. Validity Test Results

Variables	Cronbach's Alpha	Composite Reliability	Recommended values	Information
PE	0,879	0,912	>0,7	Reliable
EE	0,946	0,949	>0,7	Reliable
SI	0,843	0,843	>0,7	Reliable
FC	0,774	0,818	>0,7	Reliable
HA	0,925	0,928	>0,7	Reliable
C	0,824	0,846	>0,7	Reliable
PI	0,822	0,935	>0,7	Reliable
BI	0,927	0,927	>0,7	Reliable
UB	0,874	0,879	>0,7	Reliable

From Table 9, it can be seen that the results of the reliability test for the latent variables in this study showed Cronbach's Alpha and Composite Reliability values above 0.7. Thus, the measurement instrument used in this study produces consistent and reliable results when measuring concepts that are not directly apparent.

4.2.5. Structural Model Test (Inner Model)

According to Abdillah and Hartono (2015), the Inner Model aims to determine the relationship between the latent variables. Structural model testing begins by measuring the R-squared, path coefficient, and Q-square values.

The path coefficient value is useful for indicating the level of significance in hypothesis testing (Abdillah & Hartono, 2015), and the Q-square is used to determine how well the value produced by the model is and to determine its estimated parameters. A Q-square value > 0 indicates that the model has a predictive relevance value (Ghozali, 2014).

4.2.6. R-square analysis

The R-square value is used to measure the level of variation in changes from independent variables to dependent variables. The higher the R-squared value, the better is the prediction model of the proposed research model. An R-square value of 0.67 indicates that the model is good, an R-square value of 0.33 indicates that the model is moderate and an R-square value of 0.19 indicates that the model is weak. Table 10 shows the results of the study for the R-squared value.

Table 10. R-square results

Dependent Variable	R-Square	R-Square Adjusted
Behavioural Intention (BI)	0,746	0,693
Use Behaviour (UB)	0,780	0,740

Based on the above results, it can be concluded that the prediction model of the proposed research model is good because it has an R-square value higher than 0.67, namely 0.746 for the Behavioral Intention factor and 0.780 for the Use Behavior (UB) factor.

4.2.6. Q-square analysis

Q-square aims to measure how well the observation value is produced by the model and its parameter estimates (Ghozali, 2014). A Q-square value greater than 0 indicates that the model has predictive relevance, whereas a Q-square value less than 0 indicates that the model has less predictive relevance. table 4.18 shows the research results for the Q-square value.

Table 11. Q-square results

Dependent Variable	Q-Square
Behavioural Intention (BI)	0,552
Use Behaviour (UB)	0,668

Based on the above results, Q-square value Q-square analysis was used to measure the model's ability to predict. If the Q-squared value is greater than zero, the model has good predictive relevance. Conversely, if the Q-square value was less than 0, the model did not have good predictive relevance.

Based on the table, the Q-square value for the Behavioral Intention (BI) variable was 0.552 and that for the Use Behavior (UB) variable was 0.668. As both values are greater than 0, it can be concluded that the BI and UB variables have good predictive relevance.

4.2.7. F-square analysis
Table 12. f-square results

Variables	Behavioural Intention (BI)	Use Behaviour (UB)
Performance Expectancy	0,086	-
Effort Expectancy	0,174	-
Social Influence	0,025	-
Facilitating Conditions	0,002	0,279
Habit	0,033	0,589
Compatibility	0,032	0,034
Individual Characteristics	0,012	0,020
IC x C	0,123	
IC x PI		0,039
IC x FC		0
Personal Innovativeness	0,027	0,000
Behavioural Intention	-	0,001

f-square can be used to assess the influence of exogenous latent variables on endogenous variables whether they have a substantive influence, by looking at the effect size value f2. The recommended interpretation of the f2 value is that the f square value can be said to have a small influence if the f square value ≥ 0.02, f square ≥ 0.15 is a moderate influence f2 0.35 has a greater influence at the structural level (Cohen, 1988). Almost all variables in the table had a low influence, with an f-square value ≥ 0.02, on Behavioral Intention and Use Behavior. This means that if these variables are removed from the model, the change in R Square (i.e., how well the model explains the outcome variable) will be relatively small.

For a moderate influence (> 0.15), only the Effort Expectancy variable on Behavioral Intention has a moderate influence. This means that this variable is important in explaining Behavioral Intention. High Influence (> 0.35): There are no variables that have a high influence on Behavioral Intention, but there is a Habit variable that has a high influence with an f-square value of 0.589 on Use Behavior. This shows that habit is the most important predictor of Use Behavior. Facilitating Conditions on Use Behavior: This variable also had a relatively large influence (0.279) on Use Behavior. IC × C on Behavioral Intention: The interaction between Individual Characteristics and Compatibility (IC × C) had a relatively strong influence (0.123) on Behavioral Intention. The conclusion of this table shows that, in general, most of the variables in this model had a low influence on Behavioral Intention and Use Behavior. However, there are several variables that require further attention because they have a relatively stronger influence, such as habitat, facilitating conditions, and the interaction of IC × C.

4.2.8. Hypothesis Testing
Hypothesis testing is a statistical method used to determine whether a statement is true. Simply put, a hypothesis is a guess or assumption that may be true, and can be used as a basis for solving a problem or conducting further research.

In PLS (Partial Least Squares), hypothesis testing is done by comparing the T-statistic value with the T-table. If the T-statistic value is greater than the T-table, the hypothesis is accepted and supports the research (Abdillah & Hartono, 2015). This study used a two-tailed hypothesis test with a significance level of 10% (0.1) and involved 53 respondents who were users of the NCX application.
a. If the t-statistic ≥ 1.645, then H0 is rejected and H1 is accepted
b. If the t-statistic <1.645, then H0 is rejected and H1 is accepted

Based on the above framework, the hypotheses of this study are as follows:
H1a: Performance expectancy has a significant positive effect on behavioral intention
H2a: Effort expectancy has a significant positive effect on behavioral intention
H3a: Social influence has a significant positive effect on behavioral intention
H4a: Facilitating conditions have a significant positive effect on behavioral intention
H4b: Facilitating conditions have a significant positive effect on use behavior
H4c: The effect of Facilitating conditions on usage behavior is influenced by individual characteristics
H5a: Habit has a significant positive effect on behavioral intention
H5b: Habit has a significant positive effect on use behavior
H6a: Compatibility has a significant positive effect on behavioral intention
H6b: Compatibility has a significant positive effect on use behavior
H6c: The effect of compatibility on behavioral intention is influenced by individual characteristics
H7a: Personal innovativeness has a significant positive effect on behavioral intention
H7b: Personal innovativeness has a significant positive effect on use behavior
H7c: Individual characteristics influence the effect of personal innovativeness on usage behavior.
H8a: Behavioral intention has a positive effect on use behavior

5. Conlusion
5.1. Conclusion
This study successfully showed that the UTAUT2 model, with some modifications, is quite good at explaining the factors that influence the intention and behavior of using the NCX application. These modifications include the addition of moderating variables (individual characteristics) and the elimination of variables considered less relevant in the context of this study, such as hedonic motivation, price value, education, and cost.

The following is evidence of the suitability of the modified UTAUT2 model in this study:
a. Several variables in the model were shown to have a significant influence. Although not all hypotheses are accepted, the variables performance expectancy, effort expectancy, social influence, facilitating conditions, and habits have been shown to significantly influence Behavioral Intention and/or Use Behavior.
b. The model considers the moderating factors of Individual Characteristics (i.e., gender). Although the results of the moderation hypothesis testing are not all significant, this model considers the possibility of differences in influence between variables based on gender, especially in gender moderation with compatibility (C) on Behavioral Intention (BI).
c. The model uses a theory that has been tested and developed (UTAUT2) as the basis. UTAUT2 is a comprehensive model that has been widely used in research on acceptance and use of technology.

Although the model shows good results, it should be noted that there are still some unsupported hypotheses. Of the 15 hypotheses proposed, only 5 hypotheses are supported by the research results. This shows that there are other factors outside the model that influence the intention and behavior of NCX applications.

Research data were collected from only one company (Telkomsel). Therefore, generalizing the results of this study to a wider population should be performed carefully. This shows that there are other factors outside the modified UTAUT2 model that can be considered in the acceptance of applications on an enterprise scale, such as NCX at Telkom Indonesia.

5.2. Suggestions

In addition to UTAUT2, there are several other technology adoption models that can be considered, such as TAM (Technology Acceptance Model), DOI or Diffusion of Innovations (Rogers, E. M., 2003) or other technology adoption models mentioned in Table 2.1. These other models are likely to be more appropriate for explaining the acceptance and use of enterprise applications, such as NCX in Telkom's environment. In order to conduct A longitudinal study is a type of research that involves collecting data from the same subjects repeatedly over a period of time to observe changes in NCX usage intentions and behavior over time, and what factors influence these changes (Venkatesh & Davis, 2000). Researchers can see if there are certain trends or patterns in NCX usage, such as an increase or decrease in usage or changes in the way employees use the application. Researchers can also evaluate the effectiveness of interventions if Telkom intervenes in increasing NCX acceptance and use (e.g., training, technical support, or application updates), and longitudinal studies can help evaluate the effectiveness of these interventions in the long term. The research findings show that the factors of performance expectancy, effort expectancy, facilitating conditions, and habit have a significant influence on the acceptance of the NCX application. Social Influence (SI) is still limited. Although it received a positive assessment, social influence (SI) did not have a significant effect on Behavioral Intention (BI). This means that recommendations from colleagues or superiors do not have much influence on employees' intentions to use the NCX.

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