

Assessing the Reliability and Validity of Organizational Resilience Using SMART PLS Structural Equation Modelling

Muhamad Ali Pahmi^{1,3*}, Ahmad Faisal Mohamad Ayob¹, Gendut Suprayitno², Wilarso³

¹ Naval Architecture Programme, Faculty of Ocean Engineering Technology and Informatics, Universiti Malaysia Terengganu, Malaysia

² The Indonesian Institute for Corporate Governance, Indonesia

³ Sekolah Tinggi Teknologi Muhammadiyah Cileungsi, Indonesia

Abstract

Introduction: Organizational resilience has become a critical area of study as businesses face an increasingly complex and unpredictable environment, we are intrigued by this intriguing phenomenon and are keen to investigate further if a company's resilient aspect can be incorporated into a conceptual framework.

Objectives: This research establishes a foundation for evaluating reliability and validity in an Organizational Resilience Framework Model. It aims to pave the way for future empirical studies while shedding light on the methodological intricacies of this effort, within the context of an Organizational Resilient Framework Model.

Methods: The methodology in this research is analyzed using SEM - SEM-structural equations modelling in SmartPLS v (3.2.9) software version and analysis of the outer and inner models aspect. The data for the instrument were gathered through a questionnaire gathered via several methods including, WhatsApp, SMS, and social media via LinkedIn, and professional gatherings, which was distributed to 92 respondents using purposive judgment sampling. For the sample size, in this research, we use the path coefficient range of 0,21-0,3 with a significant level of 10%.

Results: This outer model analysis has high reliability and validity, which suggests a strong relationship between the observed variable and the underlying latent construct. the inner model indicates that the ability of the independent variables in the analysis model is 76.2%, and the remaining 23.8% of the influence is explained by other variables outside of those discussed in this research, with a predictive relevance value $0.745 > 0$ so it can be concluded that the organizational resilience variable can predict the model well and with the acceptance of the H1 hypothesis, show that there are significance of the relationships between variables and the organization's resilience is conveyed through financial feasibility and is strongly connected to all variables in the macro-micro aspect.

Conclusions: Financial feasibility plays a crucial role in determining the organization's resilience and is closely related to other variables in both macro and micro contexts. In summary, the results indicate that the relationships between variables in the model are statistically significant, supporting the conclusion that financial feasibility is integral to the organization's resilience and is interconnected with other variables at different levels of analysis.

Keywords: Structural equations modelling, reliability validity test, Smart PLS, organization resilience framework

1. Introduction

Maritime logistics, serving as the backbone of global economic activity, has experienced significant disruptions. The onset of the global COVID-19 pandemic towards the end of 2019 has had a profound impact on worldwide economic operations [1], [2]. According to UNCTAD, the shipping industry shrank by 3.8% in the first half of 2020. However, maritime trade grew by 4.3% [3]. The ability of the shipping industry to respond to the crisis caused by the outbreak resulted in minimal delays to the logistics supply chain. give a largely thorough overview of the steps taken in this situation and the efforts made by major container shipping companies to respond to COVID-19 [4].

Indonesia, which is a maritime archipelagic country with more than +/- 17,000 islands [5], is certainly not free from this global impact. The impact of the uncertain global situation on Indonesia's shipping lines and the maritime industry has been examined and summarized by previous research [6], [7][6], [7], [8]. Owing to the inherent characteristics of the industry, various factors such as capital level and economies of scale within each company can influence how a company responds to an uncertain situation. An interesting phenomenon showed that 66% of shipping line companies in Indonesia are not only resilient to the global pandemic but also growth in equity value. From this fact, it's proven that different shipping line companies/organization has a different resilient level

with 33% being bankrupt and not well prepared when facing uncertain conditions [8]. In this case, organizational resilience has become a critical area of study as businesses face an increasingly complex and unpredictable environment, we are intrigued by this intriguing phenomenon and are keen to investigate further if a company's resilient aspect can be incorporated into a conceptual framework.

2. Objectives

This research sets out to establish a foundation for evaluating reliability and validity in the context of an Organizational Resilience Framework Model. It aims to pave the way for future empirical studies, while also shedding light on the methodological intricacies involved in this effort, within the context of an Organizational Resilient Framework Model, with a specific focus on the application of SMART PLS Structural Equation Modelling.

The modelling of Smart PLS for SEM analysis is based on the proposed concept of the Organizational Resilience framework. The research design was structured as a semi-constructive setup and included both theoretical research and data collected in the field up to the design scale. This approach aims to improve current theory and generate various behavioral indicators. Next, evaluation of psychometric properties such as content validity, discriminant ability, confirmatory factor analysis, and concurrent/external validation were conducted.

3. Methods

3.1. Literature review

The literature review highlights the growing importance of organizational adaptability in today's dynamic business environment, where the criticality and complexity of organizational rigidity have become focal points of scholarly inquiry and practical consideration. As businesses face rapid technological advancements, fluctuating market demands, and global uncertainties, the ability to adapt swiftly and effectively has become a strategic imperative for survival and success. Scholars emphasize the multifaceted nature of the challenges organizations face, requiring a comprehensive understanding of the intricate connections between organizational elements and their adaptive responses. To address these challenges, researchers are employing advanced methodologies such as Partial Least Square (PLS), particularly Smart PLS, which offers a paradigm shift in approaching measurement model assessment. Smart

PLS's flexibility allows researchers to navigate complex abstract frameworks, accommodating both reflective and formative measurement models. By embracing this methodology, researchers enhance the credibility of their findings and contribute to the advancement of knowledge in organizational research. Additionally, the adoption of comprehensive measurement frameworks and latent variable modelling enables businesses to gain deeper insights into their capabilities and vulnerabilities, ultimately enhancing their ability to thrive in an uncertain environment.

3.1.1 The critical and complexity of organization adaptability

In contemporary business geography, the criticality and complexity of organizational rigidity have surfaced as focal points of scholarly inquiry and practical consideration. Organizational rigidity is no longer simply a desirable particularity; it has become a critical determinant of an association's survival and success [9]. The grim pace of change and the unpredictability of external factors have amplified the significance of an association's capability to acclimatize fleetly and effectively. As businesses grapple with technological advancements, request oscillations, and global misgivings, the capacity to acclimatize becomes a strategic imperative.

The complexity essential in organizational rigidity lies in the multifaceted nature of the challenges associations face[10]. These challenges extend beyond bare functional adaptations and frequently bear a reevaluation of organizational structures, strategies, and societies. The interplay of internal and external factors further adds layers of complexity, demanding a nuanced understanding of the intricate connections between organizational rudiments and their adaptive responses. Scholars and interpreters likewise are increasingly fetching the need for a comprehensive understanding of the critical and complex nature of organizational rigidity [11]. The capability to anticipate change, proactively acclimate strategies, and foster a culture that embraces invention are crucial rudiments in navigating the complications of the ultramodern business geography. The impacts of failing to acclimatize are severe, ranging from lowered competitiveness to outright organizational fustiness. To claw into the critical and complex angles of organizational rigidity, experimenters are employing advanced methodologies and theoretical fabrics[12], [13]. The disquisition extends beyond face-position analyses, seeking to uncover the underpinning mechanisms that drive or hamper rigidity. generalities similar to organizational adaptability, literacy capacity, and strategic dexterity are integrated into the

converse, reflecting the depth of understanding needed to address the multifaceted challenges associations encounter.

Organizational adaptability has become a critical area of study as businesses face increasingly complex and changeable terrain. In the pursuit of understanding and enhancing organizational adaptability, the operation of advanced statistical styles becomes imperative[14], [15], [16]. Organizational resilience is a multidimensional construct, and various frameworks have been proposed to capture its essence. Other researchers [17][18]have laid foundational work in conceptualizing organizational resilience, emphasizing the importance of adaptive capacity, learning, and robust systems. The assessment of organizational resilience requires robust measurement models. Scholars have employed various tools to gauge resilience, ranging from traditional survey instruments to more advanced structural equation modelling one of them [19] emphasized the importance of comprehensive measurement frameworks, while other research [20][21]explored the use of latent variable modelling. Overall, the adoption of comprehensive measurement frameworks and latent variable modelling in studying organizational adaptability and resilience enables businesses to gain deeper insights into their capabilities and vulnerabilities. By identifying areas for improvement and implementing targeted interventions, organizations can enhance their ability to thrive in a rapidly changing and uncertain environment.

3.1.2 The Imperative of Rigorous Measurement

The work of [22] attempts to delve into the explanation behind employing Partial Least Square (PLS)- specifically, Smart PLS- as an important instrument for testing the validity and reliability of abstract fabrics. An abstract frame serves as the backbone of any empirical study, furnishing a theoretical altar upon which suppositions are constructed [23].However, the effectiveness of this support structure depends on the strength of its measures and the crucial considerations of validity and reliability[24]. While traditional statistical styles have been necessary in history, Smart PLS emerges as a lamp of invention. Smart PLS isn't simply a statistical tool; it's a paradigm shift in the way we approach dimension model assessment[25]. The essential inflexibility of Smart PLS allows experimenters to navigate complex abstract fabrics with ease. Unlike its forerunners, it thrives in situations characterized by small sample sizes, non-normal distributions, and idle variables with reflective and constructive pointers.

This rigidity makes Smart PLS a potent supporter in the hunt for valid and dependable measures[26].

One of the distinctive features of Smart PLS lies in its capability to handle both reflective and constructive dimension models. Reflective pointers assume that the measured variables directly beget the idle construct, while constructive pointers suggest that the idle construct is formed by the variables[27], [28]. Smart PLS, through its advanced algorithms, accommodates the nuances of both, enabling a more accurate representation of the abstract frame. The Smart PLS methodology incorporates Monte Carlo simulations, allowing experimenters to conduct virtual trials to estimate the performance of their models under varying conditions, this robustness enhancement not only strengthens the findings but also offers valuable insights into the model's stability and reliability across diverse case [29], [30]. By embracing this methodology, experimenters elevate the credibility of their findings and contribute to the advancement of knowledge in their separate fields. As the scholarly community continues to evolve, the application of Smart PLS becomes not just a choice but a strategic imperative for those committed to unraveling the complications of abstract fabrics. Structural Equation Modelling (SEM), and specifically, Smart PLS, has gained prominence in organizational research due to its flexibility and adaptability to different research contexts. Some research results provided an in-depth guide on employing Smart PLS[31], while other researchers explored its advantages in the context of predicting endogenous constructs[32] and construct validity [33]to assess the reliability and validity of measurements.

3.2. Methodology

The methodology in this research is analyzed using SEM - Structural equations modelling in **SmartPLS v (3.2.9)** software version, with consists of :

1. Research Design: The modelling in the Smart PLS for SEM analysis is based on the proposed conceptual resilience framework. The research design was structured as a semi-constructive setup, involving both theoretical studies and data collected from the field to design scales [34]. The purpose of this approach is to enhance current theories and generate various behavioral indicators[35]. Subsequently, evaluations were carried out on psychometric properties such as content validity, discrimination ability, and confirmatory factor analysis along with concurrent/external validation.

2. Research Hypothesis:
 - a. H0: There was no significant connection to all variables in the macro-micro aspect that related to the organization's resilience conveyed through financial feasibility.
 - b. H1: There is a significant connection to all variables in the macro-micro aspect that related to the organization's resilience conveyed through financial feasibility.

3. Research Participant: To gather data from a specific target group professional, this research utilized purposive sampling with an emphasis on judgment sampling[36], [37]as a specific method within purposive sampling, involves the researcher's judgment in selecting participants based on their suitability for providing valuable insights or information to use their expertise or understanding of the target group to identify individuals who are likely to contribute meaningfully to the study. For the sample size, in this research decided by calculation table [38], [39], we use path coefficient range at 0,21-0,3 with significant level at 10%, the result is minimum 69 respondent.

4. Instrument: The instrument is developed to explore and investigate the author's hypothesis that financial feasibility is a derivative of strategic analysis at the macro PESTEL to micro ICOR framework. We collected data using Google Forms (<https://forms.gle/bzZjcZXUL3fgWfTw6>) and distributed via several methods including, WhatsApp, SMS, and social media via LinkedIn, and professional gatherings. The indicator clusters analyzed as shown in figure 1 include; Tax rate (X1), Interest rate (X2), Inflation rate (X3), attribution of investment/Capex (X4), attribution of operational/Opex (X5), account receivable rate (X6), financial feasibility (Z1), equity growth (Z2), growth market share (Z3), organization resilience (Y).

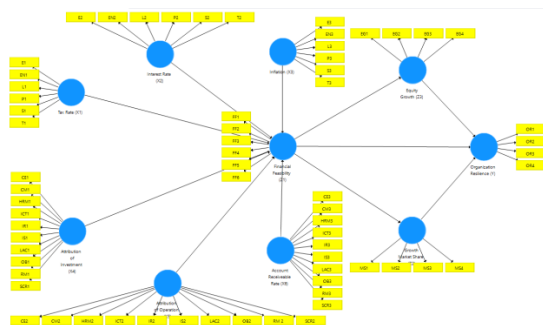


Figure 1. The organization resilience construct model

5. Outer Model Analysis (Construct Reliability & validity): The relationships between latent variables and their observed indicators, or manifest variables, are the focus of this section of SEM. It entails describing the degree to which the latent constructs are adequately represented by the observed variables. Factor loadings, measurement errors, factor variances, and factor covariances are all included in the measurement model [40][41]with the requirement:

Table 1. Outer Model Analysis Requirement

Test Type		Item to check	Standard to Pass
Convergent Validity Test	FLV Test (Factor loading Value)	Each indicator or	Valid if each Indicator > 0.6
	AVE Test (Average Variance Extracted)	Each Variable	Valid if each Variable > 0.5
Discriminant Validity Test	Cross Loading		Greater Loading on Intended Factor > 0.2
	Fornell - Larcker		The construct's variance (captured by the AVE) should be higher than its shared variance with other constructs.
	HTMT Value		< 0.9
Reliability Test	Composite Reliability Value	Each Variable	Reliable if the Composite Reliability value > 0.7
	Cronbach's Alpha Value	Each Variable	Reliable if the Cronbach's Alpha value > 0.7

6. Inner Model Structural: The relationships between the latent variables themselves are the main focus of the structural model, also known as the inner model. It outlines the latent variables' regression or causal pathways. Stated differently, it stands for the theoretical framework and theories regarding the connections among the latent constructs [40][41]with the requirement:

Table 2. Inner Model Analysis Requirement

Test Type	Standard Value	Interpretation
R ² (R-Square)	R ² ≤ 0.25 (25%)	The model has a weak connection
	R ² 0.26 – 0.74 (26% - 74%)	The model has a moderate relation / medium connection
	R ² ≥ 0.75 (75%)	The model has a strong connection
Q ² (Predictive Relevance)	Q ² < 0	The model cannot be well predicted by the variables and data.
	Q ² > 0	The variables and data have good model prediction ability.
Path Coefficient (For 10% P Value)	If the significant Value (P Value) ≤ 0.1 (10%)	The influence between variables is significant
	If the significant Value (P Value) > 0.1 (10%)	The influence between variables is NOT significant

4. Results

The results from Smart PLS analysis provide a comprehensive understanding of the research outcomes derived from the structural and measurement model evaluations. Through Smart PLS, researchers obtain valuable insights into the relationships between latent constructs and their observed indicators, shedding light on the underlying mechanisms driving the phenomenon under investigation. The analysis yields crucial information on the strength and significance of structural paths, elucidating the direct and indirect effects among variables within the theoretical framework. Additionally, the assessment of model fit indices, such as the goodness-of-fit measures, confirms the adequacy of the proposed model in explaining the observed data. Furthermore, the evaluation of the measurement model's validity and reliability enhances confidence in the research instrument, ensuring that the measured variables effectively represent the intended constructs. Overall, the findings and results derived from Smart PLS analysis contribute to advancing knowledge in the research domain by providing empirical support for theoretical propositions and offering insights into practical implications for decision-makers and stakeholders.

4.1 Research Participant

From the results of 18 months of data collection, we obtained a total of 92 data from professional respondents from various industries. From the initial dataset of 92 entries, we conducted data cleaning to address biases and outliers. Subsequently, using the refined dataset comprising 73 respondents, we designed the questionnaire to solicit insights from each participant on all variables and indicators within the resilience framework. To get the expected number and quality data from the designated respondent who has work-related experience in corporate strategy, business development, and financial analysis. We took advantage of technological advances by using Google Forms (<https://forms.gle/bzZjcZXUL3fgWfTw6>) which were distributed via several methods including, WhatsApp, SMS, and social media via LinkedIn, and professional gatherings.

Table 3. Demographic table of respondent

Demographic	Categories	Frequency	%
Gender	Male	85	92%
	Female	7	8%
Work Position	Supervisor	5	5%
	Middle management	68	74%
	Top Level Management	19	21%
Age	26 - 35 Yr	26	28%
	36 - 45 Yr	43	47%
	46 - 55 Yr	19	21%
	>56 Yr	4	4%
Industry	Manufacturing	36	39%
	Consultant	24	26%
	Others	15	16%
	Logistics & Supply Chain	13	14%
	Researcher	4	4%
Average Working Experience Related to Corporate strategy, business development, and Financial analysis.		22,8 Yr	

4.2 Outer Model Analysis

This analysis focuses on assessing the relationships between latent constructs and their corresponding observed indicators, ensuring that the measurement model accurately captures the underlying theoretical constructs. Through Smart PLS, the reliability of individual indicators and the convergent validity of constructs are evaluated, assuring that the measured

variables effectively represent the intended constructs. Furthermore, the analysis examines discriminant validity to ascertain that distinct constructs are adequately differentiated from one another. By employing advanced statistical techniques, such as factor loadings, composite reliability, and average variance extracted (AVE), Smart PLS facilitates a comprehensive assessment of the measurement model's robustness and effectiveness. Overall, the outer model analysis in Smart PLS serves as a critical step in ensuring the validity and reliability of the research instrument, thereby enhancing the credibility and trustworthiness of the study's findings, which consist :

Construct Reliability and Validity: The analysis conducted using the Smart PLS v (3.2.9) software version yielded several key findings, which are essential for assessing the validity and reliability of the measurement model. The FLV test indicates that all factor loading values are valid and exceed the threshold of > 0.6, this suggests a strong relationship between the observed variable and the underlying latent construct. And indicates that the observed variables adequately represent their respective constructs in the model. The AVE test indicates that the AVE values for all constructs are valid and exceed the threshold of > 0.5, this suggests that the underlying construct explains more than 50% of the variance in the observed variables. And provides evidence that the observed variables are adequately representing the constructs, demonstrating convergent validity.

Construct Reliability and Validity				
Matrix	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Account Receivable Rate (X6)	0.87895	0.90425	0.90094	0.53459
Attribution of Investment (X4)	0.93116	0.96244	0.94344	0.73626
Attribution of Operation (X5)	0.85160	0.85296	0.93089	0.87072
Equity Growth (Z2)	1.00000	1.00000	1.00000	1.00000
Financial Feasibility (Z1)	0.83445	0.85488	0.88642	0.66174
Inflation Rate (X3)	0.91862	1.07495	0.95887	0.92101
Interest Rate (X2)	1.00000	1.00000	1.00000	1.00000
Market Share (Z2)	1.00000	1.00000	1.00000	1.00000
Organizational Resilience (Y)	1.00000	1.00000	1.00000	1.00000
Tax Rate (X1)	1.00000	1.00000	1.00000	1.00000

Figure 2. The result of smart pls analysis on construct reliability and validity.

Fornell-Larcker Criterion: This test compares the square root of the Average Variance Extracted (AVE) for each construct to the correlations between that construct and all other constructs in the model. The AVE represents the amount of variance captured by the construct's indicators relative to the measurement error. In the Fornell-Larcker test, discriminant validity is achieved if the AVE of each construct is greater than the squared correlation between that construct and any other construct in the model. So, if the AVE for a

construct is higher than its correlations with other constructs, it indicates that the construct is more strongly associated with its indicators than with indicators of other constructs. Passing this test suggests that each construct is distinct from the others in the model.

Discriminant Validity										
Account ...	Attributio...	Attributio...	Equity Gr...	Financial ...	Inflation ...	Interest R...	Market S...	Organiza...	Tax Rate ...	
Account Receivable Rate (X6)	0.731									
Attribution of Investment (X4)	-0.117	0.858								
Attribution of Operation (X5)	-0.014	0.694	0.933							
Equity Growth (Z2)	0.290	0.012	-0.117	1.000						
Financial Feasibility (Z1)	-0.697	0.672	0.393	-0.282	0.813					
Inflation Rate (X3)	0.219	0.766	0.545	0.253	0.201	0.960				
Interest Rate (X2)	-0.667	0.506	0.433	-0.162	0.783	0.170	1.000			
Market Share (Z2)	0.669	-0.124	-0.180	0.520	-0.589	0.263	-0.548	1.000		
Organizational Resilience (Y)	-0.655	0.313	0.469	-0.476	0.746	-0.171	0.640	-0.799	1.000	
Tax Rate (X1)	0.051	0.038	0.072	-0.023	0.078	0.046	0.052	0.069	0.083	1.000

Figure 3. The result of smart pls analysis on discriminant validity fornell - larcker criterion.

Cross-Loading Test: In this test, the loading values of indicators (items) on their respective constructs are compared to their loading values on other constructs. Ideally, each indicator should have a higher loading on its construct than on any other construct. Passing this test means that each indicator predominantly measures the construct it's supposed to measure and doesn't significantly load on other constructs.

Heterotrait-Monotrait (HTMT) Ratio of Correlations Test: This test result shows that all HTMT values are less than 0,9 (<0,9). This indicates that the constructs are more correlated with their indicators than with indicators of other constructs.

Discriminant Validity										
Account ...	Attributio...	Attributio...	Equity Gr...	Financial ...	Inflation ...	Interest R...	Market S...	Organiza...	Tax Rate ...	
Account Receivable Rate (X6)										
Attribution of Investment (X4)	0.349									
Attribution of Operation (X5)	0.289	0.775								
Equity Growth (Z2)	0.335	0.125	0.239							
Financial Feasibility (Z1)	0.722	0.733	0.444	0.257						
Inflation Rate (X3)	0.325	0.859	0.582	0.292	0.442					
Interest Rate (X2)	0.692	0.444	0.468	0.162	0.847	0.160				
Market Share (Z2)	0.738	0.162	0.254	0.520	0.573	0.311	0.548			
Organizational Resilience (Y)	0.712	0.294	0.513	0.476	0.740	0.212	0.640	0.799		
Tax Rate (X1)	0.112	0.057	0.077	0.023	0.081	0.046	0.052	0.069	0.083	

Figure 4. The result of smart pls analysis on discriminant validity HTMT.

4.3 Inner Model Analysis

Through this analysis, the structural relationships and path coefficients among constructs are assessed to understand the underlying mechanisms driving the phenomenon under investigation. Smart PLS facilitates this analysis by employing advanced algorithms to estimate the strength and significance of these relationships, providing valuable insights into the hypothesized model. Additionally, the assessment of model fit indices and the examination of collinearity among constructs contribute to the validation and refinement of the research model. Overall, the inner

model analysis in Smart PLS serves as a crucial step in understanding the complex interplay between variables and elucidating the theoretical foundations of the research inquiry, which consist:

The R-Square test result, which measures the coefficient of determination, is a crucial metric in assessing the goodness-of-fit of a regression model. In this context, a result of 0.762 indicates that the ability of the independent variables in the analysis model to explain the organizational resilience variable is 76.2%, meaning that the remaining 23.8% of the influence is explained by other variables outside those discussed in this research.

R Square		
Matrix	R Square	R Square Adjusted
	R Square	R Square Adjusted
Equity Growth (Z2)	0.07960	0.06765
Financial Feasibility (Z1)	0.90302	0.89494
Market Share (Z2)	0.34641	0.33792
Organizational Resilience (Y)	0.76206	0.75255

Figure 5. The result of smart pls analysis on R Square.

The predictive relevance(Q^2) value result for organizational resilience is 0.745, market share 0.303, equity growth 0.046, and financial feasibility 0.582 as we can see that all the results are >0 or above 0, so it can be concluded that the organizational resilience variable can predict the model well.

Construct Crossvalidated Redundancy			
Total	Case1	Case2	Case3
SSO	SSE	$Q^2 (=1-SSE/SSO)$	
Account Receivable Rate (X6)	632.00000	632.00000	0.00000
Attribution of Investment (X4)	474.00000	474.00000	0.00000
Attribution of Operation (X5)	158.00000	158.00000	0.00000
Equity Growth (Z2)	79.00000	75.32962	0.04646
Financial Feasibility (Z1)	316.00000	131.83436	0.58280
Inflation Rate (X3)	158.00000	158.00000	0.00000
Interest Rate (X2)	79.00000	79.00000	0.00000
Market Share (Z2)	79.00000	55.01517	0.30361
Organizational Resilience (Y)	79.00000	20.11248	0.74541
Tax Rate (X1)	79.00000	79.00000	0.00000

Figure 6. The result of smart pls analysis on predictive relevant.

The path coefficient in this research is conducted with a significance level (α) set at 0.1 (10%) with one tail. The significance level (α) indicates the threshold at which the p-values are considered significant. In this case, the researchers have chosen a relatively relaxed significance level of 0.1 (10%), which means they are willing to accept a higher probability of Type I error (false positives) in exchange for potentially detecting weaker relationships. The p-values obtained from the

analysis are compared against the significance level (α). In this case, the p-values are reported to be ≤ 0.1 (10%), indicating that they are less than or equal to the chosen significance level. When a p-value is less than or equal to the significance level, it suggests that the observed relationship between variables is statistically significant. In other words, there is evidence to reject the null hypothesis (H_0) in favor of the alternative hypothesis (H_1).

Path Coefficients					
Mean	STDEV	T-Values	P-Values	Confidence Intervals	Confidence Intervals Bias Corrected
Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	
Account Receivable Rate (X6) -> Financial Feasibility (Z1)	-0.40726	-0.42439	0.06918	5.88719	0.00000
Attribution of Investment (X4) -> Financial Feasibility (Z1)	0.89535	0.88798	0.12330	7.26148	0.00000
Attribution of Operation (X5) -> Financial Feasibility (Z1)	-0.11134	-0.11154	0.06357	1.75154	0.03996
Equity Growth (Z2) -> Organizational Resilience (Y)	-0.09709	-0.09553	0.06265	1.54973	0.06963
Financial Feasibility (Z1) -> Equity Growth (Z2)	-0.28214	-0.27353	0.12630	2.23389	0.01277
Financial Feasibility (Z1) -> Market Share (Z2)	-0.58857	-0.58987	0.08162	7.21078	0.00000
Financial Feasibility (Z1) -> Organizational Resilience (Y)	0.42609	0.42944	0.08649	4.92628	0.00000
Inflation Rate (X3) -> Financial Feasibility (Z1)	-0.36612	-0.32593	0.17029	2.14993	0.01580
Interest Rate (X2) -> Financial Feasibility (Z1)	0.16474	0.14637	0.07458	2.20892	0.01361
Market Share (Z2) -> Organizational Resilience (Y)	-0.45782	-0.48446	0.09216	5.40176	0.00000
Tax Rate (X1) -> Financial Feasibility (Z1)	0.08078	0.08010	0.03173	2.54573	0.00547

Figure 7. The result of smart pls analysis on path coefficients.

5. Discussion

Based on the analysis result conducted using the Smart PLS v (3.2.9) software, several key findings were obtained; Firstly, the analysis of the outer model shows that this model has high reliability and validity, which suggests a strong relationship between the observed variable and the underlying latent construct. And indicates that the observed variables adequately represent their respective constructs in the model, and provides evidence that the observed variables are adequately representing the constructs, demonstrating convergent validity; Secondly, the inner model analysis informed that (R^2) result of 0.762 indicates that the ability of the independent variables in the analysis model to explain the organizational resilience variable is 76.2%, meaning that the remaining 23.8% of the influence is explained by other variables outside of those discussed in this research, and the predictive relevance (Q^2) value result for organizational resilience of 0.745, market share 0.303, equity growth 0.046, financial feasibility 0.582 is above 0, so it can be concluded that the organizational resilience variable can predict the model well; Thirdly, based on the acceptance of the H_1 hypothesis, we further interpret the significance of the relationships between variables by stating that the organization's resilience is conveyed through financial feasibility and is strongly connected to all variables in the macro-micro aspect. This suggests that financial feasibility plays a crucial role in determining the organization's resilience and is closely related to other variables in both macro and micro contexts. In summary, the

results indicate that the relationships between variables in the model are statistically significant, supporting the conclusion that financial feasibility is integral to the organization's resilience and is interconnected with other variables at different levels of analysis.

References

- [1] A. S. Alamoush, F. Ballini, and A. I. Ölçer, "Ports, maritime transport, and industry: The immediate impact of COVID-19 and the way forward," *Maritime Technology and Research*, vol. 4, no. 1, p. 250092, 2022.
- [2] A. S. Grzelakowski, "The COVID 19 pandemic—challenges for maritime transport and global logistics supply chains," *TransNav: International Journal on Marine Navigation and Safety of Sea Transportation*, vol. 16, no. 1, 2022.
- [3] UNCTAD, "Review of Maritime Report 2021," 2021. [Online]. Available: http://unctad.org/en/PublicationsLibrary/rmt2015_en.pdf
- [4] Z. Sun and Y. Zhang, "Strategic Crisis Response of Shipping Industry in the Post COVID-19 Era: A Case of the Top 10 Shipping Lines," *J Mar Sci Eng*, vol. 10, no. 5, 2022, doi: 10.3390/jmse10050635.
- [5] kkp.go.id, "DirjenPengelolaan Ruang Laut Konservasi perairan sebagai upaya.pdf."
- [6] A. Mohammad Danil, "Impacts of coronavirus COVID-19 on the global shipping and maritime industry in indonesia and how to overcome the coronavirus outbreak based on WHO and IMO recommendations," *OSF*, pp. 1–22, 2020.
- [7] A. RahmawanDestyanto, Y. Huang, and A. Verbraeck, "Examining the spatiotemporal changing pattern of freight maritime transport networks in Indonesia during COVID-19 outbreaks," in *Proceedings of the 4th Asia Pacific Conference on Research in Industrial and Systems Engineering*, 2021, pp. 590–597.
- [8] M. Ali Pahmi, A. Faisal Mohamad Ayob, G. Suprayitno, and S. Tinggi Teknologi Muhammadiyah Cileungsi, "The Performance Analysis of the Shipping Line Industry in Indonesia Amidst the Covid-19 and Global Economic Uncertainty Conditions," *Journal of Advanced Research in Applied Sciences and Engineering Technology XX, Issue X (2022) XX-XX Journal of Advanced Research in Applied Sciences and Engineering Technology Journal homepage*, 2023, [Online]. Available: https://semarakilmu.com.my/journals/index.php/applied_sciences_eng_tech/index
- [9] A. Bennet and D. Bennet, *Organizational survival in the new world*. Routledge, 2004.
- [10] K. Burnard and R. Bhamra, "Organisational resilience: development of a conceptual framework for organisational responses," *Int J Prod Res*, vol. 49, no. 18, pp. 5581–5599, 2011.
- [11] G. Schreyögg and M. Kliesch-Eberl, "How dynamic can organizational capabilities be? Towards a dual-process model of capability dynamization," *Strategic management journal*, vol. 28, no. 9, pp. 913–933, 2007.
- [12] T. Reiman, C. Rollenhagen, E. Pietikäinen, and J. Heikkilä, "Principles of adaptive management in complex safety-critical organizations," *Saf Sci*, vol. 71, pp. 80–92, 2015.
- [13] J. Normandin and M. Therrien, "Resilience factors reconciled with complexity: The dynamics of order and disorder," *Journal of Contingencies and Crisis Management*, vol. 24, no. 2, pp. 107–118, 2016.
- [14] R. E. Ployhart and S. F. Turner, "Organizational adaptability," *Individual adaptability to changes at work: New directions in research*, pp. 73–91, 2014.
- [15] L. Birdsey, C. Szabo, and K. Falkner, "Identifying self-organization and adaptability in complex adaptive systems," in *2017 IEEE 11th International Conference on Self-Adaptive and Self-Organizing Systems (SASO)*, IEEE, 2017, pp. 131–140.
- [16] J. Denhardt and R. Denhardt, "Building organizational resilience and adaptive management," *Handbook of adult resilience*, pp. 333–349, 2010.
- [17] M. Linnenluecke and A. Griffiths, "Beyond adaptation: resilience for business in light of climate change and weather extremes," *Bus Soc*, vol. 49, no. 3, pp. 477–511, 2010.
- [18] T. J. Vogus and K. M. Sutcliffe, "Organizational resilience: towards a theory and research agenda," in *2007 IEEE international conference on systems, man and cybernetics*, IEEE, 2007, pp. 3418–3422.
- [19] L. G. Canton, *Emergency management: Concepts and strategies for effective programs*. John Wiley & Sons, 2019.

- [20] S. N. Morales, L. R. Martínez, J. A. H. Gómez, R. R. López, and V. Torres-Argüelles, "Predictors of organizational resilience by factorial analysis," *International Journal of Engineering Business Management*, vol. 11, p. 1847979019837046, 2019.
- [21] T. Eriksson, M. Heikkilä, and N. Nummela, "Business model innovation for resilient international growth," *Small Enterprise Research*, vol. 29, no. 3, pp. 205–226, 2022.
- [22] T. Sander and P. L. Teh, "SmartPLS for the human resources field to evaluate a model," 2014.
- [23] R. P. Bagozzi and Y. Yi, "On the evaluation of structural equation models," *J Acad Mark Sci*, vol. 16, pp. 74–94, 1988.
- [24] C. Fornell and D. F. Larcker, "Structural equation models with unobservable variables and measurement error: Algebra and statistics." Sage Publications Sage CA: Los Angeles, CA, 1981.
- [25] N. F. Richter, G. Cepeda-Carrión, J. L. Roldán Salgueiro, and C. M. Ringle, "European management research using partial least squares structural equation modelling (PLS-SEM)," *European Management Journal*, 34 (6), 589-597., 2016.
- [26] M. Sarstedt, C. M. Ringle, and J. F. Hair, "Partial least squares structural equation modelling," in *Handbook of market research*, Springer, 2021, pp. 587–632.
- [27] A. Diamantopoulos and H. M. Winklhofer, "Index construction with formative indicators: An alternative to scale development," *Journal of marketing research*, vol. 38, no. 2, pp. 269–277, 2001.
- [28] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modelling," *J Acad Mark Sci*, vol. 43, pp. 115–135, 2015.
- [29] Z. Zhang, "Monte Carlo based statistical power analysis for mediation models: Methods and software," *Behav Res Methods*, vol. 46, pp. 1184–1198, 2014.
- [30] K. J. Preacher and J. P. Selig, "Monte Carlo method for assessing multilevel mediation: An interactive tool for creating confidence intervals for indirect effects in 1-1-1 multilevel models [Computer software]." 2010.
- [31] A. Leguina, "A primer on partial least squares structural equation modelling (PLS-SEM)." Taylor & Francis, 2015.
- [32] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modelling," *J Acad Mark Sci*, vol. 43, pp. 115–135, 2015.
- [33] J. Henseler and W. W. Chin, "A comparison of approaches for the analysis of interaction effects between latent variables using partial least squares path modelling," *Structural equation modelling*, vol. 17, no. 1, pp. 82–109, 2010.
- [34] T. R. Hinkin, J. B. Tracey, and C. A. Enz, "Scale construction: Developing reliable and valid measurement instruments," *Journal of Hospitality & Tourism Research*, vol. 21, no. 1, pp. 100–120, 1997.
- [35] A. Suryani and F. Tentama, "An AssesmentOf Construct Validity And Reliability On Organizational Commitment," *INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH*, vol. 8, p. 1, 2020, [Online]. Available: www.ijstr.org
- [36] W. G. Zikmund, B. J. Babin, J. C. Carr, and M. Griffin, *Business research methods*. Cengage learning, 2013.
- [37] U. Sekaran and R. Bougie, *Research methods for business: A skill building approach*. john wiley& sons, 2016.
- [38] M. Sarstedt, C. M. Ringle, and J. F. Hair, "Partial least squares structural equation modelling," in *Handbook of market research*, Springer, 2021, pp. 587–632.
- [39] J. F. Hair, C. M. Ringle, and M. Sarstedt, "PLS-SEM: Indeed a silver bullet," *Journal of Marketing theory and Practice*, vol. 19, no. 2, pp. 139–152, 2011.
- [40] K. K.-K. Wong, "Partial least squares structural equation modelling (PLS-SEM) techniques using SmartPLS," *Marketing bulletin*, vol. 24, no. 1, pp. 1–32, 2013.
- [41] F. Basbeth, P. Manajemen, M. Asrul, and H. Ibrahim, "Four Hours Basic PLS-SEM A Step by Step Guide With Video Clips For Student and Scholar," 2018. [Online]. Available: <https://www.researchgate.net/publication/344954763>