

Evaluation of ERP Oracle Netsuite System for Purchasing Management Module at PT PQR using UTAUT2 Method

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Abstract

The purpose of the study was to evaluate the acceptance, use, and behavior of users towards the use of ERP Oracle NetSuite systems in the Purchasing Management module by analyzing how UTAUT2's variables affected the user acceptances towards ERP Oracle NetSuite. The research method used is the UTAUT2 method, by conducting field studies to obtain information related to PT PQR and literature studies to support the theoretical data collection and analysis method to measure the user acceptance of ERP in the Oracle NetSuite Purchasing Management module system. In this study, 52 samples were collected using the saturated sample technique questionnaires. The data was analyzed using SEM-PLS with SmartPLS 3.0. The conclusion obtained from the results of this study is to focus more on improving performance expectancy, habit, and behavioral intention in using Oracle NetSuite ERP.

Keywords: evaluation, system, ERP, netsuite, purchasing management, oracle, SEM-PLS, UTAUT2.

1. Introduction

Developing an ERP system is considered an exhaustive and extensive process for an enterprise. The extensiveness of ERP system development is represented by several academic research that covers this area. A study evaluates several business models for ERP system implementation (Al-Sabri et al., 2018). Another study covers an ERP selection model under several environments (Chen et al., 2019) (Temur & Bolat, 2018). The other study identifies a framework for sustainable ERP implementation (Chofreh et al., 2018). Evaluating an ERP implementation becomes a complex challenge because of its various and uncertain parameters. Several academic studies propose a multi-criteria decision-making framework for evaluating an ERP system (Lee et al., 2019) (Arya & Kumar, 2020). A study implementing fuzzy technique in evaluating an ERP system (Marcone, 2020).

An enterprise needs to be very thorough in identifying its current ERP system's performance and effectiveness.

PT PQR is an information technology consulting and services company. Founded in 2008, the company focuses on providing customers with a full spectrum of Customer Relationship Management (CRM) solutions and middleware solutions. It has more than 250 employees, 52 of which are Oracle NetSuite users from the procurement, sales, warehouse, finance, and accounting divisions to facilitate integration in financial transactions, sales, and purchases. The stakeholders of PT PQR include ABC Group, which is the holding company of PT PQR and its subsidiaries.

PT PQR, to require employees of the finance, purchasing, and inventory divisions working at PT PQR to use Oracle NetSuite ERP, made some employees must adapt to a system that was unfamiliar to them. Moreover, the system was automated before, and they were comfortable to use the old system manually. Therefore, employees are not familiar with the Oracle NetSuite ERP system. There is user resistance in using the Oracle NetSuite ERP system at PT PQR where employees find it challenging to adapt to using the new system (Laumer et al., 2014). The user's daily behavior to complete their work can change when new technologies emerge, causing users to ignore the technology and become uninterested in continuing and ultimately refuse to use the system.

2. Research Method

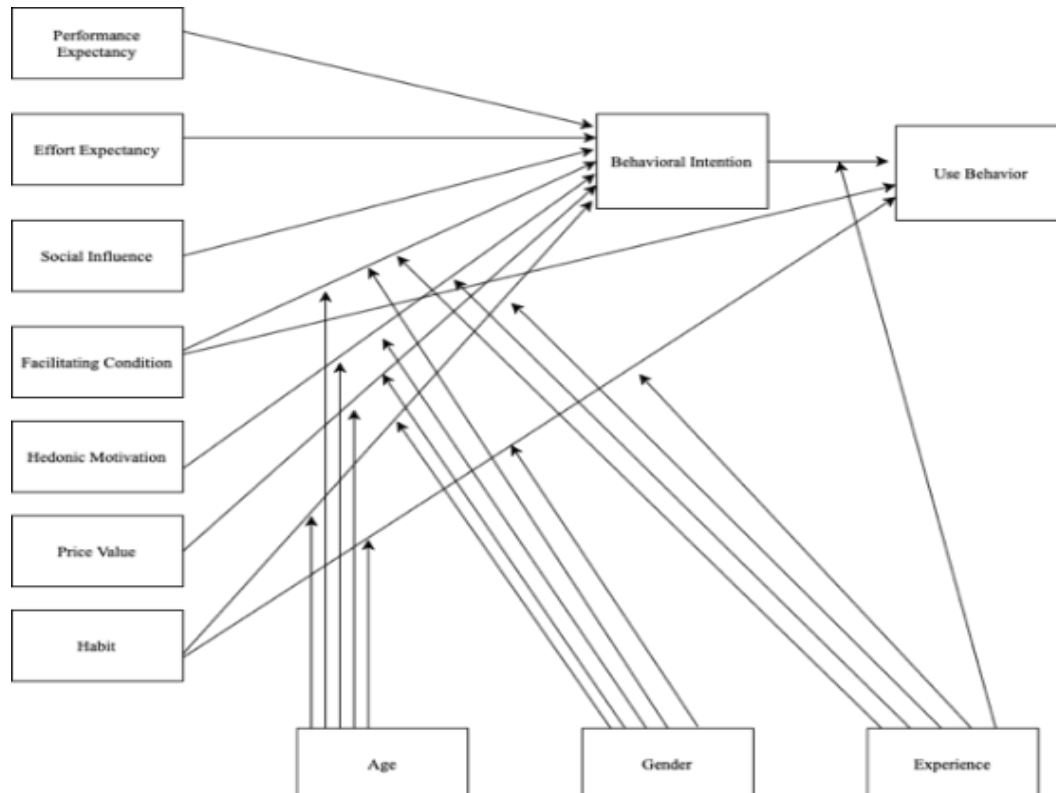
2.1. ERP Oracle NetSuite

Companies with a wide range of industries ranging from large to small scale can use these systems to improve the efficiency and productivity of their system operations. ERP consists of various types to manage finance, sales, purchasing, Human Capital Management (HCM), and others. One of the products of ERP is Oracle which is a Relational Database Management System (RDBMS) to manage information openly, comprehensively, and integrated by providing efficient and effective solutions because of its capabilities. The world's first cloud-based ERP solution is a multi-tenanted, no version and flexible NetSuite, enabling companies to manage IT costs, optimize accounting efficiency, streamline order management and procurement processes, eliminate manual spreadsheet-based reporting, and

increase employee productivity. NetSuite is designed for the cloud to offer lower costs and reduce IT complexity in the enterprise.

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

It can be analyzed what is lacking and needs to be developed again for the assumption of plans of PT PQR, especially in the finance, purchasing, and inventory division based on the acceptance, use, and behavior of employees as users through influencing factors, to encourage the planning of the development of the new NetSuite system, such as changes in strategy and business processes of resources, and so on using the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) (Venkatesh et al., 2012). This research was conducted to gain a better understanding of the acceptance, use, and behavior of Oracle NetSuite users by PT PQR employees by using the Unified Theory of Acceptance Use of Technology 2 (UTAUT2) model by being influenced by variables such as: (1) Performance Expectancy, (2) Effort Expectancy, (3) Social Influence, (4) Facilitating Condition, (5) Hedonic Motivation, (6) Price Value, (7) Habit, (8) Behavioral Intention, (9) Use behavior.



Source: Research Result

Figure 1. UTAUT2 Diagram

2.3. Hypothesis Development

- H1. Performance expectancy has a significant effect on behavioral intention.
- H2. Effort expectancy has a significant effect on behavioral intention.
- H3. Social influence has a significant effect on behavioral intention.
- H4. Facilitating conditions have a significant effect on behavioral intention.
- H5. Facilitating conditions have a significant effect on use behavior.
- H6. Hedonic motivation has a significant effect on behavioral intention.
- H7. Price value has a significant effect on behavioral intention.
- H8. Habit has a significant effect on behavioral intention.
- H9. Habit has a significant effect on use behavior.
- H10. The behavioral intention has a significant effect on use behavior.

2.4. Population and Sample

This research is a quantitative study that takes population data from 52 employees of PT PQR who use Oracle NetSuite ERP, which has characteristics consisting of male and female genders that are less than 20 years old to more than 40 years old, with a working period of less than one year to more than five years with an educational range from high school or equivalent to post-graduate. This population was then taken using a questionnaire from google form that has been arranged with variables UTAUT2 as a research object for quantitative approach and using a Likert scale with a range of values 1 (disagree) to 5 (strongly agree). Furthermore, the samples obtained are the entire population using non-probability sampling methods and determining samples with saturated sample techniques.

2.5. Data Analysis Method

This study used an analysis method using SEM-PLS (Structural Equation Model - Partial Least Square) with the help of SmartPLS 3.0 software to find out the relationship between variables that can be accepted or rejected (Monecke & Leisch, 2012). Testing for this analysis method is done by testing validity and reliability tests to measure whether or not a questionnaire is distributed.

Withdrawal of a conclusion using data that has been tested and analyzed. The results are variables that affect the acceptance and use of ERP Oracle NetSuite by PT PQR employees as users using the UTAUT2 model and SEM-PLS method. From the study results, conclusions from research and suggestions for future use of the system will be produced.

3. Results and Analysis

3.1. Outer Model

Evaluation of the measurement model or outer model is done to assess the validity and reliability of the model. Outer models with reflexive indicators are evaluated through the convergent and discriminant validity of latent and composite reliability construct-forming indicators and Cronbach's alpha for their indicator blocks.

3.1.1. Convergent Validity

Convergent validity is to measure each variable and indicators to have a high correlation.

Outer Loadings

The Loading factors value is the value of loading factor is between 0.6-0.7 is still acceptable for explanatory research.

Valdity				Validity			
No	Variabel	Indicator	Outer Loading	No	Variable	Indicator	Outer Loading
21	Performance Expectancy	PE1	0,850	1	Behavioral Intention	BI1	0,937
22		PE10	0,622	2		BI2	0,922
23		PE12	0,783	3	Effort Expectancy	EE1	0,885
24		PE2	0,757	4		EE2	0,762
25		PE3	0,753	5		EE3	0,884
26		PE4	0,774	6		EE4	0,894
27		PE5	0,794	7	Facilitating condition	FC1	0,776
28		PE6	0,829	8		FC2	0,763
29		PE7	0,706	9		FC3	0,644
30		PE8	0,717	10		FC4	0,649
31	PE9	0,621	11	FC5		0,804	
32	Price Value	PV1	0,739	12		FC6	0,716
33		PV2	0,850	13		FC7	0,803
34		PV3	0,900	14	Habit	HA1	0,903
35	Social Influence	SI1	0,824	15		HA2	0,894
36		SI2	0,892	16		HA3	0,903
37	Use Behavior	UB1	0,892	17	Hedonic Motivation	HM1	0,796
38		UB2	0,936	18		HM3	0,782
39		UB3	0,948	19		HM4	0,816
				20		HM5	0,700

Source: Research Result

Figure 2. Outer Loading Matrix

Based on the table above, the value of outer loading is must > 0,6 to be passed if the research is explanatory. So, the rest of the indicators can measure their variable.

AVE (Average Variance Extracted)

AVE (Average Variance Extracted) score, which can be qualified, must be > 0.5 . If the score is green, all the variables that have been measured with valid indicators can be said.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
BI	0,843	0,850	0,927	0,864
EE	0,887	0,942	0,917	0,736
FC	0,865	0,879	0,893	0,546
HA	0,884	0,891	0,928	0,811
HM	0,780	0,796	0,857	0,600
PE	0,921	0,925	0,933	0,562
PV	0,779	0,833	0,871	0,693
SI	0,649	0,671	0,849	0,738
UB	0,916	0,919	0,947	0,857

Source: Research Result

Figure 3. Construct Reliability and Validity

3.1.2. Discriminant Validity

In discriminant validity testing, reflective indicators can be seen in the cross-loading between the indicator and its construct.

Fornell-Larcker

The validity or absence is stated when the square root of the highest AVE to the intended construct is compared to the square root of the AVE to another construct.

	BI	EE	FC	HA	HM	PE	PV	SI	UB
BI	0,930								
EE	0,275	0,858							
FC	0,512	0,538	0,779						
HA	0,579	0,369	0,676	0,900					
HM	0,485	0,641	0,593	0,577	0,775				
PE	0,726	0,310	0,748	0,689	0,632	0,784			
PV	0,670	0,279	0,577	0,582	0,633	0,767	0,914		
SI	0,457	0,258	0,524	0,491	0,339	0,621	0,562	0,859	
UB	0,648	0,249	0,552	0,621	0,527	0,664	0,597	0,402	0,926

Source: Research Result

Figure 4. Fornell-Larcker

Fornell-Larcker is to see the value look at the top diagonally should not be smaller than the bottom and left. Based on the table above, the data in the Fornell-Larcker calculation can be interpreted as valid data.

Cross Loading

An indicator can be declared valid if it has the highest loading factor to the intended variable compared to the loading factor to another variable.

	BI	EE	FC	HA	HM	PE	PV	SI	UB
PE1	0,637	0,276	0,707	0,625	0,559	0,869	0,683	0,565	0,601
PE12	0,642	0,349	0,700	0,572	0,544	0,798	0,693	0,575	0,490
PE2	0,534	0,240	0,446	0,508	0,557	0,752	0,549	0,444	0,474
PE3	0,619	0,225	0,591	0,601	0,469	0,790	0,575	0,469	0,533
PE4	0,579	0,221	0,545	0,512	0,523	0,780	0,602	0,376	0,627
PE5	0,541	0,246	0,576	0,538	0,481	0,791	0,547	0,561	0,530
PE6	0,585	0,222	0,666	0,612	0,544	0,831	0,667	0,525	0,508
PE7	0,449	0,204	0,540	0,393	0,383	0,738	0,573	0,539	0,382
PE8	0,488	0,184	0,459	0,449	0,365	0,697	0,489	0,310	0,517
PV2	0,480	0,296	0,514	0,577	0,589	0,643	0,880	0,496	0,497
PV3	0,708	0,230	0,541	0,507	0,577	0,747	0,947	0,532	0,584
SI1	0,345	0,317	0,655	0,571	0,439	0,648	0,532	0,824	0,402
SI2	0,433	0,147	0,290	0,306	0,174	0,445	0,448	0,892	0,303
UB1	0,577	0,350	0,541	0,561	0,528	0,585	0,497	0,346	0,893
UB2	0,594	0,195	0,462	0,545	0,430	0,579	0,544	0,400	0,935
UB3	0,628	0,152	0,527	0,616	0,504	0,676	0,612	0,371	0,948

	BI	EE	FC	HA	HM	PE	PV	SI	UB
B11	0,936	0,291	0,499	0,567	0,528	0,687	0,669	0,415	0,641
B12	0,923	0,218	0,451	0,507	0,367	0,661	0,572	0,436	0,562
EE1	0,253	0,885	0,430	0,356	0,584	0,297	0,297	0,330	0,237
EE2	0,085	0,762	0,227	0,210	0,442	0,072	0,159	0,032	0,112
EE3	0,213	0,884	0,441	0,159	0,511	0,185	0,151	0,166	0,194
EE4	0,296	0,894	0,599	0,445	0,612	0,369	0,291	0,235	0,249
FC1	0,316	0,315	0,785	0,582	0,558	0,623	0,550	0,471	0,475
FC2	0,386	0,214	0,746	0,513	0,509	0,733	0,504	0,407	0,545
FC4	0,119	0,489	0,730	0,448	0,308	0,354	0,211	0,370	0,281
FC5	0,335	0,506	0,840	0,484	0,431	0,483	0,288	0,324	0,258
FC6	0,349	0,515	0,770	0,547	0,340	0,455	0,297	0,279	0,352
FC7	0,634	0,536	0,799	0,540	0,504	0,647	0,600	0,505	0,495
HA1	0,480	0,266	0,635	0,903	0,512	0,586	0,528	0,498	0,544
HA2	0,456	0,369	0,642	0,894	0,467	0,608	0,436	0,493	0,545
HA3	0,612	0,358	0,560	0,903	0,571	0,660	0,597	0,352	0,585
HM1	0,360	0,518	0,473	0,438	0,796	0,568	0,590	0,457	0,384
HM3	0,447	0,557	0,567	0,592	0,782	0,545	0,528	0,210	0,594
HM4	0,388	0,471	0,441	0,429	0,816	0,481	0,414	0,269	0,286
HM5	0,275	0,421	0,305	0,261	0,700	0,325	0,420	0,092	0,322

Source: Research Result

Figure 5. Cross-Loading Testing

Based on the results of cross-loading calculation, there is no loading factor variable intended smaller than loading factor to other variables. Thus, it is interpreted that the calculation of cross-loading data is considered valid (e.g., B11, B12 measures BI and the value of BI > right and left).

3.1.3. Reliability Test

Reliability tests are conducted to see if indicators are consistent for measuring variables. It can be concluded that the construct has good reliability, or the questionnaire used as a tool in this study has been reliable or consistent.

Composite Reliability

According to Hasan (2019), when compared to Cronbach's Alpha and rho_A, composite reliability can produce higher and more precise estimates of actual reliability.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
BI	0,843	0,848	0,927	0,864
EE	0,887	0,942	0,917	0,736
FC	0,875	0,899	0,902	0,607
HA	0,884	0,891	0,928	0,811
HM	0,780	0,796	0,857	0,600
PE	0,921	0,926	0,935	0,615
PV	0,809	0,896	0,910	0,835
SI	0,649	0,671	0,849	0,738
UB	0,916	0,919	0,947	0,857

Source: Research Result

Figure 6. Reliability Test Result

3.2. Inner Model

Inner model testing is the development of concept-based models and theories to analyze the relationship between exogenous and endogenous variables has been described in conceptual terms.

3.2.1. R² (Coefficients of Determination)

R-Square is done to see how significant independent variables provide all the information needed to predict and how large the cause variable can explain the resulting variable.

	R Square	R Square Adjusted
BI	0,585	0,520
UB	0,523	0,494

Source: Research Result

Figure 7. R² Test Result

BI is explained by as much as 58.5% of seven independent variables, while other variables explain the remaining 41.5%. UB described as many as three dependent variables as 52.3%, while other variables explain the remaining 47.7%.

3.2.2. Q² (Blindfolding/ Predictive Relevance)

Predictive Relevance (Q²) for structural models measures how well the observation value is generated. According to Hair et al. (2017), Q² values greater than zero for certain endogenous latent variables may indicate that the PLS path model is relevant for that variable.

	SSO	SSE	Q ² (=1-SSE/SSO)
BI	104,000	60,557	0,418
EE	208,000	208,000	
FC	312,000	312,000	
HA	156,000	156,000	
HM	208,000	208,000	
PE	468,000	468,000	
PV	104,000	104,000	
SI	104,000	104,000	
UB	156,000	89,231	0,428

Source: Research Result

Figure 7. R² Test Result

Based on the table above, it is stated that all endogenous latent variables that have a relationship path with behavioral intention and use behavior are relevant.

3.2.3. T-Statistics

T-Statistics sees the variable significant with a limit value of or more than 1.96.

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)
BI -> UB	0,407	0,102	3,988
EE -> BI	0,161	0,137	1,182
FC -> BI	-0,200	0,198	1,014
FC -> UB	0,152	0,163	0,931
HA -> BI	0,183	0,211	0,869
HA -> UB	0,283	0,128	2,215
HM -> BI	-0,160	0,144	1,111
PE -> BI	0,604	0,221	2,732
PV -> BI	0,307	0,214	1,438
SI -> BI	-0,063	0,143	0,439

Source: Research Result

Figure 7. T-Statistics Test Result

From the table above, three variables have a significant effect with a limit value above 1.96. They are behavioral intention to use behavior, the habit of use behavior, and performance expectancy to behavioral intention.

3.2.4. Model Fit

Evaluation of fit models in this study was conducted using two test models, among others Normal Fit Index (NFI) put forward by Hu and Bentler in 1998 in Ramayah et al. (2017), that if the NFI value is getting closer to one, then the model is getting fitter.

	Saturated Model	Estimated Model
SRMR	0,104	0,105
d ULS	6,796	6,912
d G	6,983	6,999
Chi-Square	1232,177	1234,987
NFI	0,461	0,460

Source: Research Result

Figure 7. Model Fit Test Result

SRMR value must be below 1.0 to determine whether the model is fit and the Chi-Square value must be above 0.9 to fit. From the table above, SRMR, Chi-Square, NFI are eligible for the NFI value, proving that the model is fit at 46.1%.

4. Conclusion

Based on the research result, all variables that have been used, not all of them has a significant relationship, and the conclusions are: (1) Performance expectancy towards behavioral intention shows that the higher the performance expectations for getting the job done, the higher the employee's interest in using the ERP Oracle NetSuite system, (2) Habit variables towards use behavior show that any habit carried out by employees influences employees to use the ERP Oracle NetSuite system, (3) Behavioral intention towards use behavior, showing the higher the interest of employees in using the system, affecting employees in using the ERP Oracle NetSuite system.

PT PQR should remain focus on maintaining those 3 significant variables to the use of ERP Oracle NetSuite in PT PQR to reduce costs and the risks. The future study will look at the time for implementation that is currently it still calculated only one years and many variables are insignificant. Therefore, the study to those who have implemented ERP Oracle NetSuite for a long time is needed to gain new perspectives with many variables that have a significant effect.

Author Contributions

Richard proposed the topic; Indira Damayanti and Mutia Annisa Nabilla conceived models and designed the experiments; Richard, Indira Damayanti, Mutia Annisa and Almaida Aviani conceived the optimisation algorithms. Richard, Indira Damayanti, Mutia Annisa and Almaida Aviani analysed the result.

Conflicts of Interest

The author declare no conflict of interest.

References

Al-Sabri, H. M., Al-Mashari, M., & Chikh, A. (2018). A comparative study and evaluation of ERP reference models in the context of ERP IT-driven

- implementation. *Business Process Management Journal*, 24(4), 943–964.
<https://doi.org/10.1108/BPMJ-07-2016-0139>
- Arya, V., & Kumar, S. (2020). Multi-criteria decision making problem for evaluating ERP system using entropy weighting approach and q-rung orthopair fuzzy TODIM. *Granular Computing 2020* 6:4, 6(4), 977–989.
<https://doi.org/10.1007/S41066-020-00242-2>
- Chen, S., Wang, J., & Wang, T. (2019). Cloud-based ERP system selection based on extended probabilistic linguistic MULTIMOORA method and Choquet integral operator. *Computational and Applied Mathematics*, 38(2), 88.
<https://doi.org/10.1007/s40314-019-0839-z>
- Chofreh, A. G., Goni, F. A., & Klemeš, J. J. (2018). Evaluation of a framework for sustainable Enterprise Resource Planning systems implementation. *Journal of Cleaner Production*, 190, 778–786.
<https://doi.org/10.1016/j.jclepro.2018.04.182>
- Laumer, S., Maier, C., Eckhardt, A., & Weitzel, T. (2014). Why are they grumbling about my new system? Theoretical foundation and empirical evidence of employee grumbling as a user resistance behavior. *ICIS 2014 Proceedings*.
<https://aisel.aisnet.org/icis2014/proceedings/HumanBehavior/45>
- Lee, A. H. I., Chen, S. C., & Kang, H. Y. (2019). A decision-making framework for evaluating enterprise resource planning systems in a high-tech industry. *Https://Doi.Org/10.1080/16843703.2019.1626073*, 17(3), 319–336.
<https://doi.org/10.1080/16843703.2019.1626073>
- Marcone, M. R. (2020). Implementing ERP evaluation through a fuzzy analysis: An empirical investigation. *International Journal of Information Technology and Management*, 19(1), 33–46. <https://doi.org/10.1504/IJITM.2020.104503>
- Monecke, A., & Leisch, F. (2012). semPLS: structural equation modeling using partial least squares. *Faculty of Commerce - Papers (Archive)*.
<https://ro.uow.edu.au/commpapers/3138>
- Temur, G. T., & Bolat, B. (2018). A robust MCDM approach for ERP system selection under uncertain environment based on worst case scenario. *Journal*

of *Enterprise Information Management*, 31(3), 405–425.
<https://doi.org/10.1108/JEIM-12-2017-0175>

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly: Management Information Systems*, 36(1), 157–178. <https://doi.org/10.2307/41410412>