The Relation between Sustainable Innovation Strategy and Financial Performance Mediated By Environmental Performance

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Abstract

This study aims to examine the relationship of sustainable innovation strategy and financial performance through the mediation environmental performance. The hypothesis in this study is sustainable innovation strategy affect the financial performance which is mediated by environmental performance. This study is quantitative research in the explanatory level. The population of this study is all the manufacturer companies in East Java. The data is collected through questionnaire. The unit of analysis is a business unit. The respondent of this study is the manager of a business unit manufacturing company in East Java. The results showed that the environmental performance mediates partially the relation between sustainable innovation strategy and financial performance.

Keywords: *sustainable innovation strategy*, *financial performance*, *environmental performance*.

Introduction

The main goal of the company is maximizing the welfare of the owners with attention to the environment. Maximize the wealth of the company owner can be defined to maximize the value of the company (Brigham and Houston, 2001). Increasing the value of the company can be achieved if the company can achieve the targeted profit. Targeted profits can be achieved with good performance. The Company performance is multidimensional as it covers non-financial performance and financial performance. Dimensions of performance measurement with a single measurement is not able to provide a comprehensive understanding (Bhargava *et al*., 1994).

Performance measurement should integrate diverse measurements (Bhargava *et al*., 1994; Venkatraman & Ramunajam, 1986). Company performance can be achieved

when the company has a competitive advantage. There are two theories relating to competitive advantage to achieve performance. According to the Theory of Industrial Organization (I / O), to achieve the performance of the organization or company must pay attention to factors external environment (Porter, 1996). According to the Resource Based Theory (RBT), to achieve the organization's performance is determined by factors internal environment (Barney, 1991). In the stakeholder theory states that the company is not the only entity that operates for its own sake, but must provide benefits to all stakeholders (Ghozali & Chariri, 2007). The existence of a company is strongly influenced by the support of stakeholder to the company. In this case, there is a gap from theories, to cover the gaps from both theories, this study used the Contingency Theory. According to Otley (1980), the basic thesis of the contingency approach is no concept or organizational design that can be applied universally anywhere or in any condition effectively. An organization is only appropriate design or fit for a certain context or conditions. The use of contingency approach encourages researchers to identify the appropriate conditions for a specific organizational design and develop theories that support it (Riyanto, 1999).

After some research have described that the sustainable innovation strategy effect on financial performance. However, it should be realized, that the strategy will affect the performance when through several aspects such as environmental performance, which is a part of CSR. According to the GRI standards, environmental performance using six indicators disclosure such as economic aspect, Environment, Labor, Human Rights, Society, and the responsibility for the product.

To improve performance can be done through operational improvements, such as increased production capacity, cost efficiency and process innovation. The increased activity of the company's operations has an impact on the earth's existence, human and economic. This concept is called sustainability. According to Elkington (1998) sustainability is a balance between people, planet, and profit then known as the Triple Bottom Line. The Company shall be responsible for the positive and negative impact of the increase in operational activities against the economic, social and environmental.

The Companies can achieve the performance of the company through a fitness strategy with attention to environmental performance. There are various strategies used by the company, among other prospector strategy typology by Miles and Snow (1978) and differentiation strategy by Porter (2008) and sustainable innovation strategy by Terziovski (2002). According to Hambrick (1981) is a corporate strategy decisions pattern associated with the achievement of the performance. Strategy to innovate is one way to achieve good performance. In implementing sustainable innovation strategy necessary information technology. Information technology provides opportunities for companies to improve the coordination and control, or can also be used to gain a competitive advantage in the world market through product innovation and process innovation (Mahmod & Mann, 1993; Kettinger *et al*., 1994; Mata *et al*., 1995; Roos & Roos, 1997). Innovation in the implementation of the strategy by utilizing a sustainable and integrated technology will have an impact on the financial performance of their setting.

Sustainable innovation strategy impact on company performance. Innovation is a critical factor for the company to compete effectively in domestic and global markets and

is regarded as one of the most important components of an organization's strategy (Davila, 2000; Hitt *et al.*, 2001). Organizations that have a high level of innovation that is able to develop a competitive advantage and achieve higher levels of performance (Hurley & Hult, 1998; Davila, 2000; Weerawardena, 2003). Manufacturing innovations include the creation, selection, and development / improvement of products, processes and technology (Zahra & Das, 1993; Lucas & Ferrell, 2000). Innovation can improve the global position of the manufacturing company and help them achieve status as a producer of world-class quality goods.

The process of innovation is done with product innovation and process innovation. Innovation is a valuable organizational capability, difficult to imitate, and cannot be replaced (Henri, 2006). Innovation is a source of sustainable competitive advantage which contributes positively to the performance of the organization. In applying the innovation strategy should take into consideration the environment. Intended environment is Tripple Bottom Line. The Company shall be responsible for the positive and negative impacts caused by the economic, social and environmental in achieving performance through the implementation of an innovation strategy that is applied on a sustainable innovation strategy. The balance between economic performance, social welfare, and conservation of the environment is of concern. The process is then referred to as Corporate Social Responsibility (CSR).

CSR is a business commitment to act ethically, operating legally and contribute to improve the economy along with increased quality of life for employees and their families, the local community and the wider society. In the 1990s, corporate social responsibility (CSR) into an idea that took a lot of people, both from the academic community, non-governmental organizations (NGOs), to business people. Currently, annual reports some companies that go public and multinational must include its CSR practices. The importance of CSR has been elaborated by *Undang Undang* No. 25 of 2007 on Investment (Capital Market Law) and *Undang Undang* No. 40 of 2007 on Limited Liability Company (the Company Law). Environmental performance is part of the CSR. Environmental performance includes elements derived from internal and external factors.

Indonesia's environmental problems are now more complex, this is evidenced by the presence of various kinds of natural disasters, climate change to damage the ecosystem. Various aspects of the causes of the disaster could have been sourced from a variety of factors, but the influence of bad human behavior towards nature conservation seems to be a major cause environmental damage (Dyah & Prastiwi, 2008). As science and human awareness of the importance of the environment, environmental conditions ranging note back. Several attempts have been made, including the greening movement and make rules concerning the processing and utilization of the environment. One effort in minimizing the environmental conditions at this time that has been done Convention on Climate change (UN Framework Convention on Climate Change, UN-FCCC) held in Bali in 3 to 14 December 2007.

Based on the above explanation, the research is done about how to influence the relationship between sustainable innovation strategy and financial performance by mediating variable environmental performance. The study was conducted on a manufacturing company in East Java, both of which have gone public or not to go public. The manufacturing company is a company that is quite unique and has a capacity of complicated

work from production to finished goods ready for sale. Manufacturing company in East Java is the largest contributor of non-oil export performance Java after Jakarta and East Kalimantan. Manufacturing companies must become more creative in producing goods and very innovative with attention to environmental aspects.

The focus of the study was to examine the relationship between sustainable innovation strategy with financial performance mediated by the environmental performance of manufacturing companies in East Java. Motivations of this study were (1) Closing the gap theory and previous empirical studies on the model of the Resource-Based Theory, models of I / O and stakeholder theory by incorporating variables as described contingency theory, (2) whether the variable environmental performance (as variable contingency) is a mediating variable on the relationship between sustainable innovation strategy and financial performance.

The research questions in this research are: 1) Is sustainable innovation strategy affect the financial performance? 2) Is sustainable innovation strategy affect the performance of the Environment? 3) Is the environmental performance affects the financial performance? 4) Is the environmental performance mediates the relationship between sustainable innovation strategy and financial performance?

Theory and Hypothesis Development

I/O Theory

I/O Theory (I/O Models) explained that external factors is more important than internal factors within the company to achieve competitive advantage. The main concern in the theory of the I/O is competition. Required analysis of the power structure in the competition, which is better known as the Five Forces Model (Porter, 1985).

There are five things that are very important in the Five Forces Model, namely: (1) competition among peers, (2) The possibility of entry of new competitors, (3) the potential development of substitute products, (4) The power of bargaining seller/ supplier and (5) Strength bargain buyers/ consumers. Theory I/O explained that the company's performance is largely determined by the external environment. This theory focuses on the structure of the industry or the attractiveness of the external environment which is then focused on the company's internal resources.

Resources Based Theory

Resource-Based Theory explains that internal factors are more important than the external (industry) in the company to achieve competitive advantage. Resource-Based Theory is a view with a focus resources and capabilities which are fundamental principles that determine the welfare of society. Opinion Teece *et al.*, (1997) stated that a competitive advantage depends on the resources of the company. The idea came from strategic management, which is connected with the views Resource-Based Theory.

Barney (1986) explains that in a Resource-Based Theory, resources can be generally defined incorporate the assets, organizational processes, firm attributes, information, or knowledge that is controlled by a company which can be used formulate and implement their strategies. Resource-Based Theory categorize three types of resources: (1) physical capital resources (technology, plant, and equipment), (2) human capital or the

so-called intellectual capital, and (3) capital resources organization (formal structure). Furthermore Barney *et al*., (2001) stated that, Resource-Based Theory sees the company as a set of resources and capabilities of the company. The difference in resources and capabilities with a competitor company will provide a competitive advantage for the company. Assumptions Resources Based Theory: how companies can compete with other companies to gain competitive advantage in managing its resources in accordance with the ability of the company. According Resources Based Theory in order to provide optimal results, the resource must meet the following criteria: (1) valuable means to be a valuable resource if it can deliver strategic value to the company, (2) scarce means should have a unique resource in the sense that difficult to find among the competitors and become the company's potential, (3) the imperfect imitability means resources can be a source of sustainable competitive advantage, only if the company does not hold these resources cannot get them or not can mimic these resources, (4) non-substitution means that resources cannot be substituted by other alternative power sources.

Stakeholder Theory

Based on stakeholder theory, organizational management is expected to perform activities that are considered important by stakeholder and report back on these activities on the stakeholder. Stakeholder theory, explaining that the management of the organization is expected to perform activities that are considered important by stakeholder and report back on these activities on the stakeholder.

The term stakeholder of Gray et al definition (2001) stated that the stakeholder are: "......stakeholder in the company that may affect or be affected by the activities of the company, among other community stakeholder, employees, governments, suppliers, capital markets and others. "The survival of the company depends on the support of stakeholder and the support should be sought so that the activity of the company is to seek such support. The more powerful stakeholder, the greater the company's business to adapt. Social disclosure is considered as part of a dialogue between the company and stakeholder (Ghozali & Chariri, 2007).

Stakeholder theory states that all stakeholder have the right to be given information about the activities of the company (such as pollution, social movements, business companies for safety). The main purpose of the stakeholder theory is help corporate managers understand their stakeholder environment and to manage more effectively in the presence of relationships in their corporate environment.

The concept of stakeholder theory this helps corporate managers in increasing the value of the impact of their activities and minimize losses for the stakeholder. The focus of stakeholder theory lies in what happens when corporations and stakeholder carry out their relationship.

In a moral perspective, stakeholder theory emphasizes that all stakeholder have the right to be treated fairly by the company and that the issue of the power of stakeholder (stakeholder power) is not directly relevant. This theory sees the company not as a mechanism to improve financial returns stakeholder and as a vehicle for coordinating stakeholder interests and see that management has a fiduciary relationship (lien) not only with some stakeholder but with all stakeholder.

The stakeholder theory normative view, management should provide balanced consideration to the interests of all stakeholder. When stakeholder have different perceptions so that a conflict of interest, then the manager should manage the company properly so as to achieve an optimal balance between them. Managerial perspective view in this stakeholder theory, trying to explain when the management company intends to achieve the expectations of certain stakeholder (in particular having strength), so that it can be said in this view is more likely to organizational perspective. Gray *et al.* (1996 in Deegan, 2004) states that the stakeholder are identified through the company's attention. The company believes that the interplay between managers and stakeholder should be managed in order to achieve the interests of the company that should not be restricted to the conventional assumption that for profit only. For companies' increasingly important stakeholder, the more work done to manage the relationship. The company sees a major element of information that can be used to manage or manipulate the stakeholder in order to seek their approval or support and resistance and to divert their disapproval. In this context, the concerned stakeholder to influence the management in the process of exploiting the full potential of the organization. Because only with proper management and the maximum over all this potential organization will be able to create value added and then push the company's financial performance which is the orientation of the stakeholder in the management intervenes.

Financial Performance

In the Balanced Scorecard concept, the financial perspective is seen as the ultimate goal for the profit-maximizing companies. Financial performance measures indicate whether the company's strategy, including implementation and enforcement, contribute to the bottom-line improvement. The financial performance of the company includes that revenue growth and productivity. Companies can generate profitable revenue by way of deepening relationships with existing customers, selling products, selling to customers in the segment as a whole.

Improvements in productivity can occur in two ways, namely companies reduce costs by reducing the direct and indirect expenses, or by using financial and physical assets more efficiently, reducing the working and fixed capital needed to support a given level of business. The linkage strategy in the financial perspective arises when organizations choose a balance between growth and productivity. In financial performance is defined as a consequence of an economic decision taken from an economic action. Financial performance refers to the concept of Balanced Scorecard developed by Kaplan &Norton (1992) which showed the planning, implementation and evaluation of the implementation of the strategy has been determined. Financial performance variables include three (3) indicators, namely: revenue growth, reduction or cost savings and increased asset utilization and increase customer value.

Sustainable Innovation Strategy

Innovation plays a major role for entering new markets, maintain existing market share and enhance the company's competitive advantage. Innovation is an important element of the company's business strategy, as innovation becomes an important contributor in the competition. Innovation becomes the main focus of academic research and industry to address the various problems faced by the company business. Innovation used to achieve a sustainable competitive advantage in the global competition (Hitt *et al.*, 2001; Kuratko *et al.*, 2005). The goal of innovation is not only to reduce

costs alone, but also for improving the quality of products and services, to design better products, product life cycle longer, and respond to the needs and demands of the customers. In addition, the innovation carried out to develop new products and services, new organizational models, improve the environment and new marketing techniques.

Some research indicates that companies should be more innovative in order to compete in domestic and international markets (Evangelista *et al.*, 1998). Global competition is forcing companies to innovate to reduce production costs and improve technology and product innovation. Business success is determined by innovation millennium (Hammel, 1999). Innovation is defined as a process in the organization to utilize the skills and resources to develop new products or services or to build a new system of production and operation so as to address the needs of customers (Jones, 2004). The influence of innovation on firm performance indicators (customer satisfaction, productivity and competitiveness of technology) has been demonstrated by Terziovski (2002). Continuous innovation strategy from the bottom - the top (bottom - up) is preferred to increase customer satisfaction and productivity (Terziovski, 2002).

In the face of environmental uncertainty and the increasingly intense competition, some companies must implement appropriate strategies, especially in strengthening their position as the most innovative, as the most cost-effective manufacturers, and as a company that is most responsive to market changes. Companies must innovate, both product innovation and process innovation. Innovation process is done in a sustainable enterprise environment.

Environmental Performance

Environmental performance is measured results of the environmental management system, which is associated with the control aspects of environmental aspects. According to the company's environmental performance Suratno *et al*. (2006) is the performance of the company in creating a good environment. Performance is measured through PROPER enterprise environment. Measurement of environmental performance has been implemented by the government since 2002. The program is used by the Ministry of Environment to measure compliance was based on the laws and regulations in force. The program is also used to assess the performance of the company in the implementation of various activities related to environmental management activities.

In this study, environmental performance is measured by using the GRI-G3 Guidelines. Corporate environmental disclosure is a disclosure made by the company to the stakeholder in the form of a report environmental activities undertaken by the company. CSR disclosure standards developed in Indonesia using standards developed by GRI (Global Reporting Initiative). GRI is a non-profit organization that spearheaded the economic, environmental and social sustainability. In this study used the GRI standard for measuring corporate environmental disclosure (CED). GRI provides to all companies with a comprehensive sustainability reporting framework that is used all over the world (www.globalreporting.org). List of social disclosure by using the GRI standard disclosure 6 indicators, namely:

Sustainable Innovation Strategy Relationship with Financial Performance

To achieve a competitive advantage can be done through the process of innovation, both product and process innovation. Innovation is a valuable organizational capabilities, difficult to imitate, and cannot be replaced (Henri, 2006). Thus innovation is a source of sustainable competitive advantage which contributes positively to the performance of the organization. Innovation is a critical factor for the company to compete effectively in domestic and global markets and is regarded as one of the most important components of an organization's strategy (Davila, 2000; Hitt *et al*., 2001). Organizations that have a high level of innovation that is able to develop a competitive advantage and achieve higher levels of performance (Hurley & Hult, 1998; Davila, 2000; Weerawardena, 2003).

The research studied the association of sustainable innovation strategy and information technology became a major element in strategic information systems, as well as its influence on the performance of the organization still has a great opportunity for elaboration. Research on innovation learn how organizations design and implement innovations that have been made in the strategy. One of them was developed by Terziovski (2002) who propose three alternative strategies of innovation: a gradual (incremental), radical, and (integrated). Research conducted by Ward & Peppard, (2002) also relates how strategic factors can affect the speed, effectiveness and progress management / utilization of information technology. These factors are: the ability of technological, economic considerations in the use of technology, the feasibility of the application, skills and ability to develop applications, the pressure on the organization and specific industries to improve performance, and the ability of the organization in applying information technology. Therefore, continuous innovation strategy will affect financial performance.

> *Hypothesis 1: Sustainable innovation strategy affects the financial performance.*

Sustainable Innovation Strategy Relationship with Environment Performance

Innovation is defined as a process in organizations that utilize the skills and resources to develop new products or services or to build a new system of production and operation so as to address the needs of customers (Jones, 2004). The influence of innovation on firm performance indicators (customer satisfaction, productivity and competitiveness of technology) has been demonstrated by Terziovski (2002).

Implementation strategies are implemented in a sustainable innovation will impact on the environment. Environmental performance can be measured is the result of the environmental management system, which is associated with the control aspect of the environment. According to the company's environmental performance Suratno *et al*. (2006) is the performance of the company in creating a good environment. Environmental performance can be seen from the economic, environmental, labor, human rights, society, and the responsibility for the product.

> *Hypothesis 2: Sustainable innovation strategy influences on environmental performance*

Relationship environmental performance and financial performance

Environmental performance is the performance of the company to create a good environment. The company issued the environmental costs associated with it will build a good image according to the stakeholder so that the company has received positive responses from the market because it has been doing social responsibility and caring for the environment. If this is done then the company have an impact on its financial performance. Increased revenue, cost savings and increased use of corporate assets is mirrored in financial performance.

Verrecchia (1983) <u>in</u> Suratno *et al*. (2006) suggested that good environmental actors believe that disclosing environmental performance will illustrate good news for market participants. Companies with good environmental performance will disclose the quantity and quality of environmental information that is more comparable to a company that has a poor environmental performance. According to Suratno *et al*. (2006) information about the activity or performance of the company is important for stakeholder, especially investors because disclosure of that information is an advantage for stakeholder. Companies that have good news will improve environmental performance disclosure in the annual report. Good news is expected to be responded positively by investors who have an impact on the company's financial performance. The better the environmental performance of a company the better the financial performance of the company. It reflects the transparency of the company that the company concerned and responsible for what he has done so that people know the company's contribution to the environment (Fitriyani, 2012).

Hypothesis 3: Environmental performance effects on financial performance.

Relationship   Sustainable   Innovation   Strategy,   Environmental Performance and Financial Performance

Innovation strategy implemented in a sustainable impact on the financial performance, through several variables include environmental performance. Therefore, the hypothesis to 4 are proposed in this study are:

Hypothesis 4: sustainable innovation strategy affects financial performance mediated by the environmental performance

Theory and Hypothesis Development
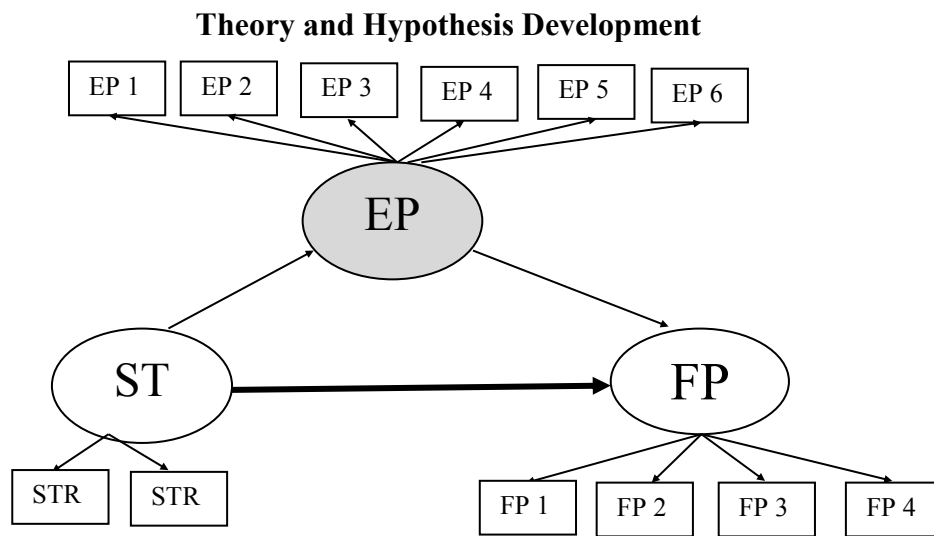
Figure 1. Theory and Research Development

Note :
STR = Sustainable innovation strategy (Independent variable)
STR 1 = Inovation Produk and proses
STR 2 = Information Teknologi

FP   = Financial performance (Dependent variable)
FP 1 = Improve cost structure
FP 2 = Increase Asset Utilization
FP 3 = Expand Revenue Opportunity
FP 4 = Enhance Customer Value

EP   = Environmental performance (Mediating variable)
EP 1 = Economic
EP 2 = Environmental aspects of the production process
EP 3 = Employment
EP 4 = Human Right
EP 5 = Community
EP 6 = Responsibility for products

Research Method

Research Design, Sample and Variables

This study was designed as a causal studies (Cooper & Emory, 1995). This research is quantitative research on the explanatory level. Data were collected by questionnaire media. The unit of analysis of this research is a business unit. Respondents were managers of business units manufacturing company in East Java. This research is the perception of behavior that uses the business unit managers as the party deemed to have sufficient knowledge about the holistic research variables.

The study population was all manufacturing companies in East Java totaling 398 companies. To avoid a low response to the questionnaire study, the questionnaire was sent by fax and email to the entire population. To increase the response rate, the interviews were conducted by telephone. Until the time limit data collection, as many as 135 questionnaires can be filled or a response rate of 34 percent.

The variables in the study were classified as follows:
 1. The financial performance of the Dependent Variables
 2. innovation strategy is an Independent Variable
 3. Environmental performance is variable Mediation

Financial performance is defined as a consequence of an economic decision taken from an economic action. Financial performance refers to the concept of Balanced Scorecard developed by Kaplan & Norton (1992) which showed the planning, implementation and evaluation of the implementation of the strategy has been determined. Financial performance variables include four (4) indicators, namely: revenue growth, reduction or cost savings and increased asset utilization and increase customer value.

The strategy is intended in this study is an innovation strategy that is applied on an ongoing basis, which is defined as the manner in which the company to compete in the industry in a sustainable manner. Variable innovation strategy in research refers to research conducted by Terziovski (2002). Types of strategies that are selected in the study were integrated innovation strategy, which is a combination of radical innovation strategy and incremental innovation strategy. Instrument developed in this study involves two (2) aspects of product and process innovation, and information technology. By using a 5-point Likert scale, respondents were questioned about the company's position compared to other companies of the two aspects of innovation and information technology.

Environmental Performance

Environmental performance is the measurable results of the environmental management system, which is associated with the control aspects of environmental aspects. In this study, environmental performance is measured by using the GRI-G3 Guidelines. Corporate environmental disclosure is a disclosure made by the company to the stakeholder in the form of a report environmental activities undertaken by the company. CSR disclosure standards developed in Indonesia using standards developed by GRI (Global Reporting Initiative). This standard covers the economic, environmental, labor, human rights, social and product responsibility. By using a 5-point Likert scale, respondents were questioned about the company's position compared to other companies of these aspects.

Data Analysis

Analysis of the data using Structural Equation Modeling (SEM) - PLS-based variant. WARP program PLS 3:00 version is used to test the hypothesis. Analysis of data through two stages, namely (1) a direct influence on the relationship of sustainable innovation strategy and financial performance and (2) indirect effect on the relationship of sustainable innovation strategy and financial performance by mediating variables (environmental performance). Indirect effect in this study is the effect of mediation on the environmental performance of sustainable innovation strategy relationship with financial performance.

Test methods for mediating variable coefficient difference approach Testing the following steps: (a) examine the effect of the independent variable on the dependent variable in the model without the involvement of mediating variables, (b) examine the direct effect of the independent variable on the dependent variable in the model involving mediating variables, (c) examine the effect of the independent variable on the variable mediation, and (d) examine the effect of mediating variables on the dependent variable.

Mediation testing criteria are as follows: (1) variable is declared as a perfect mediation variable, if after entering mediating variables, the effect of the independent variable (X) to the dependent variable (Y) decreases to zero (c '= 0) or the effect of variable X to Y which was significant (before entering the variable M) becomes not significant after entering Mediation variable into the regression equation models. (2) Mediation Variables declared as partial mediating variables if, after entering Mediation variables influence the independent variable (X) to the dependent variable (Y) decreased but not to zero (c '≠ 0) or the influence of variable X to Y was significant (before entering the variable M) be remained significant after entering variables into the model equation M regersi but decreased regression coefficient (Kock, 2010, 2011, 2014).

Direct Effect Testing

Testing the direct effect is to examine the direct effect on the relationship of sustainable innovation strategy and financial performance.
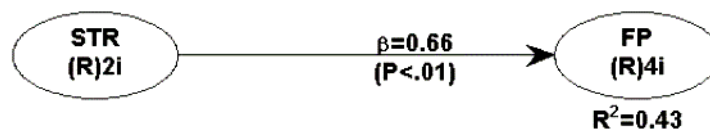
Figure 2. Direct Effect

This test consists of:

1. Validity Test

Table 1. Validity Test (Direct effect)

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*****************************************
* Combined loadings and cross-loadings *
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	STR	FP	Type (a	SE	P value
str1	0.876	0.114	Reflect	0.068	<0.001
str2	0.876	-0.114	Reflect	0.068	<0.001
fp1	-0.188	0.836	Reflect	0.068	<0.001
fp2	-0.130	0.855	Reflect	0.068	<0.001
fp3	0.081	0.917	Reflect	0.068	<0.001
fp4	0.216	0.895	Reflect	0.068	<0.001

Value of AVE

STR	FP
0.768	0.768

In Table 1, it can be seen that the loading of indicators of sustainable innovation strategy (STR1 and STR2) and Financial Performance (FP1, FP2, FP3 and FP4) more than 0.70 with a p-value of less than 5% (significant), it is means of measurement construct sustainable innovation strategy (STR) and Financial Performance (FP) has qualified convergent validity. AVE value of the variable STR and FP more than 0.50 which means that the measurement construct STR and FP have qualified convergent validity.

2. Reliability Test

Table 2. Reliability Test (Direct effect)

Composite Reliability Coefficients		*Cronbach's Alpha Coefficients*	
STR	FP	STR	FP
0.869	0.930	0.698	0.899

Reliability Test can be seen from the Composite Reliability Coefficients and Cronbach's Alpha Coefficients in Table 2. Value Composite Reliability Coefficients and Cronbach's Alpha Coefficients of variable STR and families more than 0.70 which means that the variable STR and FP is reliable.

3. Goodness of fit

Table 3. Goodness of fit (Direct effect)

Model fit indices and P values

Average path coefficient (APC)=0.658, P<0.001
Average R-squared (ARS)=0.433, P<0.001
Average block VIF (AVIF) not available
Average full collinearity VIF (AFVIF)=1.692, acceptable if <= 5, ideally <= 3.3

In Table 3 shows that the average value of the path coefficient (APC), which is produced by 0.658 and significantly less than 5%. Average value of R-Square (ARS) generated by 0.433 and significantly less than 5%. Average value of the variance inflation factor (AVIF) of 1,693 is less than 5. As such, it can be concluded that the goodness of fit of models have been fulfilled.

4. Path Coefficient Estimation Results

Table 4. Result of path coefficient and Effect Size (Direct effect)

	Path coefficients			P values	
	STR	FP		STR	FP
STR			STR		
FP	0.658		FP	<0.001	

Effect sizes for path coefficients		
	STR	FP
STR		
FP	0.433	

In Table 4 indicated that the resulting path coefficient is positive in the amount of 0.658 with a p-value of less than 5%. It means that sustainable innovation strategy (STR) significant effect and positive effect for financial performance (FP).

5. Effect Size

In Figure 2 is shown a direct influence on the relationship of sustainable innovation strategy and financial performance. In Table 4 indicated that the value of Effect Size produced by 0.433 more than 0.35 indicates that the STR has a considerable influence on FP that means STR has a very important role to improve the FP. The amount of influence on the STR to FP can be seen from the values of R-Squared Coefficients in the amount of 0.433 which means that the influence of the STR to households amounted to 43.3%.

Indirect Effect Testing

Testing the indirect effect to test the effect of mediation on the environmental performance of sustainable innovation strategy relationship with financial performance.
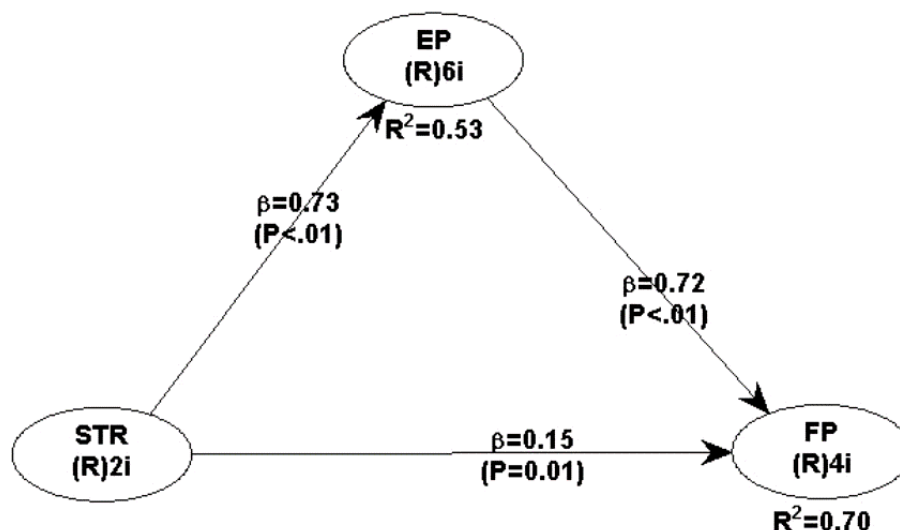
Figure 3. Indirect Effect

This test consists of:
1. Validity Test

Table 5. Validity Test (Indirect effect)

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* Combined loadings and cross-loadings *

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	STR	EP	FP	Type (a	SE	P value
str1	0.876	0.067	0.070	Reflect	0.068	<0.001
str2	0.876	-0.067	-0.070	Reflect	0.068	<0.001
ep1	0.308	0.796	-0.162	Reflect	0.068	<0.001
ep2	-0.207	0.851	-0.299	Reflect	0.068	<0.001
ep3	0.028	0.835	-0.370	Reflect	0.068	<0.001
ep4	0.191	0.830	0.075	Reflect	0.068	<0.001
ep5	-0.116	0.813	0.401	Reflect	0.068	<0.001
ep6	-0.189	0.829	0.367	Reflect	0.068	<0.001
fp1	-0.249	0.107	0.836	Reflect	0.068	<0.001
fp2	-0.092	-0.106	0.855	Reflect	0.068	<0.001
fp3	0.060	0.082	0.917	Reflect	0.068	<0.001
fp4	0.259	-0.083	0.895	Reflect	0.068	<0.001

Value of AVE

STR	EP	FP
0.768	0.682	0.768

Table 5 shows that the value of the indicator loading STR (STR 1 and STR 2), EP (EP1. EP2.EP3,EP4, EP5 and EP6) and FP (FP1,FP2,FP3 and FP4) more than 0.70 with a p-value of less than 5% (significant), this means that the measurement of the construct STR, EP and FP have qualified convergent validity. Convergent validity can also be seen from the value AVE. AVE value of the variable STR, EP and FP more than 0.50 which means that the measurement of the construct STR, EP and FP have qualified convergent validity.

2. Test Reliability

Table 6. Reliability Test (Indirect effect)

Composite Reliability Coefficients			*Cronbach's Alpha Coefficients*		
STR	EP	FP	STR	EP	FP
0.869	0.928	0.930	0.698	0.907	0.899

Test reliability can be seen from the Composite Reliability Coefficients and Cronbach's Alpha Coefficients in Table 6. Value Composite Reliability Coefficients and Cronbach's Alpha Coefficients of variable STR, EP and FP more than 0.70 which means that the variable STR, EP and FP is reliable.

3. Goodness of fit

Table 7. Goodness of fit (Indirect effect)

Model fit indices and P values

Average path coefficient (APC)=0.534, P<0.001

Average R-squared (ARS)=0.615, P<0.001

Average block VIF (AVIF)=1.964, acceptable if <= 5, ideally <= 3.3

In Table 7 shows that the average value of the path coefficient (APC) were produced at 0,534 and significantly less than 5%. Average value of R-Square (ARS) produced 0.615 and significantly less than 5%. Average value of the variance inflation factor (AVIF) of 1.964 is less than 5. As such, it can be concluded that the goodness of fit of models have been fulfilled.

4. Estimation Results Coefficient path

Table 8. Result of path coefficient and Effect Size (Indirect effect)

	Path coefficients				P values		
	STR	EP	FP		STR	EP	FP
STR				STR			
EP	0.731			EP	<0.001		
FP	0.155	0.718		FP	0.012	<0.001	
* Effect sizes for path coefficients *							
	STR	EP	FP				
STR							
EP	0.534						
FP	0.102	0.594					
	Indirect effects				*P values*		
	STR	EP	FP		STR	EP	FP
STR				STR			
EP				EP			
FP	0.525			FP	<0.001		

Table 8 shows the resulting path coefficients are positive with p-value less than 5%. It means that STR has significant effect and positive effect for EP, STR significant positive effect on FP and EP significant positive effect on FP.

6. Effect Size and R-Squared

Effect Size value between variable STR to EP for 0.534 (large), indicates that the STR has a considerable influence on the EP. Effect Size value between variable STR with FP of 0.102 (medium), indicates that the STR has a medium impact on FP. Effect Size value between variables EP to FP for 0.584 (large), indicating that EP has a considerable influence on EP. Variance FP can be explained by variations in STR and EP by 69.5% while the EP variation can be explained by variations in STR at 53.4 %.

7. Indirect Effect

The estimation results indicate that the effect of STR against FP indirectly and through EP by 52.5% and significant with p value of less than 5%.

Discussion

On direct examination shows that sustainable innovation strategy affects financial performance. The resulting path coefficient of 0.658 with a p-value of less than 5%. This means that the strategy (STR) effect on financial performance (FP) of 0.658 and is statistically significant at the 5% level. Size Effect resulting value of 0.433 is more than 0.35 indicates that the strategy (STR) has a great influence on the financial performance (FP) which means that the strategy (STR) has a very important role to improve the financial performance (FP). The amount of influence strategies (STR) on financial

performance (FP) shown the value of R-Squared Coefficients that is equal to 0.433. This shows that the influence of the strategy (STR) on financial performance (FP) is approximately 43.3%.

In testing implies that sustainable innovation strategy affects financial performance through the mediating variable of 52.5% and significant with a p value of less than 5%. Effect of mediation Environmental Performance (EP) on the relationship of sustainable innovation strategy (STR) with financial performance (FP) with statistical significance level of 5% can be seen from the lane lines as follows:

– Sustainable innovation strategy (STR) effect on Environmental Performance (EP) and statistically significant at the 5% level, with a coefficient of 0.731
– Environmental Performance (EP) effect on financial performance (FP) and statistically significant at the 5% level, with a coefficient of 0.718.

Identification and testing of both line Environmental Performance (EP) partially mediate the relationship between sustainable innovation strategies (STR) with financial performance (FP). This is because all paths mediation variable significant influence, which is the path of sustainable innovation strategy (STR) of the Environmental Performance (EP) and the path of the Environmental Performance (EP) on the performance of Finance (FP). In Figure 2, it can be said variable Environmental Performance (EP) partially mediate the (partial mediating) on the relationship of sustainable innovation strategy (STR) with financial performance (FP).

Partially mediate the environmental performance on Sustainable Innovation Strategy influence on financial performance. This form of partial mediation indicates that environmental performance is not the only mediation relationship Sustainable Innovation Strategy on financial performance, but there are factors other mediating variable (Baron & Kenny, 1986). The test results demonstrate support for the hypothesis that Sustainable Innovation Strategy indirect effect on financial performance. Environmental Performance act as partial mediating Sustainable Innovation Strategy influence on financial performance.

Conclusion

Overall the results of this study demonstrate the important role of sustainable innovation strategy in improving the role of environmental performance and financial performance. By using the theory of stakeholder who have integrated the role of environmental performance as a means of implementing the strategies and formulate new strategies. The results of this study may explain the findings of previous studies that environmental performance has not been consistent. The findings of this study indicate support for mediating the relationship between continuous innovation strategy, environmental performance and financial performance.

Limitations of this study that may be taken into consideration for future research. First, the study sample was derived from the manufacturing industry alone so that the findings of this study can not be generalized to other industries. Future research may consider using a larger sample size and of the industry in addition to manufacturing. Second, this study used a cross-sectional survey design so it can not confirm a causal relationship between variables. Causal interpretation of the results of this study are in the theoretical framework alone. Future research may consider the use of longitudinal survey design or laboratory experiments to be able to ensure a causal relationship.

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Appendix

General Sem Analysis Results With Warp - Pls

Direct effect

```
*******************************
* General SEM analysis results *
*******************************
```

General project information

Version of WarpPLS used: 4.0
License holder: Trial license (3 months)
Type of license: Trial license (3 months)
License start date: 12-Oct-2014
License end date: 10-Jan-2015
Project path (directory): E:\bu haryati\
Project file: PENELITIAN2.prj
Last changed: 04-Jan-2015 22:46:11
Last saved: Never (needs to be saved)
Raw data path (directory): E:\bu haryati\
Raw data file: OLAH_DATA=PENELITIAN.xls

Model fit and quality indices

Average path coefficient (APC)=0.658, P<0.001
Average R-squared (ARS)=0.433, P<0.001
Average adjusted R-squared (AARS)=0.428, P<0.001
Average block VIF (AVIF) not available
Average full collinearity VIF (AFVIF)=1.692, acceptable if <= 5, ideally <= 3.3
TenenhausGoF (GoF)=0.576, small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio (SPR)=1.000, acceptable if >= 0.7, ideally = 1
R-squared contribution ratio (RSCR)=1.000, 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

General model elements

Outer model analysis algorithm: PLS regression
Default inner model analysis algorithm: Warp3
Multiple inner model analysis algorithms used? No
Resampling method used in the analysis: Stable
Number of data resamples used: 100
Number of cases (rows) in model data: 135
Number of latent variables in model: 2
Number of indicators used in model: 6
Number of iterations to obtain estimates: 5
Range restriction variable type: None
Range restriction variable: None
Range restriction variable min value: 0.000
Range restriction variable max value: 0.000
Only ranked data used in analysis? No

```
**********************************
* Path coefficients and P values *
**********************************
Path coefficients
-----------------
        STR     FP
STR
FP      0.658
P values
--------
        STR     FP
STR
FP      <0.001
****************************************
* Standard errors for path coefficients *
****************************************
        STR     FP
STR
FP      0.068


**************************************
* Effect sizes for path coefficients *
**************************************
        STR     FP
STR
FP      0.433


*****************************************
* Combined loadings and cross-loadings *
*****************************************
        STR     FP      Type (a  SE      P value
str1    0.876   0.114   Reflect  0.068   <0.001
str2    0.876   -0.114  Reflect  0.068   <0.001
fp1     -0.188  0.836   Reflect  0.068   <0.001
fp2     -0.130  0.855   Reflect  0.068   <0.001
fp3     0.081   0.917   Reflect  0.068   <0.001
fp4     0.216   0.895   Reflect  0.068   <0.001
```

Notes: Loadings are unrotated and cross-loadings are oblique-rotated. SEs and P values are for loadings. P values < 0.05 are desirable for reflective indicators.

```
************************************************
* Normalized combined loadings and cross-loadings *
************************************************
        STR     FP
str1    0.824   0.144
str2    0.861   -0.117
fp1     -0.191  0.875
fp2     -0.136  0.865
fp3     0.094   0.831
fp4     0.279   0.805
```
Note: Loadings are unrotated and cross-loadings are oblique-rotated, both after separate Kaiser normalizations.

```
************************************
* Pattern loadings and cross-loadings *
************************************
        STR     FP
str1    0.784   0.114
str2    0.969   -0.114
fp1     -0.188  0.967
fp2     -0.130  0.946
fp3     0.081   0.859
fp4     0.216   0.745
```

Note: Loadings and cross-loadings are oblique-rotated.

```
*************************************************
* Normalized pattern loadings and cross-loadings *
*************************************************
        STR     FP
str1    0.990   0.144
str2    0.993   -0.117
fp1     -0.191  0.982
fp2     -0.136  0.991
fp3     0.094   0.996
fp4     0.279   0.960
```

Note: Loadings and cross-loadings shown are after oblique rotation and Kaiser normalization.

```
*****************************************
* Structure loadings and cross-loadings *
*****************************************
        STR     FP
str1    0.876   0.603
str2    0.876   0.518
fp1     0.462   0.836
fp2     0.497   0.855
fp3     0.613   0.917
fp4     0.661   0.895
```

Note: Loadings and cross-loadings are unrotated.

```
****************************************************
* Normalized structure loadings and cross-loadings *
****************************************************
        STR     FP
str1    0.824   0.567
str2    0.861   0.509
fp1     0.484   0.875
fp2     0.502   0.865
fp3     0.556   0.831
fp4     0.594   0.805
```

Note: Loadings and cross-loadings shown are unrotated and after Kaiser normalization.

```
*********************
* Indicator weights *
*********************
      STR    FP     Type (a  SE     P value  VIF    WLS    ES
str1  0.571  0.000  Reflect  0.068  <0.001   1.403  1      0.500
str2  0.571  0.000  Reflect  0.068  <0.001   1.403  1      0.500
fp1   0.000  0.272  Reflect  0.068  <0.001   2.082  1      0.228
fp2   0.000  0.278  Reflect  0.068  <0.001   2.247  1      0.238
fp3   0.000  0.298  Reflect  0.068  <0.001   3.838  1      0.273
fp4   0.000  0.291  Reflect  0.068  <0.001   3.375  1      0.261
```

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.

```
*******************************
* Latent variable coefficients *
*******************************
```
R-squared coefficients

```
STR    FP
       0.433
```
Adjusted R-squared coefficients

```
STR    FP
       0.428
```
Composite reliability coefficients

```
STR    FP
0.869  0.930
```
Cronbach's alpha coefficients

```
STR    FP
0.698  0.899
```
Average variances extracted

```
STR    FP
0.768  0.768
```

Full collinearity VIFs

```
STR    FP
1.692  1.692
```
Q-squared coefficients

```
STR    FP
       0.430
```

```
**************************************************
* Ccorrelations among latent variables and errors *
**************************************************
```

Correlations among l.vs.with sq. rts. of AVEs

```
----------------------------------------------
          STR      FP
STR     0.876    0.640
FP      0.640    0.876
```

Note: Square roots of average variances extracted (AVEs) shown on diagonal.

P values for correlations

```
------------------------
          STR      FP
STR     1.000    <0.001
FP      <0.001   1.000
```

Correlations among l.v. error terms with VIFs

```
----------------------------------------------
```

There is nothing to show here, likely due to at least one of the following reasons:
  - There is only one endogenous latent variable in the model.
  - No links among latent variables have been defined.


```
************************************
* Block variance inflation factors *
************************************
```

There is nothing to show here, likely due to at least one of the following reasons:
  - No criterion latent variable has more than one predictor latent variable.
  - No links between latent variables have been defined.


```
****************************
* Indirect and total effects *
****************************
```

There is nothing relevant to report here, likely due to at least one of the following reasons:
  - There are fewer than 3 latent variables in the model.
  - No links between latent variables have been defined.


```
************************************
* Causality assessment coefficients *
************************************
```

Path-correlation signs

```
----------------------
          STR      FP
STR
FP        1
```

Notes: path-correlation signs; negative sign (i.e., -1) = Simpson's paradox.

R-squared contributions

```
----------------------
          STR      FP
STR
FP      0.433
```

Notes: R-squared contributions of predictor lat. vars.; columns = predictor lat. vars.; rows = criteria lat. vars.; negative sign = reduction in R-squared.

Path-correlation ratios

       STR   FP
STR
FP   1.000
Notes: absolute path-correlation ratios; ratio > 1 indicates statistical suppression; 1 < ratio <= 1.3: weak suppression; 1.3 < ratio <= 1.7: medium; 1.7 < ratio: strong.

Path-correlation differences

       STR   FP
STR
FP   0.000
Note: absolute path-correlation differences.

P values for path-correlation differences

       STR   FP
STR
FP   1.000
Note: P values for absolute path-correlation differences.

Warp2 bivariate causal direction ratios

       STR   FP
STR
FP   1.011
Notes: Warp2 bivariate causal direction ratios; ratio > 1 supports reversed link; 1 < ratio <= 1.3: weak support; 1.3 < ratio <= 1.7: medium; 1.7 < ratio: strong.

Warp2 bivariate causal direction differences

       STR   FP
STR
FP   0.007
Note: absolute Warp2 bivariate causal direction differences.

P values for Warp2 bivariate causal direction differences

       STR   FP
STR
FP   0.461
Note: P values for absolute Warp2 bivariate causal direction differences.

Warp3 bivariate causal direction ratios

       STR   FP
STR
FP   1.014
Notes: Warp3 bivariate causal direction ratios; ratio > 1 supports reversed link; 1 < ratio <= 1.3: weak support; 1.3 < ratio <= 1.7: medium; 1.7 < ratio: strong.
Warp3 bivariate causal direction differences

```
-------------------------------------------
        STR     FP
STR
FP      0.009
```
Note: absolute Warp3 bivariate causal direction differences.

P values for Warp3 bivariate causal direction differences
```
----------------------------------------------------------
        STR     FP
STR
FP      0.446
```
Note: P values for absolute Warp3 bivariate causal direction differences.

Indirect Effect

```
*******************************
* General SEM analysis results *
*******************************
```
General project information
```
--------------------------
```
Version of WarpPLS used: 4.0
License holder: Trial license (3 months)
Type of license: Trial license (3 months)
License start date: 12-Oct-2014
License end date: 10-Jan-2015
Project path (directory): E:\bu haryati\
Project file: PENELITIAN.prj
Last changed: 04-Jan-2015 21:18:36
Last saved: Never (needs to be saved)
Raw data path (directory): E:\bu haryati\
Raw data file: OLAH_DATA=PENELITIAN.xls

Model fit and quality indices
```
----------------------------
```
Average path coefficient (APC)=0.534, P<0.001
Average R-squared (ARS)=0.615, P<0.001
Average adjusted R-squared (AARS)=0.610, P<0.001
Average block VIF (AVIF)=1.964, acceptable if <= 5, ideally <= 3.3
Average full collinearity VIF (AFVIF)=2.992, acceptable if <= 5, ideally <= 3.3
TenenhausGoF (GoF)=0.674, small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio (SPR)=1.000, acceptable if >= 0.7, ideally = 1
R-squared contribution ratio (RSCR)=1.000, 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

General model elements
```
---------------------
```
Outer model analysis algorithm: PLS regression
Default inner model analysis algorithm: Warp3
Multiple inner model analysis algorithms used? No
Resampling method used in the analysis: Stable
Number of data resamples used: 100
Number of cases (rows) in model data: 135
Number of latent variables in model: 3
Number of indicators used in model: 12

Number of iterations to obtain estimates: 5
Range restriction variable type: None
Range restriction variable: None
Range restriction variable min value: 0.000
Range restriction variable max value: 0.000
Only ranked data used in analysis? No

```
********************************
* Path coefficients and P values *
********************************
Path coefficients
-----------------
          STR     EP      FP
STR
EP        0.731
FP        0.155   0.718
P values
--------
          STR     EP      FP
STR
EP        <0.001
FP        0.012   <0.001


****************************************
* Standard errors for path coefficients *
****************************************
          STR     EP      FP
STR
EP        0.068
FP        0.068   0.068


**************************************
* Effect sizes for path coefficients *
**************************************
          STR     EP      FP
STR
EP        0.534
FP        0.102   0.594


**************************************
* Combined loadings and cross-loadings *
**************************************
          STR     EP      FP      Type (a  SE      P value
str1      0.876   0.067   0.070   Reflect  0.068   <0.001
str2      0.876   -0.067  -0.070  Reflect  0.068   <0.001
ep1       0.308   0.796   -0.162  Reflect  0.068   <0.001
ep2       -0.207  0.851   -0.299  Reflect  0.068   <0.001
ep3       0.028   0.835   -0.370  Reflect  0.068   <0.001
ep4       0.191   0.830   0.075   Reflect  0.068   <0.001
ep5       -0.116  0.813   0.401   Reflect  0.068   <0.001
ep6       -0.189  0.829   0.367   Reflect  0.068   <0.001
fp1       -0.249  0.107   0.836   Reflect  0.068   <0.001
fp2       -0.092  -0.106  0.855   Reflect  0.068   <0.001
fp3       0.060   0.082   0.917   Reflect  0.068   <0.001
fp4       0.259   -0.083  0.895   Reflect  0.068   <0.001
```

Notes: Loadings are unrotated and cross-loadings are oblique-rotated. SEs and P values are for loadings. P values < 0.05 are desirable for reflective indicators.

```
**************************************************
* Normalized combined loadings and cross-loadings *
**************************************************
        STR     EP      FP
str1    0.702   0.087   0.091
str2    0.747   -0.067  -0.070
ep1     0.392   0.660   -0.206
ep2     -0.157  0.718   -0.227
ep3     0.023   0.700   -0.309
ep4     0.290   0.655   0.114
ep5     -0.168  0.658   0.580
ep6     -0.246  0.668   0.477
fp1     -0.260  0.112   0.712
fp2     -0.090  -0.104  0.717
fp3     0.075   0.102   0.679
fp4     0.311   -0.099  0.666
```
Note: Loadings are unrotated and cross-loadings are oblique-rotated, both after separate Kaiser normalizations.

```
*************************************
* Pattern loadings and cross-loadings *
*************************************
        STR     EP      FP
str1    0.759   0.067   0.070
str2    0.994   -0.067  -0.070
ep1     0.308   0.705   -0.162
ep2     -0.207  1.264   -0.299
ep3     0.028   1.139   -0.370
ep4     0.191   0.624   0.075
ep5     -0.116  0.550   0.401
ep6     -0.189  0.649   0.367
fp1     -0.249  0.107   0.919
fp2     -0.092  -0.106  1.013
fp3     0.060   0.082   0.798
fp4     0.259   -0.083  0.789
```
Note: Loadings and cross-loadings are oblique-rotated.

```
**************************************************
* Normalized pattern loadings and cross-loadings *
**************************************************
        STR     EP      FP
str1    0.992   0.087   0.091
str2    0.995   -0.067  -0.070
ep1     0.392   0.897   -0.206
ep2     -0.157  0.961   -0.227
ep3     0.023   0.951   -0.309
ep4     0.290   0.950   0.114
ep5     -0.168  0.797   0.580
ep6     -0.246  0.844   0.477
fp1     -0.260  0.112   0.959
fp2     -0.090  -0.104  0.990
fp3     0.075   0.102   0.992
fp4     0.311   -0.099  0.945
```
Note: Loadings and cross-loadings shown are after oblique rotation and Kaiser normalization.

```
****************************************
* Structure loadings and cross-loadings *
****************************************
```

	STR	EP	FP
str1	0.876	0.655	0.603
str2	0.876	0.584	0.518
ep1	0.646	0.796	0.633
ep2	0.535	0.851	0.627
ep3	0.582	0.835	0.623
ep4	0.635	0.830	0.715
ep5	0.563	0.813	0.741
ep6	0.547	0.829	0.744
fp1	0.462	0.683	0.836
fp2	0.497	0.667	0.855
fp3	0.613	0.778	0.917
fp4	0.661	0.755	0.895

Note: Loadings and cross-loadings are unrotated.

```
*********************************************
* Normalized structure loadings and cross-loadings *
*********************************************
```

	STR	EP	FP
str1	0.702	0.525	0.482
str2	0.747	0.498	0.441
ep1	0.536	0.660	0.526
ep2	0.451	0.718	0.530
ep3	0.487	0.700	0.522
ep4	0.502	0.655	0.565
ep5	0.456	0.658	0.599
ep6	0.441	0.668	0.600
fp1	0.394	0.582	0.712
fp2	0.416	0.559	0.717
fp3	0.454	0.577	0.679
fp4	0.491	0.562	0.666

Note: Loadings and cross-loadings shown are unrotated and after Kaiser normalization.

```
********************
* Indicator weights *
********************
```

	STR	EP	FP	Type (a	SE	P value	VIF	WLS	ES
str1	0.571	0.000	0.000	Reflect	0.068	<0.001	1.403	1	0.500
str2	0.571	0.000	0.000	Reflect	0.068	<0.001	1.403	1	0.500
ep1	0.000	0.195	0.000	Reflect	0.068	0.002	2.197	1	0.155
ep2	0.000	0.208	0.000	Reflect	0.068	0.001	2.844	1	0.177
ep3	0.000	0.204	0.000	Reflect	0.068	0.002	2.907	1	0.171
ep4	0.000	0.203	0.000	Reflect	0.068	0.002	2.359	1	0.168
ep5	0.000	0.199	0.000	Reflect	0.068	0.002	2.638	1	0.162
ep6	0.000	0.203	0.000	Reflect	0.068	0.002	2.841	1	0.168
fp1	0.000	0.000	0.272	Reflect	0.068	<0.001	2.082	1	0.228
fp2	0.000	0.000	0.278	Reflect	0.068	<0.001	2.247	1	0.238
fp3	0.000	0.000	0.298	Reflect	0.068	<0.001	3.838	1	0.273
fp4	0.000	0.000	0.291	Reflect	0.068	<0.001	3.375	1	0.261

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.

```
******************************
* Latent variable coefficients *
******************************
R-squared coefficients
----------------------
STR    EP     FP
       0.534  0.695
Adjusted R-squared coefficients
-------------------------------
STR    EP     FP
       0.530  0.691
Composite reliability coefficients
----------------------------------
STR    EP     FP
0.869  0.928  0.930
Cronbach's alpha coefficients
-----------------------------
STR    EP     FP
0.698  0.907  0.899
Average variances extracted
---------------------------
STR    EP     FP
0.768  0.682  0.768
Full collinearity VIFs
----------------------
STR    EP     FP
2.042  3.757  3.177
Q-squared coefficients
----------------------
STR    EP     FP
       0.528  0.698


**************************************************
* Ccorrelations among latent variables and errors *
**************************************************
Correlations among l.vs.with sq. rts. of AVEs
---------------------------------------------
       STR    EP     FP
STR    0.876  0.707  0.640
EP     0.707  0.826  0.824
FP     0.640  0.824  0.876
Note: Square roots of average variances extracted (AVEs) shown on diagonal.
P values for correlations
------------------------
       STR    EP     FP
STR    1.000  <0.001 <0.001
EP     <0.001 1.000  <0.001
FP     <0.001 <0.001 1.000


Correlations among l.v. error terms with VIFs
---------------------------------------------
       (e)EP  (e)FP
(e)EP  1.006  0.077
(e)FP  0.077  1.006
```

Notes: Variance inflation factors (VIFs) shown on diagonal. Error terms included (a.k.a. residuals) are for endogenous l.vs.

P values for correlations

```
          (e)EP    (e)FP
(e)EP    1.000    0.376
(e)FP    0.376    1.000
```

```
************************************
* Block variance inflation factors *
************************************
          STR     EP       FP
STR
EP
FP       1.964   1.964
```
Note: These VIFs are for the latent variables on each column (predictors), with reference to the latent variables on each row (criteria).

```
*****************************
* Indirect and total effects *
*****************************
```
Indirect effects for paths with 2 segments

```
          STR     EP       FP
STR
EP
FP       0.525
```
Number of paths with 2 segments

```
          STR     EP       FP
STR
EP
FP       1
```
P values of indirect effects for paths with 2 segments

```
          STR     EP       FP
STR
EP
FP       <0.001
```
Standard errors of indirect effects for paths with 2 segments
----
```
          STR     EP       FP
STR
EP
FP       0.048
```
Effect sizes of indirect effects for paths with 2 segments

```
          STR     EP       FP
STR
EP
FP       0.345
```
Sums of indirect effects

```
          STR     EP       FP
STR
EP
FP       0.525
```

Number of paths for indirect effects

```
-----------------------------
          STR     EP      FP
STR
EP
FP       1
```

P values for sums of indirect effects

```
-----------------------------
          STR     EP      FP
STR
EP
FP      <0.001
```

Standard errors for sums of indirect effects

```
-----------------------------
          STR     EP      FP
STR
EP
FP       0.048
```

Effect sizes for sums of indirect effects

```
-----------------------------
          STR     EP      FP
STR
EP
FP       0.345
```

Total effects

```
-----------------------------
          STR     EP      FP
STR
EP       0.731
FP       0.679   0.718
```

Number of paths for total effects

```
-----------------------------
          STR     EP      FP
STR
EP       1
FP       2       1
```

P values for total effects

```
-----------------------------
          STR     EP      FP
STR
EP      <0.001
FP      <0.001  <0.001
```

Standard errors for total effects

```
-----------------------------
          STR     EP      FP
STR
EP       0.068
FP       0.068   0.068
```

Effect sizes for total effects

```
-----------------------------
          STR     EP      FP
STR
EP       0.534
FP       0.447   0.594
```

```
************************************
* Causality assessment coefficients *
************************************
```

Path-correlation signs

	STR	EP	FP
STR			
EP	1		
FP	1	1	

Notes: path-correlation signs; negative sign (i.e., -1) = Simpson's paradox.

R-squared contributions

	STR	EP	FP
STR			
EP	0.534		
FP	0.102	0.594	

Notes: R-squared contributions of predictor lat. vars.; columns = predictor lat. vars.; rows = criteria lat. vars.; negative sign = reduction in R-squared.

Path-correlation ratios

	STR	EP	FP
STR			
EP	1.000		
FP	0.235	0.869	

Notes: absolute path-correlation ratios; ratio > 1 indicates statistical suppression; 1 < ratio <= 1.3: weak suppression; 1.3 < ratio <= 1.7: medium; 1.7 < ratio: strong.

Path-correlation differences

	STR	EP	FP
STR			
EP	0.000		
FP	0.503	0.108	

Note: absolute path-correlation differences.

P values for path-correlation differences

	STR	EP	FP
STR			
EP	1.000		
FP	<0.001	0.057	

Note: P values for absolute path-correlation differences.

Warp2 bivariate causal direction ratios

	STR	EP	FP
STR			
EP	0.977		
FP	1.011	1.008	

Notes: Warp2 bivariate causal direction ratios; ratio > 1 supports reversed link; 1 < ratio <= 1.3: weak support; 1.3 < ratio <= 1.7: medium; 1.7 < ratio: strong.

Warp2 bivariate causal direction differences

         STR   EP   FP
STR
EP   0.016
FP   0.007   0.006
Note: absolute Warp2 bivariate causal direction differences.

P values for Warp2 bivariate causal direction differences

         STR   EP   FP
STR
EP   0.405
FP   0.461   0.464
Note: P values for absolute Warp2 bivariate causal direction differences.

Warp3 bivariate causal direction ratios

         STR   EP   FP
STR
EP   0.974
FP   1.014   1.014
Notes: Warp3 bivariate causal direction ratios; ratio > 1 supports reversed link; 1 < ratio <= 1.3: weak support; 1.3 < ratio <= 1.7: medium; 1.7 < ratio: strong.

Warp3 bivariate causal direction differences

         STR   EP   FP
STR
EP   0.019
FP   0.009   0.012
Note: absolute Warp3 bivariate causal direction differences.

P values for Warp3 bivariate causal direction differences
         STR   EP   FP
STR
EP   0.391
FP   0.446   0.432
Note: P values for absolute Warp3 bivariate causal direction differences.