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The Moderating Effect of Environmental Turbulence in the Relationship between Entrepreneurial Management and Firm Performance

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Abstract Contingency theory points out the adaptive management is crucial point to sustainable firm performance. This research aims to determine the relative importance of a set of variables comprising the four entrepreneurial management variables, i.e. strategic orientation, organization culture, organization structure, and reward system, and a set of environmental turbulence variables in predicting firm performance. This research uses firm-level data with observed population of this research is SMEs in Surabaya, Indonesia. Through adopting hierarchical regression approach and partial least square method, this study indicates that moderating effect of environmental turbulence changes the direction of relationship between entrepreneurial management and firm performance. During low environmental turbulence, entrepreneurial management has positive impact on firm performance, but the direction changes. Entrepreneurial management has negative impact on firm performance during high environmental turbulence.

Keywords Firm Performance, Entrepreneurial Management, Environmental Turbulence

development path and just follows other small businesses (Economist, 2014).

Other approach points out that environmental turbulence determines the performance of business organization. The mainstream of management approach designates it as contingency theory, notably Lawrence and Lorsch (1967). As environmental turbulence provides both challenges and opportunity, Wren and Bedeian (2009) indicate that successful businesses refer to their ability to adjust to the relevant environment. While large businesses can be slow to adapt change, that contingency approach highlights the managerial practices, which relevant to specific situation (Kreitner, 2007).

This paper aims to determine the environmental turbulence on the relationship between entrepreneurial management and firm performance. This research aims to determine the relative importance of a set of variables comprising the four entrepreneurial management variables (strategic orientation, organization culture, organization structure, and reward system) and a set of environmental turbulence variables in predicting firm performance.

1. Introduction

There is warm glow of academic debate over the concept of entrepreneur. One of the most popular views consider that entrepreneurs refers to self-employed people or small business. Small businesses provide some advantages, including job creation, strong personal relationship within the small organization structure, entrepreneurial culture which enable innovation and success story for the future (Longenecker et al, 2013).

Another view considers that entrepreneur is associated with innovator and incorporate it in high-growth business. This concept indicates that an economy with small business tends to be stagnant. Self-employed business becomes popular since there are no other opportunities. Hence, the business remains small because they are stuck in

2. Contingency Theory

Contingency theory has criticized the classical management theory from being neglected to various aspects of the contingency factors. Both Max Weber with bureaucracy theory and Frederic Taylor with scientific management theory challenges the view bias on internal organization. The bureaucracy theory is considered as “iron cage” due to imposing on efficiency which bring about ambivalent analysis, such as specialization, formal rule and procedure, and scientific performance appraisal (Pheng & Shang, 2011; Adler, 2012). Bell and Martin (2012) highlight that human resource practices with Taylor’s management theory has trained workers as machine to achieve performance. This means that organization should be flexible to external environment.

Contingency model acknowledges intelligence of firms to

respond environmental turbulence. Johannesson and Palona (2010) point out the role of intelligence strategy to deal with various level of environmental turbulence to achieve firm performance. Moreover, Valentinov (2012) highlight the linkage between excessive internal systemic complexity and carrying capacity of the environment.

Contingency strategy points out the adaptive resource-based strategy of firms to respond environmental turbulence. In the emerging economy context, the growing firms are associated with ability to deal with transition system with a corrupt environment (Xheneti & Bartlett, 2012). High perceived environmental uncertainty plays pivotal role on organization control, but mixed result in small firms (Jokipii, 2010).

Respond of managers to external environment is associated with opportunistic surveillance (Johannesson & Palona, 2010). Sundqvist et al. (2012) consider the need of firms to allocate resources carefully and set entrepreneurial strategies to achieve high level of firm performance. With uncertainty, pay-offs associated with environmental turbulence need to be taken into account in calibrating resource allocation (Wang & Fang, 2012).

In the small business context, firms with high growth tend to carry out consumer and competitor intelligence, which become part of knowledge management system (Lowe, Lowe, & Lynch, 2010). Chi and Sun (2013) argue that standardization and routinization of management activities and centralized decision-making processes can increase efficiency during the stable environment, while more turbulence in business environment will bring about less efficiency in organization structure. In contingency model, firms gain knowledge through assessing their business environment and set strategy, which are appropriate for each level of environmental turbulence (Johannesson & Palona, 2010).

3. Hypothesis Development

Entrepreneurial management is nexus of two concepts, management and entrepreneur. While management refers to a process to deal with resources, the entrepreneurial is about willingness to run a business with greater than a normal risk to gain business opportunities. Entrepreneurial Management (EM) is a combination between management and entrepreneur approach becomes antithesis of classical management theory, which lays emphasis on formal monitoring and control system within aims to boost efficiency which emerged during industrial revolution.

In classical management theory, the performance of labor and machine was measured by time to provide products. For example, Taylor used a stopwatch to promote efficiency. On the other hand, entrepreneurial management takes account of the flexibility in operation and control system with aim to promote innovation (Kuleza, Weaver, & Friedman, 2011). Hence, EM refers to some supporting mechanisms for entrepreneurial firms with opportunity as a driven force

(Gürbüz & Aykol, 2009). This mechanisms refers administrative behavior, which constitutes entrepreneurial culture, reward system, strategy, and people. Hence, both Gürbüz and Aykol (2009) and Bradley, Wiklund, & Shepherd (2011) consider that four elements of EM, i.e. organizational culture, organizational structure, strategic orientation, and reward system with impact of firm performance have impact on firm performance.

Hypothesis 1 : Entrepreneurial management has significant impact on firm performance

Strategic orientation affected firm performance in positive direction (Morgan, Vorhies, & Mason, 2009). Chatzoglou et al. (2011) also indicate that strategic orientation and structure organization played significant role on firm performance regardless the size of the firms and business industry. On the other hand, Lowe, Lowe and Lynch (2010) indicate negative relationship between strategic orientation and firm performance, which takes place during the early phase of business, which is associated with marketing capacity that affects its performance.

Hypothesis 1.1 : There is strong relationship between strategy orientation and firm performance

The relationship between organization culture and firm performance is mixed. Ting (2011) provides empirical result that organization culture has the most significant impact on firm performance. Nold III (2012) identify significant impact of organization culture on firm performance and argue that organizations with trust and collective sharing of knowledge grow more effectively. However, Slater, Olsom, and Finegan (2011) identify a different conclusion that there is no significant relationship between organization culture and firm performance due to overriding focus.

Uzkurt, Kumar, Kimzan, and Eminoglu (2013) also identify insignificant relationship organizational culture on firm performance dimensions. Organization structure is considered to have positive and significant impact on firm performance. Pertusa-Ortega, Molina-Azorín, and Claver-Cortés (2010) identify significant impact of organization structure on firm performance and highlight that organization structure contributes to competitive advantage. Jiang, Sun, and Law (2011) also provide similar result that organization structure has significant impact on firm performance, then highlight that a highly organized structure enables job satisfaction and empowerment perception.

Hypothesis 1.2: organization culture has significant impact on firm performance

The positive relationship between reward philosophy and firm performance becomes apparent, but complicated. Wei, Frankwick, and Nguyen (2012) highlight that participatory-based rewards has significant and indirect effect on firm performance. Ferguson and Reio (2010) indicates that payment system and other human resource practices has significant relationship with organizational and

financial performance. Firm performance springs from reasonable incentive compensation (Ferguson & Reio, 2010; Bradley et al., 2011).

Shah, Jamila, Shoaib, and Aamir (2011) indicate that that rewarded employees have more interest in work. However, Stare (2011) indicates that reward system is not directly correlated with firm performance. Perception of employee regarding fairness and reasonable reward system plays pivotal role (Jackson, Rossi, Hoover, Johnson, 2012). Along with controversial relationship between reward and employee's motivation, Salie and Schlechter (2012) point out that a program with aim to increase motivation will succeed if there is clear link between performance and reward. Hence the proposed hypothesis is

Hypothesis 1.3: There is relationship between reward system and firm performance

The choice of centralization or decentralization brings about critical point on firm performance. Riccaboni and Leoni (2010) highlight that coordination across business unit with decentralized structure has significant impact on performance. Lin et al (2008) provide evident that formalization and firm performance have negative relationship. In addition, Bradley et al. (2011) argue that informal approach in organization structure enables the business organization to be flexible in handling resources. On the other hand, Chatzoglou, et al. (2011) argue that formalization improves organization performance through access valuable information, then comes to a set of priority.

Hypothesis 1.4: There is strong relationship between organization structure and firm performance

Moderating variable determines the strength of the causal relationship between entrepreneurial management and firm performance. Environmental turbulence moderates the relationship between entrepreneurial management and firm performance, which may imply on a weakening of the relationship, amplify or even reverse effect. The idea about the effect of environmental turbulence on organization performance is widespread in generic management literatures. Environmental turbulence represents a process that alters the impact of the independent variables on firm performance in the context of contingency theory. This variable could be exogenous variable with moderating effect (see Zhang & Duan, 2010; Wang & Fang, 2012; Sundqvist et al., 2012; and Chi & Sun, 2012). Negative impact of environment turbulence on firm performance springs from unanticipated environmental turbulence (Wang & Fang, 2012).

H2: Environmental turbulence has significant impact on relationship between entrepreneurial management and firm performance.

4. Methods

This research uses firm-level data. The quantitative method with cross-section design is employed. The information required to answer the research questions refers to quantify firm performance as dependent variable, entrepreneurial orientation as independent variable, and environmental turbulence as an exogenous variable.

A structured questionnaire for data collection is adapted from the literatures. The measures of SMEs performance adapts from Aziz and Mahmood (2011), which consider financial performance with subjective measures. The subjective measure is research strategy to deal with unreported financial information of the observed respondents (Sheppard & Radulvich, 2010; Parkman, Holloway, & Sebastiao, 2012).

The measures of entrepreneurial management adapts from Bradley et al. (2011), Gürbüz & Aykol (2009); Lukas, et al. (2013), while environmental turbulence adapts from Zhang & Duan (2010) and Didonet et al. (2012). All constructs were measured using multiple items with a seven-point Likert-type scale ranging from one (very low) to seven (very high).

The observed population of this research is SMEs in Surabaya, Indonesia. Refer to Indonesian regulation, Law No 20/2008, SMEs have criteria with sales between Rp300 million and Rp50 billion and asset between Rp50 million and Rp 10 billion. The data collection approach uses in-self administration as a strategy to increase willingness to provide honest answers (Chang & Krosnick, 2010). However, this method is acknowledged with a lower rate of response (Bakar & Ahmad, 2010). The respond rate is 32%, which is 182 responses from 500 targeted respondents.

Through adopting hierarchical regression approach, this determines whether that environmental turbulence would be less strongly related to the dependent variable than the set of entrepreneurial management. The Bartlett's Test shows the adequacy of the correlation matrix with significance smaller than 0.001. This indicates correlation matrix is an identity matrix is in place.

As environmental turbulence is considered to be moderating variables, then this variable is expected to influence the direction of relationship between a dependent and an independent variables, which is entrepreneurial management and firm performance. To determine whether there is moderating effect of environmental turbulence, this study considers partial least square approach. This approach uses Henseler and Fassot procedure to identify an interaction effect in the proposed structural equation model. The interaction term comes from the indicators linked the exogenous latent and moderating variable (Trinchera & Rusolillo, 2011).

Table 1. Factor Analysis

Variables	KMO measures	Bartlett-test
Firm performance	0.878	910***
Strategic orientation	0.685	135***
Organization culture	0.671	175***
Organization structure	0.661	144***
Reward system	0.829	402***
Technology turbulence	0.863	584***
Market turbulence	0.556	60***
Competition turbulence	0.688	175***

*** : significant with alpha <0.01

5. The Results

Ranged between 1 to 7, the subjective appraisal shows that most of the performance criteria ranged between 4 and 5. This indicates that firms do not have astonish performances, but tend to be moderate. The observed firms consider that sales growth during the last three years was above the average or the greatest performance among the other performance indicators. However, employment growth rate in the last three year is not quite impressive compare to other performances (see Table 2).

Table 2A. Firm Performance of the Observed Firms

	Average	Standard Deviation
FP 1: sales growth during the last three years	5.0495	1.57072
FP 2: sales growth relative to direct competitors	4.7582	1.59655
FP 3: employment growth rate in the last three years	4.1044	1.65709
FP 4: gross profit in the last three years	4.7967	1.48189
FP 5: return on asset (ROA)	4.5440	1.72590
FP 6: return on investment (ROI)	4.7088	1.69752
FP 7: return on sales (ROS)	4.8956	1.67698

The hierarchical regression reveals two results, model 1 and model 2. Model 1 represents entry of the first set of environmental turbulence variables, while model 2 represent entry of second set of entrepreneurial management variables. The result shows that environmental turbulence accounted for 40.6% of the variance (R square) in the firm performance. Model 2 shows that R square change of 15.9% from the four independent variables. This increase is significant by F change test ($F_{4,174} = 15.919$, $p < 0$). This indicates that the entrepreneurial management is significantly more powerful set of predictors that the set of environmental turbulence.

Table 2B. R Square Change

	R square	R square change	F change
Model 1	0.406	0.406	40.514
Model 2	0.547	0.159	15.919

The ANOVA Table shows that the environmental turbulence yielded a significant prediction equation. $F(3,178) = 40.514$, $p < 0.001$. The model 2 shows the overall prediction equation $F(7,174) = 32.281$, $p < 0.001$. The VIF, which stands for variance inflation factors and refers to $1/\text{tolerance}$, measures the level of multicollinearity in which model with VIF value greater than 10 may have problem. The results show that VIF values are bellow 10, which indicates that multicollinearity is not a problem.

Table 3. Regression on Firm Performance

Model	Independents Variable	Standardized coefficients	t-test	significant level
Model 1	Constanta			
	Competitiveness Turbulence	-.118	-1.690	0.093
	Market Turbulence	.356	4.565	0.000
	Technological Turbulence	.430	6.472	0.000
Model 2	Constanta			
	Competitiveness Turbulence	-.141	-2.245	0.026
	Market Turbulence	.279	3.857	0.000
	Technological Turbulence	.160	2.351	0.020
	Entrepreneurial culture	.395	5.280	0.000
	Reward system	.148	2.069	0.040
	Strategy Orientation	-.115	-2.172	0.031
	Organization structure	.062	1.040	0.300

In determining the observed coefficients, the model 2 shows that hypothesis 1.1, 1.2, and 1.3 are accepted, while hypothesis 1.4 is not accepted. The coefficient of entrepreneurial culture and reward system have positive direction. This indicates that organization culture with aim to promote innovation has positive impact on firm performance. Similarly, reward system provides improvement on firm performance.

The strategic orientation with option between resource-based and opportunity-based strategy indicates negative impact on firm performance. This means that the observed data shows that resource-based strategy is more relevant to the effort on achieving performance. This finding supports the view of Lowe, Lowe and Lynch (2010) that indicate negative relationship between strategic orientation and firm performance. The significant effect of reward system on firm performance supports the previous references, which lays emphasis on the pivotal role of payment system and other human resources practices to promote innovation (Ferguson & Reio, 2010; Bradley et al, 2011).

The result also indicates that hypothesis 2 is accepted and all turbulence variables have significant impact on firm performance ($p < .05$). All coefficients show significant and positive impact on firm performance. To determine whether the environmental turbulence, the Henseler and Eassot procedure uses partial least square to identify both direct effect and interaction effect (Figure 1).

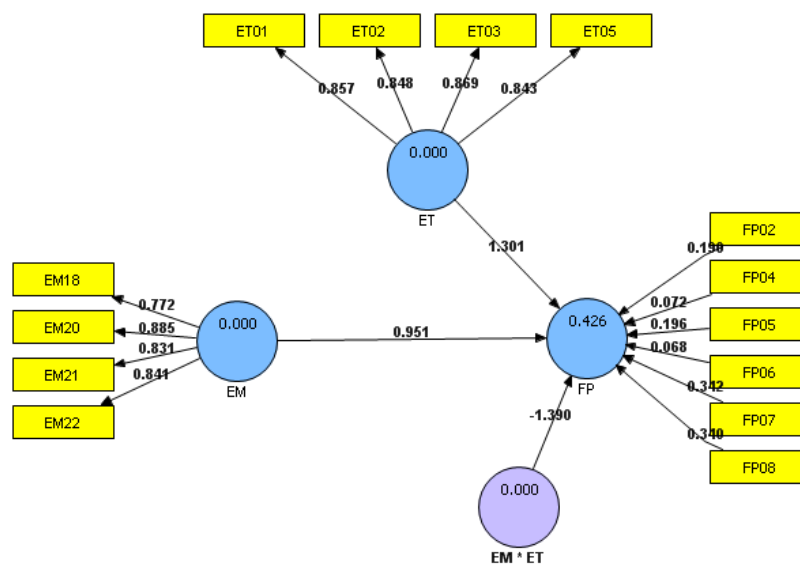


Figure 1. Partial least square output

The PLS output indicates that both EM and ET has significant impact on FP, with $t = 3.23$ ($\alpha < 0.05$) and 3.12 ($\alpha < 0.05$) respectively. Hence, interaction between EM and ET ($EM \times ET$) also has significant effect on FP with $t = 2.32$ ($\alpha < 0.05$). This implies the significant impact of ET as moderating variable. Figure 2 shows that moderating effect of ET reverses the relationship between EM and FP. During low environmental turbulence, EM has positive and significant impact on FP, but the impact becomes negative under greater environmental turbulence.

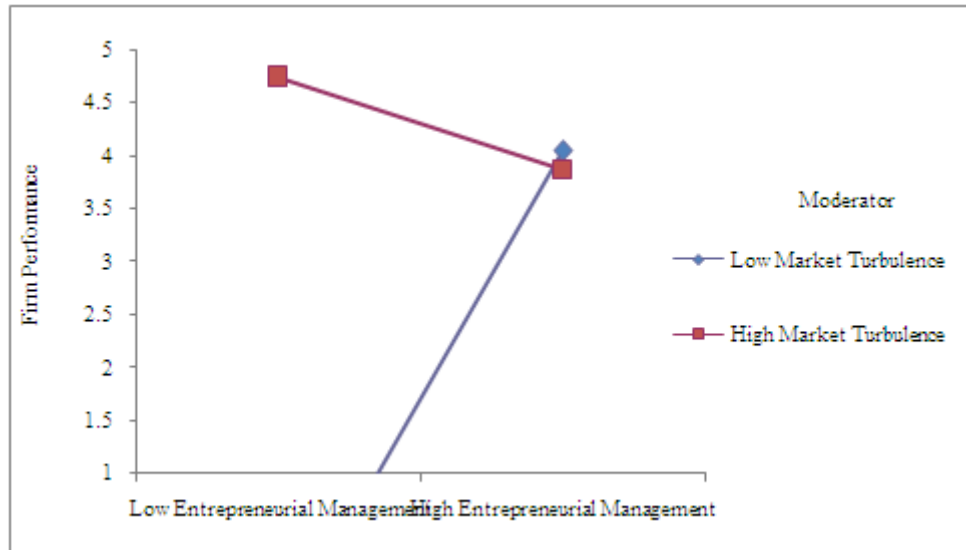


Figure 2. Moderating effect of environmental turbulence

6. Discussion

Departing from previous debates on contingency theory, this study determines how the relationship between firm performance and entrepreneurial management is influenced by environmental turbulences. It finds that environmental turbulence changes the positive impact of entrepreneurial management on firm performance. More importantly, it identifies a variety of environmental turbulence under which SMEs with entrepreneurial approaches are more adaptive to their business environment. This finding brings new understanding of entrepreneurial management as embedded within capability of firms to deal with their business environment.

First, this study shows that firms with greater entrepreneurial management have more opportunities to achieve the best firm performance. Previous studies show that entrepreneurial management has positive impact on firm performance (Gürbüz & Aykol, 2009, Bradley, Wiklund & Shepherd, 2011). It appears that organization culture with aim to promote innovation has positive impact on firm performance. Similarly, reward system provides improvement on firm performance. However, the strategic orientation with resource-based strategy is more relevant to the effort on achieving performance. Nuñez and Lynn (2012) try to figure out a dynamic market with modest technological innovation as an evolutionary technology. Informal owner-manager with higher market orientation pertain technological change (Didonet et al., 2012). Betta, Jones, and Latham (2010) highlight “expression of energetic will” as proposed by Schumpeter as well as technology turbulence will create new thing as enterprise. This is relevant with those previous studies.

Second, the finding indicates that the benefit of entrepreneurial approach in management practices positively yield during the low environmental turbulence. Though environmental turbulence can provide more opportunities in

industry, such as new technology and new market direction. On the other hand, the result shows that greater environmental turbulence negatively affects firms with greater entrepreneurial management suffer. The observed SMEs fail to gain the opportunity from the greater environmental turbulence. SMEs suffers due to their poor capacity to respond high environmental turbulence.

In sum, our study highlights that entrepreneurial management approach is not relevant for SMEs to deal with high competitiveness turbulence, dramatic market turbulence, and greater technological change provide crucial point to adaptive management. This supports Pertusa-Ortega, Molina-Azorín, and Claver-Cortesé (2010), that indicate the influence exerted by the organizational structure on performance is not significant in the contingency model. Lack of capability to deal with environmental turbulence may brings negative impact on firm performance (Wang & Fang, 2012).

For managerial implication, SMEs typically have more flexibility in entrepreneurial management. As close relationship between owner-managers and employees develops organization culture, the managers can nurture organization culture with focus on innovation. As Chi and Sun (2013) point out that formalized structure and centralized authority make organization more adaptive to environment turbulence, firms are suggested to adopt low level of entrepreneurial approach in their managerial practices under greater environmental turbulence.

This study has some limitations. One limitation of this study is that it tested the separated models. This ANOVA approach tests the model with second order variables, while the PLS uses first order variables. It is necessary for future study to include both first and second order variables within one model. Second, our study relies exclusively the owner-managers. Consequently, this study could not investigate the internal dynamic through which the entrepreneurial management operates. The future study is

suggested to handle longitudinal observation and involves the wide range of stakeholders, which may yield insightful findings regarding entrepreneurial management mechanism.

7. Conclusions

The study contributes to debate at the contingency theory, which lays emphasis on the capacity of SMEs to respond environmental turbulence. Previous studies consider that firms with greater level of entrepreneurial management are more adaptive to environmental turbulence (Didonet et al., 2012). In addition, Nuñez and Lynn (2012) argue that new product developments emerge during any level of environmental turbulence when firms have ability to improvise to manage cost with different degree of organization structure. This study provides the certain condition in which SMEs can deal with environmental turbulence. Under low environmental turbulence, firms with entrepreneurial approach at their managerial practices have more possibility to gain greater performance. Moderate technological, lenient competition and market turbulence provide more opportunities for SMEs to achieve the best performance. On the other hand, firms with greater entrepreneurial management suffer from high environmental turbulence, such as high technological turbulence, stiff competition, and dramatic change of market preferences. A failure to consider adaptable entrepreneurial management to deal with environmental turbulence may lead to overexpansion of innovation, then firms fail to achieve the best performance.

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