

# The Influence of Cloud Computing, Artificial Intelligence, Machine Learnings and Digital Disruption on the Design of Accounting and Finance Functions Mediated by Data Processing

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## Abstract

This research aims to determine the influence of cloud computing, artificial intelligence, machine learning and digital disruption on the design of accounting and financial functions mediated by data processing. This type of research is an explanatory survey, the data used is primary data on 202 respondents working in the accounting and finance sector in Indonesia drawn using the purposive random sampling method. Analysis tool using the Structural Equation Modeling approach with the WarpPLS Version 8.0 test tool. The results show that Cloud Computing, Artificial Intelligence, Machine Learnings and Digital Disruption have a significant influence on the Design of Accounting and Financial Functions Mediated by Data Processing.

**Keywords :** cloud computing, artificial intelligence, machine learning, digital disruption.

**JEL Codes Classification :** C91, D23, N75

## I. INTRODUCTION

Recent developments in digital technology provide tools for organizations to initiate digital transformation that includes various business processes and activities (Rodrigues et al., 2022). The digital disruption is a time of massive changes in all lines of life due to the development of technology and digitalization innovations that convert all systems in Indonesia and on the international scene (Ahmadi et al., 2023). The company's systems and structures in various sectors have also changed. Companies now prioritize efficiency by maximizing the use of technology and reducing activities carried out manually (Sukhorukov et al., 2022). Reporting from research conducted by McKinsey in 2016, mentioned the impact of digital technology will eliminate 52.6 million types of jobs in the future. Among the 52.6 million jobs predicted to be lost, accounting and finance is one of them (Pereira et al., 2022). The era of the COVID-19 pandemic which is currently being faced by the entire world's population also indirectly supports the acceleration of economic digitization (Hussain and

Papastathopoulos, 2022). Due to restrictions on physical social gatherings to prevent transmission of the virus, most of the economic activities are carried out digitally. The rapid development of e-commerce, digital wallets, m-banking, tax e-filing and various advanced features that support economic activities shifts the industry's need for human resources (Elgazzar et al., 2022). According to data from the Central Statistics Agency (BPS), 1.62 million people became unemployed due to COVID-19. This data shows the number of layoffs carried out by companies to reduce labor and reduce costs (Rahman et al., 2022). Currently, almost all the work of the accounting profession can be done by technology. The emergence of automatic journaling software, data analytics (a series of applications containing data sets to make it easier to make decisions from existing information), and big data (a large database system to assist business activities) has made the main basic tasks of accountants such as recording transactions, processing transactions, and organizing Financial reports are increasingly being eroded and can be replaced by

technology (Scardovi, 2017, Gatla et al., 2022). The process of recording and making financial reports can now be done automatically properly because there is no possibility of human error. The position of an accountant in all types of organizations, both profit and non-profit, is always needed because the accountant also acts as an advisor who gives advice to the company regarding the financial and non-financial conditions being faced. The function of an accountant in the digital era is to provide accurate and in-depth data in making decisions to resolve questions and perform statistical data analysis, test data quality and interpret statistical data processing (Werth et al., 2020, Jaichandran et al., 2022). Accountants also partner with technology, work with machines or robots, and train artificial intelligence models. The accountant's work will also extend to aspects of non-financial reporting and data security of computer information and systems (Butler, 2020).

**II. LITERATURE REVIEW**

**Cloud Computing**

Cloud Computing is a term from the internet and computing from computers in the form of a method of delivering various services via the internet (Khan et al., 2023). Existing resources in the form of data storage, servers, databases, networks, and software. (Sujatha et al., 2020). In addition, it defines a power processing process through the internet network so that it can run existing programs through computers that are connected to each other at the same time (Alahmadi et al., 2022). Cloud Computing is information that is accessed remotely in the "cloud" or virtual space. Companies that provide cloud services, allow their users to store files and applications from remote servers, technology that makes the internet a central server for managing user data and applications (Syah et al., 2023). Cloud Computing makes it easy for users to run programs without having to install applications and users can access data and information via the internet at the same time (Stalmachova et al., 2022).

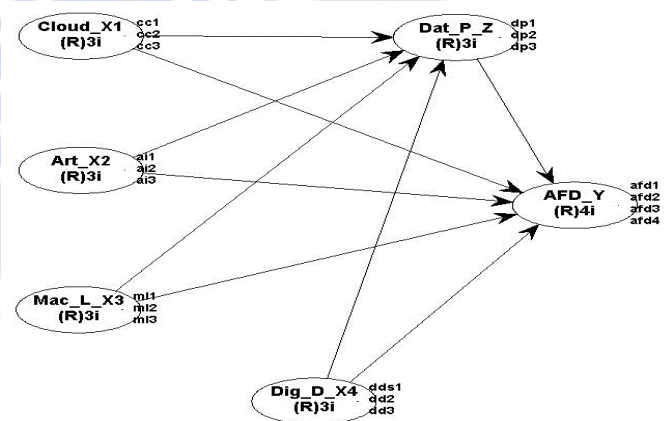
**How Cloud Computing Works**

Data processing servers are highly dependent on the Internet in the implementation of Cloud technology used by companies ranging from small to large, ministries and even individual users. The advantage of the cloud is that it is easy to log on to the internet anywhere to run applications without having to fully install the application (Kumbhojkar and Menon, 2022). This causes disk space savings and data storage media because storage space exists virtually which is directly connected to the application server (Yu et al., 2022). If it is received by the server, the data will be

processed which will eventually update the fields and previous records that have been stored (Fragnière et al., 2022). Commands given in using the application will be connected directly to the Cloud Computing system provided the internet is active. This can be seen by simple examples of implementing Cloud Computing such as Gmail and Google Drive.

**Cloud Computing Functions**

Most companies using the cloud can cut operational costs significantly. Before the cloud, companies bought and built their own Information Technology. The existence of a cloud in a company only requires a central server and IT division and has fast and stable internet so that employees can interact with the cloud online (Elkhalidi & Abdullah, 2022). Cloud Computing is a solution to the problem because it is a good and inexpensive technology (Almunawar et al., 2022). Cloud Computing has flexible and efficient storage media to reduce hardware and software demands (Ilid et al., 2022). Data is a priority for large or small scale business processes with data processing as a trend with increasing smartphone and computer users. The conceptual framework in this research can be described as follows:



**Figure 1. Conceptual Framework**

**III. Methods**

This type of research is an explanatory survey, the data used is primary data on 202 respondents working in the accounting and finance sector in Indonesia drawn using the purposive random sampling method. Analysis tool using the Structural Equation Modeling approach with the WarpPLS Version 8.0 test tool. Confirmatory factor analysis for the indicator model will produce a coefficient called standard loading or lambda value ( $\lambda$ ). The lambda value is used to assess the suitability or appropriateness of the instruments in forming a factor. Analysis using SEM WarpPLS Version 3.0 requires several fit indices to measure the correctness of the proposed model (Kock, 2013). There are several suitability indices and cut-off values to test whether a model is accepted or rejected (model feasibility test) including effect

size, output combined loadings and cross loadings, output pattern loading and cross loading, output indicator weight, output latent variable coefficient, Q squared (Stoner-Geisser coefficient), Full collinearity test, Output correlations among Latent variables, Output block VIF, Output correlation among indicators and Output indirect and Total Effect if necessary. (Kock, 2013). The inner model is a structural model to predict causal relationships between latent variables. Statistical T test parameters are obtained to predict the existence of a causal relationship. The inner model is evaluated by looking at the percentage of variance explained by the R2 value for the dependent variable using the measure. The inner model is a structural model to predict causal relationships between latent variables.

**IV. RESEARCH RESULTS AND DISCUSSION**

**4.1. Data Description**

The number of questionnaires obtained was 202 copies and was carried out in one stage. The distribution is as follows:

Table 1. Distribution of Questionnaires

Noted	Amount	Percentages
Distributed questionnaires	400	100%
Returned questionnaire	202	50.50%
Unreturned questionnaires	198	49.50%
Questionnaires that can be used in research	202	50.50%

Source: Data processed. (2023).

Respondents spread across the island of Java were 202 (two hundred and two) respondents.

**4.2. Data Quality Testing Analysis**

**4.2.1. Validity test**

From the questionnaire distributed to 202 respondents who were the research sample respondents, to test the validity the output combined loadings and cross loadings were used as indicators of convergent validity which is part of the measurement model in SEM-PLS (Kock, 2013). The output is expected to display constructs in columns and indicators in rows to obtain the following results:

Table 2. Output Combined Loadings and Cross-Loading

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\* Indicator weights \*

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	Cloud_X	Art_X2	Mac_L_X	Dig_D_X	Dat_P_Z	
AFD_Y	Type (a	SE	P value	VIF	WLS	ES
cc1	0.353	0.000	0.000	0.000	0.000	0.000
	Reflect	0.066	<0.001	4.401	1	0.334
cc2	0.353	0.000	0.000	0.000	0.000	0.000
	Reflect	0.066	<0.001	4.425	1	0.334

cc3	0.352	0.000	0.000	0.000	0.000	0.000
	Reflect	0.066	<0.001	4.237	1	0.332
ai1	0.000	0.415	0.000	0.000	0.000	0.000
	Reflect	0.065	<0.001	3.100	1	0.381
ai2	0.000	0.408	0.000	0.000	0.000	0.000
	Reflect	0.065	<0.001	2.941	1	0.369
ai3	0.000	0.336	0.000	0.000	0.000	0.000
	Reflect	0.066	<0.001	1.376	1	0.249
ml1	0.000	0.000	0.410	0.000	0.000	0.000
	Reflect	0.065	<0.001	3.103	1	0.377
ml2	0.000	0.000	0.342	0.000	0.000	0.000
	Reflect	0.066	<0.001	1.454	1	0.262
ml3	0.000	0.000	0.401	0.000	0.000	0.000
	Reflect	0.065	<0.001	2.867	1	0.361
dds1	0.000	0.000	0.000	0.357	0.000	0.000
	Reflect	0.066	<0.001	4.145	1	0.337
dd2	0.000	0.000	0.000	0.353	0.000	0.000
	Reflect	0.066	<0.001	3.589	1	0.329
dd3	0.000	0.000	0.000	0.355	0.000	0.000
	Reflect	0.066	<0.001	3.938	1	0.334
dp1	0.000	0.000	0.000	0.000	0.396	0.000
	Reflect	0.065	<0.001	2.603	1	0.352
dp2	0.000	0.000	0.000	0.000	0.348	0.000
	Reflect	0.066	<0.001	1.510	1	0.271
dp3	0.000	0.000	0.000	0.000	0.409	0.000
	Reflect	0.065	<0.001	2.931	1	0.376
afd1	0.000	0.000	0.000	0.000	0.000	0.261
	Reflect	0.067	<0.001	2.420	1	0.217
afd2	0.000	0.000	0.000	0.000	0.000	0.263
	Reflect	0.067	<0.001	2.404	1	0.221
afd3	0.000	0.000	0.000	0.000	0.000	0.299
	Reflect	0.066	<0.001	6.505	1	0.286
afd4	0.000	0.000	0.000	0.000	0.000	0.294
	Reflect	0.066	<0.001	5.339	1	0.276

Notes: P values < 0.05 and VIFs < 2.5 are desirable for formative indicators; VIF = indicator variance inflation factor;

WLS = indicator weight-loading sign (-1 = Simpson's paradox in l.v.); ES = indicator effect size..

Based on the test results, it shows that the outer model meets the convergent validity requirements for the reflective construct where the overall p-value is significant. And the loading value is above 0.70 and the p-value is significant (<0.05) indicating that the outer model meets the convergent validity requirements for the reflective construct (Hair et al, 2013). With these results, construct testing meets the requirements for convergent

validity and the loading on other constructs is lower than that construct.

4.2.2. Reliability Test

Based on the WarpPLS output, the reliability test results are as follows in Table 3:

Table 3. Cronbach's alpha coefficients

Cloud_X	Art_X2	Mac_L_X
	Dig_D_X	Dat_P_Z
	AFD_Y	
0.941	0.817	0.829
0.932	0.830	0.914

Based on the results of the reliability test on 5 (five) constructs, Cronbach's Alpha was obtained above 60% so that all questions were declared reliable.

4.3. The Goodness of Fit Model Test

To test goodness of fit indicators are used, namely average path coefficient (APC), average R-Squared (ARS) and average variance inflation factor (AVIF). The p value is given for the APC and ARS indicators which are calculated using re-sampling estimation and Bonferroni like correction (Sholihin and Ratmono. 2013). Test results show in Table 4:

Table 4. Model fit indices and P values

- Average path coefficient (APC)=0.209, P<0.001
  - Average R-squared (ARS)=0.707, P<0.001
  - Average adjusted R-squared (AARS)=0.701, P<0.001
  - Average block VIF (AVIF)=8.999, acceptable if <= 5, ideally <= 3.3
  - Average full collinearity VIF (AFVIF)=20.626, acceptable if <= 5, ideally <= 3.3
  - Tenenhaus GoF (GoF)=0.753, small >= 0.1, medium >= 0.25, large >= 0.36
  - Simpson's paradox ratio (SPR)=0.889, acceptable if >= 0.7, ideally = 1
  - R-squared contribution ratio (RSCR)=0.999, acceptable if >= 0.9, ideally = 1
  - Statistical suppression ratio (SSR)=1.000, acceptable if >= 0.7
  - Nonlinear bivariate causality direction ratio (NLBCDR)=1.000, acceptable if >= 0.7
- Source: WarpPLS Test Results. (2023).

Thus, both the APC and ARS values are significant at the alpha level below 5% and the AVIF value is below 5. Likewise with the other values, thus the model fits.

4.6. Hypothesis Testing

The results show that Cloud Computing, Artificial Intelligence, Machine Learnings and Digital Disruption have a significant influence on the Design of Accounting and Financial Functions Mediated by Data Processing. To test the individual partial regression coefficients for each independent variable, it can be seen in the following Figure 1:

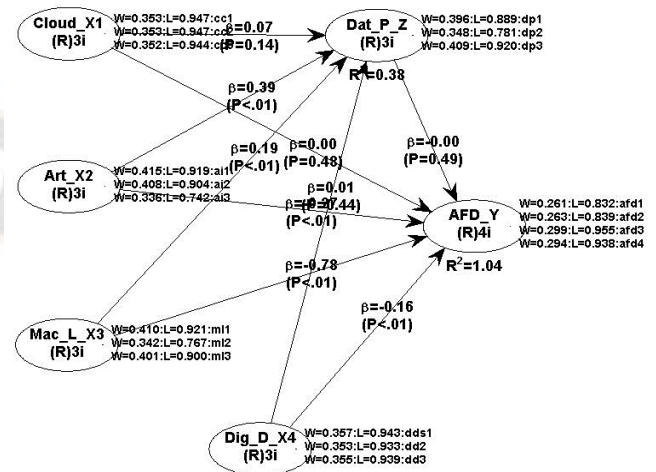


Figure 1. WarpPLS 8.0 Test Results

The results show that Cloud Computing, Artificial Intelligence, Machine Learnings and Digital Disruption have a significant influence on the Design of Accounting and Financial Functions Mediated by Data Processing

5.6.3. Mediator Test Results

Table 5. Indirect and Total Effect

Indirect Effect	Cloud_X	Art_X2	Mac_L_X
	Dig_D_X	Dat_P_Z	AFD_Y
AFD_Y	0.494	0.497	0.500

Total Effect	Cloud_X	Art_X2	Mac_L_X
	Dig_D_X	Dat_P_Z	AFD_Y
Dat_P_Z	0.390	0.185	0.011
AFD_Y	0.004	-0.268	-0.785
	-0.164	-0.002	

Source: WarpPLS Test Results. (2023).

The results show a direct effect of 50% and a total effect of 1%.

#### 5.6.4. Coefficient of Q-squared Results (Q<sup>2</sup>)

The coefficient of determination is used to test the goodness-fit of the regression model which can be seen from the Q-squared coefficients value. Q-squared coefficients only exist for endogenous constructs. For a set of latent predictor variables on the criterion variable, the Q-Squares indicator or another term called the Stoner-Geisser Coefficient is used (Sholihin and Ratmono, 2013). To find out the influence that Cloud Computing, Artificial Intelligence, Machine Learnings and Digital Disruption have a significant influence on the Design of Accounting and Financial Functions Mediated by Data Processing, it can be seen through the magnitude of the Q-squared coefficients resulting from the warpPLS 8.0 output show in Table 6.

Table 6. Q-squared coefficients

N	Clo	Art	Mac	Dig	Dat	AF
o	ud_	_X	_L_	_D_	_P_	D_
	X	2	X	X	Z	Y
1					0.4	0.8
					10	56

Source: WarpPLS Test Results. (2023)..

From the calculation, the Q-squared coefficients value is 0.856. This means that 85.6% of the Cloud Computing, Artificial Intelligence, Machine Learnings and Digital Disruption variables influencing the Design of Accounting and Financial Functions can be explained by the independent variables above, while the remaining 14.4% is explained by other causes. The model estimates show good predictive validity of 85.6%.

#### 5.7. Discussion

Accounting Profession and Profession The financial sector is a profession that is vulnerable to transformation and change due to the impact of rapidly developing technology (Lisha et al., 2023). The rapidly developing and innovative technologies include The internet, sensor technology, cloud computing and artificial intelligence play a major role in implementation company's operations (Boute, et al., 2022). It is predicted that in the future there will be significant changes in the professions in finance and accounting. Information Technology can enhance the role of financial information and offer accountants opportunities to create value and provide more in-depth analysis and recommendations of a financial nature in a timely manner. This form of Information Technology transformation in the field of accounting involves the automation of not only ordinary bookkeeping tasks but also complex processes. The accounting profession expects the application of software and artificial intelligence that will enable greater accuracy of reporting and enable accountants

to move from retrospective to predictive analysis and links to financial and non-financial performance. Research in Australia in 2021 examining the impact of technology on the accounting profession. The study highlights a concern in the accounting profession that even gifted graduates do not have the right skills and are not able to adapt to the growing skills requirements of technological developments. This study provides recommendations on the importance of technological literacy as the most desirable skill for the accounting profession and highlights that the perceived impact of technology on success in the accounting profession is greater when it changes. Likewise in Singapore in the Accounting sector, which continues to change in the digital era which has identified data analytics as one of the new skills needed in the accounting profession. Accounting organizations need to rethink the future of the accounting profession and take active steps to embrace the phenomenon of digital transformation in the accounting and financial sector.

#### V. Conclusion and Sugestion

The results show that Cloud Computing, Artificial Intelligence, Machine Learnings and Digital Disruption have a significant influence on the Design of Accounting and Financial Functions Mediated by Data Processing. The suggestions for future work are should use a large sample of companies in many countries that rely heavily on rapidly developing technology that eliminates the use of human resources but uses more artificial intelligence approaches.

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