The effect of data analytics quality on fintech P2P lending sustainability through operational performance as an intervening variable

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A B S T R A C T

This study aims to explore the effect of data analytics quality on company sustainability through operational performance as an intervening variable of Fintech Peer to Peer Lending (P2P) companies registered and licensed at the Financial Services Authority (known as OJK) Indonesia. This study is quantitative research using primary data collected through questionnaires and interviews. The data came from 104 company leaders and involved 91 Fintech P2P Lending companies registered and licensed at OJK until December 2023. Data were processed using statistical tools Structural Equation Modeling (SEM)-Lisrel. The result of processed data indicates that data analytics quality has a positive and significant effect on company sustainability through operational performance as an intervening variable. Data analytics quality with AI-based automation makes repetitive work operations easy, efficient and effective which has implications for increasing the sustainability opportunities of fintech companies.

1. Introduction

The development of Fintech P2P Lending industries has attracted public attention and it possesses a huge potential with comparative advantages. However, this industry also experiences an issue related to operational performance in providing quality products or services to facilitate consumer lending and borrowing transactions. According to (Liu *et al.*, 2019: 3) the rapid development of the P2P lending platform, supported by its market potential, the lack of regulations and intense competition in obtaining access to capital, forced the P2P lending platform to assure opportunistic return on investment to attract investors, thereby increasing the risk of business failure. Subsequently, many platforms went bankrupt and the owners and executives of several platforms suddenly disappeared when regulators made arrangements. About 1.726 of 4.503 P2P lending platforms registered in China disappeared during the study period of 2016-2019. Similar data are shown by (Naysary & Daud, 2021: 108) Financial Stability Bureau of the Central Bank of China who stated that more than 4000 P2P lending companies faced daily operational issues until bankruptcy. Reuters (2019:1) added new data from the China Banking and Insurance Regulatory Commission (CBIRC) showing only 427 P2P companies which still operated by the end of October 2019, indicating the number had dropped from 6.000 companies back in 2015. In the context of P2P, according to Zhao et al., (2014) lenders are categorized as investors. Investors make investment decisions based on the information presented by the platform. The quality of the information generated by the platform serves to match the right product characteristics with investor preferences, thereby helping investors make quality decisions. Suzan et al. (2019) also stated that information for decision quality is the desired characteristic of information system output. These characteristics are relevance, completeness, accuracy, timeliness, and appropriateness. In other words, the quality of decisions depends on the quality of the output of an

information system. P2P Lending operations are data flows followed by transaction decisions of borrowers and lenders. The quality of this data flow also provides valuable information for improving operational performance (Wang *et al.*, 2015:3). The quality of data analytics according to (Ghasemaghaei, 2019:16; Akter et al., 2019) consists of the use of big data, quality of data, sophisticated tools and analytical capabilities to produce quality information. Data accuracy for decision-making can be improved by using data analytics competence and understanding of the company's internal operations (Ghasemaghaei et al., 2018; Davenport et al., 2001).

Based on the actual business development of P2P, KPMG (2018:4) stated that the Indonesian P2P industry is still in a growing phase. For it to grow is determined by the quality of data analytics as the determinant of business performance. Following up on KPMG's premise, this research is an attempt to explain the effect of the quality of data analysis on the operational performance and sustainability of P2P Lending companies in Indonesia.

2. Literature review

2.1 Data analytics quality

The development of Fintech P2P Lending industries has attracted public attention and it possesses a huge potential with comparative advantages. However, this industry also experiences an issue related to operational performance in providing quality products or services to facilitate consumer lending and borrowing transactions. According to (Liu *et al.*, 2019: 3) the rapid development of the P2P lending platform, supported by its market potential, the lack of regulations and intense competition in obtaining access to capital, forced the P2P lending platform to assure opportunistic return on investment to attract investors, thereby increasing the risk of business failure. Subsequently, many platforms went bankrupt and the owners and executives of several platforms suddenly disappeared when regulators made arrangements. About 1.726 of 4.503 P2P lending platforms registered in China disappeared during the study period of 2016-2019. Similar data are shown by (Naysary & Daud, 2021: 108) Financial Stability Bureau of the Central Bank of China who stated that more than 4000 P2P lending companies faced daily operational issues until bankruptcy. Reuters (2019:1) added new data from the China Banking and Insurance Regulatory Commission (CBIRC) showing only 427 P2P companies which still operated by the end of October 2019, indicating the number had dropped from 6.000 companies back in 2015.

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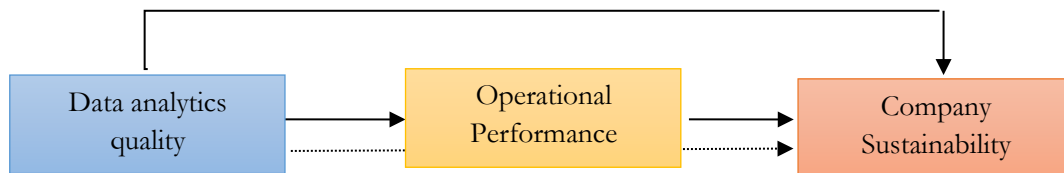

Fig. 1. The Effect of Data analytics quality on Company Sustainability through operational performance as an intervening variable

2.16 Hypotheses

H1: *Data analytics quality has a positive and significant effect on operational performance.*
H2: *Data analytics quality has a positive and significant effect on company sustainability.*
H3: *Operational performance has a positive and significant effect on company sustainability.*
H4: *Data analytics quality has a positive and significant effect on company sustainability through operational performance as an intervening variable.*

3. Method

3.1 Sampling

From a population of 104 P2P lending fintech entities registered and licensed by the OJK on December 31st, 2023, a sample of 91 P2P lending fintech companies or 87.5% were taken as samples.

3.2 Data Collection

The data were collected using an instrument in the form of a questionnaire and then confirmed through virtual interviews using zoom media or video calls and visits to the Asosiasi Fintech Pendanaan Indonesia (AFPI) office. The data collection process was carried out for nine months and 23 days, starting from March 8th 2023 to December 31st 2023. Primary data collection was carried out electronically using a g-form with the link https://bit.ly/KuesionerFintechLending. The questionnaire link was submitted through an online communication channel to each analysis unit ie., a P2P lending fintech company registered and/or licensed at the OJK and attached with a cover letter from the OJK.

3.3 Measures

The measurement of variables uses the following dimensions and indicators:

Table 1
Variables, Dimensions and Indicators

Variables	Dimension	Indicators
Data analytics quality (X1) (Ghasemaghaei & Calic, 2019; Ghasemaghaei, Ebrahimi, & Hassanein, 2018)	Big Data Utilization	Volume of data
		Velocity of data
		Variety of data
	Data Quality	Data reliability
		Data security
		Data timeliness
		Data relevance
		Data accuracy
	Intelligent credit rating	The system is capable of modelling and simulation
		The system is capable of performing text language analysis
		Integrated system with PUSDAFIL PUSDAFIL and Fintech Data Center
	Domain Knowledge	Employee understanding of the company's external factors
		Employee understanding of the company's internal factors
		Employees' understanding of the main factors for fintech business success
Operational Performance (Y) (*Bai & Sarkis, 2017;* Babaei & Bamdad, 2020; Ma, et al, 2020)	Fee	Interest rate charged
		Total fees charged
	Quality	Financing quality
		Compatibility of the rate of return with the published platform
	Delivery	Loan processing time
		Loan process reliability
	Flexibility	Flexibility in determining the loan amount
		Flexibility in setting interest rates
Company sustainability (Z) (Aras et al., 2018; Raut et al., 2017, 2019)	Profit	Financing growth
		Capital growth
		Profit growth
		Market share growth
	People	Consumer retention
		Consumer complaint
		Consumer complaint resolution
	Planet (environment)	Financing related to environmental sustainability
		CSR portion for environmental sustainability

Source: Research Data (2024)

4. Results

4.1 Descriptive Analysis

Respondents' answers to the questionnaire were grouped into 5, starting from the lowest, i.e., not good, less good, enough, good, and very good. Based on the grouping and notification of answers to the questionnaire, then the average value, gap and criteria for each variable are calculated as follows:

158

Table 2
Research Variable Score Analysis

No	Variables	Real Score	Max Score	Avg Score	% Realization	%GAP	Criteria
1	Data Analytics Quality (KAD)	5788	7280	3.98	79.51	20.49	Good
2	Operational Performance (KO)	2765	4160	3.32	66.47	33.53	Enough
3	Company Sustainability (KP)	2934	4680	3.13	62.69	37.31	Enough

Source: Results of data processing (2024)

4.2 Model Fit Test, and Structural Model Test

The model fit test with the goodness of fit index approach is carried out before testing the structural model to provide confidence whether the model built on the theoretical basis following the empirical data collected through the questionnaire instrument in the field:

Table3
Model Fit Test

No	Match Criteria	Target Rate for Model Fit	Model Estimation Result	Model Fit Rate
1	RMSEA	RMSEA ≤ 0.08	0.073	Fit
2	SRMR	SRMR ≤ 0.05	0.050	Fit
3	CFI	CFI ≥ 0.90	0.98	Fit
4	IFI	IFI ≥ 0.90	0.98	Fit
5	RFI	RFI ≥ 0.90	0.95	Fit
6	NFI	NFI ≥ 0.90	0.96	Fit
7	NNFI	NNFI ≥ 0.90	0.98	Fit

Source: Processed Data (2024)

Table 2 shows that all of the model fit test criteria have met the requirements for structural testing. After the model is declared fit, a comprehensive structural test is carried out. The result of the structural test shown in Fig. 2 aims to ensure the presence or absence of variance as the basis for accepting or rejecting the research hypothesis.
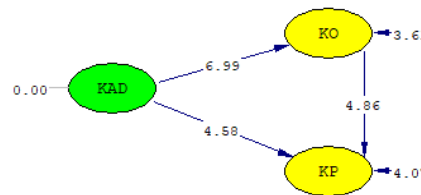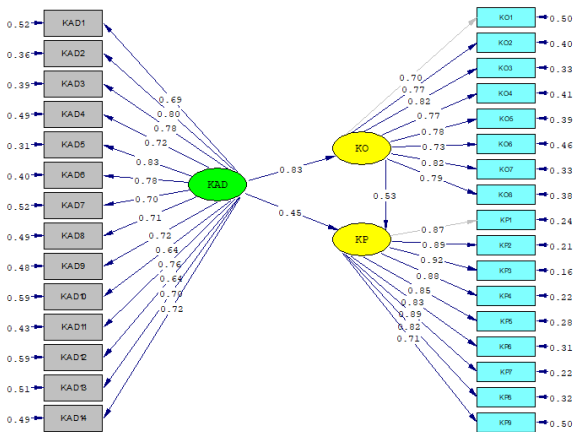

Fig. 2. Model Diagram of Structural Comprehensive Solution
Source: Processed Data (2024)

Fig. 3. T-Value Structural Model Diagram (Result of data processing, 2024)

Following the model above, two structural models have been derived i.e., 1) the direct effect of data analytics quality on company sustainability and 2) the effect of data analytics quality on company sustainability through operational performance. The statistical effect is seen below.

$$\eta_1 = 0.83 \times \xi_1 + 0.31$$
$$\eta_2 = 0.53 \times \eta_1 + 0.45 \times \xi_1 + 0.071$$

Description:

ξ_1	= data analytics quality variable
η_1	= operational performance implementation variable
η_2	= company sustainability variable

4.2.1 Path Coefficient Analysis

The magnitude of the value of the causal relationship between research variables is shown in Fig. 3 below:

Table 4
Summary of Hypotheses Testing Results

Alternative Hypothesis (Ha)	Path (Relationship)	t count value ≥1.64	Direct effect	Indirect effect	Total	Hypotheses Conclusion
Hypothesis1	KAD →KO	6.99	0.83	-	0.83	Accepted
Hypothesis2	KAD →KP	4.58	0.45	-	0.45	Accepted
Hypothesis3	KO →KP	4.86	0.53		0.53	Accepted
Hypothesis4	KAD→KO→KP	4.58	0.45	(0.45 × 0.53) = 0.24	0.69	Accepted

5. Discussion

Hypothesis 1

Based on hypothesis testing, it was revealed that there was a positive and significant effect of operational performance on the sustainability of Fintech P2P lending companies. All managers in Fintech P2P lending in the survey had used data analytics quality supported by machine learning to carry out the operational process of fintech P2P lending such as digitally accepting, storing and processing customers' data from either lender or borrower. The significance of the effect of data analytics quality in supporting Fintech P2P lending business operations in Indonesia supports the results of empirical research from Dubey et al., (2019, 2020) who found that big data analytic capabilities using artificial intelligence can improve the quality of decision making which can have implications for improving the company's operational performance. Yadegaridehkordi et al. (2020:208) confirmed that analytical factors supported by technology like complexity, technological infrastructure, quality of big data, and integration between systems affects the big data adoption itself and it leads to operational performance. De Camargo Fiorini *et al.*, (2018:112) also found that big data analytics skills in the data management process, diagnosis, and the process will produce quality information to increase business value and company performance.

Hypothesis 2

Based on the hypothesis testing, it was revealed that data analytics quality had a positive and significant effect on company sustainability. The significant effect of the quality of data analytics on the sustainability of the company, according to the samples, is because P2P fintech is an early adopter of the quality of data analytics with AI technology, and they are more familiar, ready, and understand it and can use it optimally for the benefit of maintaining its existence in the market. Through machine learning, AI algorithms can increase data analytics quality to support business sustainability. The results of this study support Božič and Dimovski, (2019:1) who prove the relationship between skills of data analytics and business intelligence to innovation and competitive capability, which ultimately impacts a company's sustainability. Ghasemaghaei et al. (2018:104) found that companies that integrated big data can predict future events or trends and use them as a part of the strategy to win the competition. Ghasemaghaei and Calic (2019:72) also stated that predictive insights from big data analytics make it possible for companies to forecast sales trends and long-term performance, and implement through innovation, new product development or improvement of existing products to improve long-term performance. This result also supports the findings by (Bag *et al.*, 2020:1) who surveyed executive managers at mining companies in South Africa and found that the use of big data analytics supported by staff skills in using big data fuels company learning and growth, which has implications for sustainable supply chain management performance.

Hypothesis 3

Based on the hypothesis testing, it was revealed that operational performance had a positive and significant effect on the sustainability of Fintech P2P lending companies. Based on interviews with several fintech CEOs, as an operational financing institution with TKB indicators of more than 90% as an advantage, the platform would be eyed by prospective lenders so that funding barriers were automatically overcome and the company's reputation and performance would be good on an ongoing basis. This finding supports the empirical evidence from Wiengarten and Longoni (2015:139) who found that the sustainability aspect is significantly affected by the success of the company's operational activities integrally using the supply chain in the ecosystem. Similar empirical evidence was also found by Sehnem, et al. (2019:237) indicating that company sustainability is affected by the ability of operational management. The continuous improvement of supply chain performance is largely determined by operational excellence and circularly engages in the business ecosystem. Dev et al. (2020:1) stated that operational excellence in an economic way simultaneously affects cost reduction and it encourages the application of the principles of the Industrial Revolution 4.0 with business sustainability as the ultimate goal. Excellence in operations can improve supply chain performance on an ongoing basis including flexibility, collaboration, transparency, innovation, and supply chain relational capabilities.

Hypothesis 4

Based on the hypothesis testing, it was revealed that the data analytics quality had a positive and significant effect on the company's sustainability with operational performance as the intervening variable. According to the managers, with data analytics quality with automated AI, the repetitive tasks can be easily carried out, efficiently and effectively. Furthermore, the work of an AI system supported with machine learning will always provide the best output because it can maintain operational consistency in best practices which has implications for the sustainability of the P2P lending fintech business.

The findings of this study are in line with Bag *et al.*, (2020:1) who found that the quality of data analytics using big data supported by the capabilities of managers can improve the operational performance of the value chain and simultaneously ensure company sustainability. This result also supports finding by (Ren *et al.*, 2019:1343), which states that BDA-AI can explore large volumes of varied datasets to uncover specific insights and behaviors and other useful information. This useful information helps managers to make better decisions, achieve optimization across the company's operational life cycle, and ensure production sustainability.

Furthermore, similar results were also shown by (Sivarajah *et al.*, 2020:14) who stated that big data analysis and social media insights in a participatory web environment in Business to Business (B2B) companies moderated by operating performance and marketing activities will have implications for corporate sustainability. A study by Di & Varriale (2019:1) stated that blockchain-based analytical technology in the Airport Collaborative Decision Making (A-CDM) system has been proven to be able to improve decision quality, and has implications for sustainability of air transportation companies.

6. Conclusion and suggestion

6.1 Conclusion

Achievements in the form of operational performance at Fintech P2P lending companies are the main determinants of business sustainability. The granting of Fintech P2P lending business licenses by OJK also pays attention to operational aspects, adequacy, loan quality and so on. The findings of this study are concluded as follows:

1)   Data analytics quality has a positive and significant effect on the operational performance of fintech P2P lending. Data Analytics is the main medium for P2P lending fintech companies to operate. Through the utilization of rich and unique data that previously was treated as passive record, it can now innovatively become valuable information in assessing creditworthiness that has not been done by banks.

2)   Data analytics quality has a positive and significant effect on company sustainability. Data analytics quality has now become a capability of the P2P lending fintech algorithm, becoming a major factor in automating all business processes that impact the growth and the profit and consistently guaranteeing customer satisfaction to support the sustainability of the P2P lending fintech business.

3)   Operational performance has a positive and significant effect on the sustainability of P2P lending fintech companies. As an alternative to financing institutions, in addition to market conduct, P2P lending fintech continues to make loan quality an indicator of operational success and at the same time determines the sustainability of the P2P lending fintech companies. With a TKB exceeding 90%, the P2P lending fintech business will be more attractive to potential lenders so that funding barriers are automatically overcome and the company's performance and reputation will be good and increase the opportunity for the sustainability of the P2P lending fintech business.

4)   Data analytics quality has a positive and significant effect on company sustainability through operational performance. Fintech P2P lending operations have many procedures and customer verification processes. With the quality of data analytics with AI-based automation, repetitive tasks can be carried out easily, efficiently and effectively. Furthermore, the work of AI systems will always produce the best output if assisted with machine learning and the company's system will be able to maintain the consistency of these best practices, which has implications for the company's sustainability.

6.2 Suggestions

Based on the results of data processing, discussion and research conclusions, the recommended solutions related to analytical data quality, operational performance and sustainability of Fintech P2P lending companies in Indonesia are as follows:

1)   In the P2P industry, lenders and borrowers need a reliable platform to conduct analysis, to interact for various needs such as getting in-depth information or submitting complaints. To be able to produce data analytics quality, a reliable technique of data processing competence is needed as well as solid internal company teamwork to update algorithms following the development of business processes, ecosystems and targeted segments. Improving HR capabilities and mindsets in problem-

solving, application design of data processing techniques, data analysis techniques design, and data scientists are the crucial things to pay attention to.

2)   The high circulation of money online in P2P lending transactions attracts hackers to steal the data and the money. Fintech P2P lending must always carry out penetration tests, and identify and block suspicious activities that endanger the business.

7. Limitation

1)   The research sample still represents 87.5% of the total P2P lending fintech industry players so there are still opportunities for other insights that have not been explored in this research.

2)   The variables that affect the growth and sustainability of the financial sector industry are developing very dynamically. The next researcher is expected to be able to add other variables as determinants of operational performance or the sustainability of P2P lending fintech companies. As described in the descriptive analysis, there are indications of variables that affect the business and existence of fintech P2P lending such as foreign ownership, capital accessibility, marketing and so on.

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