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**Does EO Play a Mediating Role between Prior and Future Performance?  
Evidence from Two Longitudinal Studies**

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## **ABSTRACT**

By reviewing previous EO literature, consequences rather than antecedents of EO have been more focused upon, the EO-performance relationship in particular. Our study attempts to fill in this gap and explore the “performance-EO-performance” mechanism. By using two newly emerging lower-order dimensions (EB and MATR) of EO conceptual domain, two longitudinal studies were conducted. The results showed: (1) the performance as an antecedent of two lower-order dimensions of EO was confirmed; (2) however, the result of performance as a consequence of EO was not replicated in two studies; (3) by unleashing the joint exhibition of the two dimensions, they (MATR and EB) started to capture a firms’ prior and future growth, respectively. The mediating role of each factor was confirmed. Theoretical and practical implications, and future research are discussed.

**Key Words:** Entrepreneurial Orientation, Entrepreneurial Behavior, Managerial Attitude towards Risk, Performance, Small Firms

## INTRODUCTION

The study of Entrepreneurial Orientation (EO) is yet unexplored in many areas although its conceptual and empirical developments are prominent over the past thirty years. Among ample EO arguments, the current study attempts to shed light on two underdeveloped fields: the EO construct and antecedents of EO.

It is posited there is a continuous ontological question of EO, arguing for whether or not EO is fundamentally a dispositional or behavioral or mixed latent construct (Covin & Lumpkin, 2011; Miller, 2011). Further, it is questioned whether or not EO construct captures the nature of a firm-level entrepreneurial phenomena, arguing a misspecification of a reflective measurement EO model (George & Marino, 2011; Anderson, Kreiser, Kuratko, Hornsby & Eshima, 2015).

One of the most well-established EO construct in the literature is the Miller(1983)/Covin & Slevin(1989, 1991)'s three lower order dimensions: innovativeness, proactiveness and risk-taking. Each indicator is simultaneously exhibited and reflected to unidimensional EO. Nonetheless, there is still an ongoing argument in the literature that their classic EO construct is problematic.

Challenging this, Anderson et al.,(2015) carefully examined the EO construct by re-visiting the origin and development process of EO (Mintzberg, 1973; Khandwalla, 1977; Miller, 1983), and reviewing a reflective measurement theory (Diamantopoulos, Riefler & Roth, 2008; MacKenzie, Podsakoff & Podsakoff, 2011). Consequently, the reconceptualization of EO was proposed: It is composed of two lower-order distinct dimensions with the belief/attitude for one and the act/behavior for another, namely managerial attitude towards risk (MATR) and entrepreneurial behavior (EB) (Anderson et al.,2015).

One of the advantages of the new composite is not only the distinctness and clarification of the proclivity of two mixed dimensions (a disposition and behavior) in EO but also the usefulness as a measurement tool in exploring for cause and effect of each construct. However, few empirical studies using newly developing dimensions of EO have been conducted. The current study tests the usefulness of two dimensions of EO by replicating two longitudinal studies.

Recent EO literature seems to emphasize consequences rather than antecedents of EO. In particular, the relationship of performance with EO is less highlighted and underexplored. We attempt to fill in this gap by using re-conceptualized dimensions of EO.

Covin & Slevin (1991) proposed a conceptual model of consequences and antecedents of entrepreneurship as a firm's behavior. By developing 44 conceptual proposals, it is suggested that a firm's performance can influence entrepreneurial posture and vice versa. Financial inflow or slack from an outcome of a high performance may prompt firms to conduct new experimentation, pursuing entrepreneurial opportunity (March & Simon, 1968). It is implied

that high performing firms can afford to take high risks and conduct innovative projects, thus indicating a high level of entrepreneurial initiative.

The literature also posits that prior growth is a weak correlate with future growth due to several constraints in-between (Shepherd and Wiklund, 2009). However, Penrose (1959) argues that growing firms are likely to explore ways in which they can grow more. EO may be a key to connect the prior and future high performance. Yet, both conceptual and empirical studies of the “performance-EO” relationship are scarce. This paper explores this mechanism while keeping in mind the important premise of both EO-performance and performance-EO relationship.

This study contributes to three areas of EO literature. First, the newly emerging two lower-order dimensions of EO conceptual domain were used and confirmed as a useful measurement tool by replicating two studies. The result may develop further argument for the ontological question of the EO construct. Second, a prior performance as an antecedent of EO (joint exhibition/covariance of EB and MATR) was confirmed. It implies that EO is capable of capturing an outcome of previous corporate high performance, consequently enlarging the possibility of the antecedent search of the EO study.

Third, two studies showed that two lower-order indicators mediated between prior and future performance by freeing joint exhibition of the EO construct whereas the joint covariance of two lower-order dimensions of EO conceptual domain did not. The new premise of unleashing the dominant EO construct is raised as a weighting agenda for further EO research.

In the following section, literature review and hypotheses, method and results, and discussions and implications are presented.

## **LITERATURE REVIEW & HYPOTHESES**

### **EO construct**

Originating from the entrepreneurial mode of strategic decision making (Mintzberg, 1973; Khandwalla, 1977), the EO concept has developed. The most popular EO construct in the literature is Miller (1983) and Covin & Slevin (1989,1991)’s EO conceptualization. The meta-analysis of EO supports this view (Rauch, Wiklund, Lumpkin & Frese, 2009; Rosenbusch, Rauch & Bausch, 2013).

It is viewed as a reflective latent measurement in which three lower-order dimensions of innovativeness, proactiveness and risk-taking are simultaneously shared and exhibited. Nonetheless, there is still an ongoing argument in the literature that Miller(1983)/Covin & Slevin (1989, 1991)’s EO construct is problematic.

It is posited that while this EO construct conceptually captures the nature of entrepreneurial phenomena, yet empirically contains some challenges. In the construct, two distinct

characteristics of the nature of entrepreneurship (a disposition and a behavior) are mixed and are assumed to relate and be weighted equally to the same antecedents and consequences. In addition, it is said that a nomological error of a specificity of a reflective measurement model causes an ongoing ontological argument.

Questioning this problematic construct (Kreiser, Marino & Weaver, 2002), Anderson *et al.* (2015) reconceptualized EO into two lower-order dimensions: entrepreneurial behavior (EB) (encompassing innovativeness and proactiveness) and managerial attitude towards risk (MATR) (risk taking):

Entrepreneurial behavior (EB) is defined “*as the firm-level pursuit of new products, processes, or business models (e.g., innovativeness) with the intended commercialization of those innovations in new product/market domains (e.g., proactiveness).*” Managerial attitude towards risk (MATR) is defined “*as an inherent managerial inclination—existing at the level of the senior manager(s) tasked with developing and implementing firm-level strategy.*”

Under this constructivist perspective, entrepreneurial behavior (EB) and managerial attitude toward risk (MATR) are necessary conditions for conceptually defined EO domain. An advantage of using this newly emerging construct is to allow a potential antecedent and consequence to link differentially to EO's lower order dimensions while allowing researchers to place the antecedents within a global EO concept (Anderson *et al.*, 2015).

Empirical evidence showed validity and reliability of MATR and EB, and antecedents and consequences of each variable are found and verified (Anderson *et al.*, 2015; Eshima & Anderson, 2017). However, few empirical studies using newly developed dimensions of EO have been conducted. The current study tests and replicates the usefulness of these two dimensions of EO by conducting two studies.

In the following empirical study, we use these two lower-order dimensions, namely EB and MATR as a focal latent construct to examine antecedents and consequences of the joint definition of EO conceptual domain.

### **Performance as an antecedent of EO**

The organizational behavior is influenced by current and past business success or failure. EO literature stated that firm performance may be justification for and against the choice of entrepreneurial strategic posture in practice (Covin & Slevin, 1991). It is suggested that high performing firms may feel that aggressive and risk-taking entrepreneurial initiatives can jeopardize their firm's performance in the future, leading firms toward a conservative strategic posture.

On the other hand, firms with benefits from improved performance may feel that entrepreneurial behavior and action are the inherent success of the business or trigger new opportunity (Covin & Slevin, 1988). As such, they may determine to exhibit more entrepreneurially.

EO researchers argue that the corporate performance can be seen as one of the key antecedents of EO (Covin & Slevin, 1991; Zahra, Jennings, & Kuratko, 1999). Since being entrepreneurial is considered a resource consuming strategic initiative in nature (Covin & Slevin, 1991; Romanellie, 1987), it must require a wide variety of assets or benefits primarily from the outcome of high business performance.

Sales growth or profitability from high performance, for instance, will affect top managers' strategic and management perspectives in practice (Covin and Slevin, 1988). Thus, a different strategic initiative can be chosen depending on the outcome of prior business performance.

A firm's growth is considered as an increase of the firm's organizational boundaries (Penrose, 1959). The shared variance of revenue or sales growth collectively changes firms' resource foundation (Achtenhagen, Naldi & Melin, 2010). When growing, firms are likely to enlarge resources and possibility to extend opportunities by combining new and existing resources in new ways (Fombrun & Wally, 1989; Penrose, 1959). To exploit emerging opportunity, firms are likely to behave entrepreneurially.

Following Penrose(1959)'s view, an extending resource base as an outcome of high performance may be the key of a direct antecedent to entrepreneurial action to capture new opportunity (Hitt, Ireland, Camp & Sexton, 2001). Empirical studies support this view (Eshima & Anderson, 2017).

Performance is multidimensional. Thus, its indicators are various (Venkatraman & Ramanujam, 1986) but commonly distinct between financial and non-financial performance. Financial performance includes, for instance, sales growth, return on investments (ROI), market share and/or profitability. Non-financial performance is exemplified as business goals or successes that appear as satisfactions of business owners or business ratings. Although meta-analysis of the EO-performance relationship reports that both performance indicators are associated with EO, it is argued that non-financial performance is less straightforward and indirect (Rauch, *et al.*, 2009). It can be said that owners' satisfaction or goal achievement, for instance, may be a result of short term profits or long term growth of financial performance.

Benefits from firm performance prompt firms to conduct new experimentation, pursuing entrepreneurial opportunity (March & Simon, 1968). It suggests that top managers in firms with improved performance tend to feel that entrepreneurial strategic posture is the key to success (Covin & Slevin, 1988). The literature implies that the improved financial performance or growth over time may increase organizational assets or slack and thus concurrently influence top managers' strategic perspective and/or strategy making process, substantially enhancing non-financial performance as well.

Stated differently, by gaining financial inflow or surplus capital from firm performance, managers may perceive them as resources or opportunity to be used for new initiatives. Such financial benefits or a firm's tangible resources may be seen as a risk-hedge for potential failure of new experimentation and/or new ventures.

Theoretically, the mechanism of performance feedback to entrepreneurial mind or posture, particularly a risk-taking manner, can be explained by the aspiration level. It is defined as the smallest or a minimum perceived satisfactory level of outcome by a decision maker. The literature posits that when an outcome of organizational performances or growth exceeds a top manager's aspiration level, firms begin taking risks. The higher the exceeding level, the more risks firms are likely to take (Schneider, 1992). It implies that the prior growth or firm performance is likely to determine a decision makers' willingness to explore or discover a value-creating new opportunity in a risk-taking manner.

Likewise, the previous research conceptually suggested that there is strong linkage between the firm's past performance or growth and future entrepreneurial activity, namely performance-EO relationship. By modifying measurement model of EO and using EB and MATR under lower-order dimensions of EO, Eshima & Anderson (2017) showed evidence of a significant indirect effect of growth on both entrepreneurial behaviors (EB) and on risk-taking attitude (MATR). Nonetheless, such studies are few and are an exception.

As such, the question still remains and continues whether or not the joint definition of EO conceptual domain shares the same antecedents. Specifically, does a prior growth or high performance affect both MATR and EB despite the fact that they are fundamentally different latent constructs (Koslowsky *et al.* 1997). Taken all together, we present the following two hypotheses.

*Hypothesis 1: Under the lower-order dimensions of EO, performance in time 1 is likely to influence managerial attitude towards risk (MATR) in time 2: (performance1 → MATR2)*

*Hypothesis 2: Under the lower-order dimensions of EO, performance in time 1 is likely to influence entrepreneurial behavior (EB) in time 2: (performance1 → EB2)*

### **Performance as a consequence of EO**

There is an increased agreement that EO leads a firm to a superior performance. A rich body of EO-performance research has developed over the past thirty years. Meta-analysis of EO confirms that there is a significant positive relationship between the two. However, in their studies scholars generally use Miller (1983)/Covin & Slevin (1989)'s EO construct reflecting three lower-order dimensions, recognizing that it is the most popular utility in the literature.

As pointed out in the previous section, it is argued that the EO may not be perfectly measured. As such, the current study uses the modified re-conceptualized two lower-order

dimensions of EO (Anderson *et al.*, 2015) and evaluates the measurement and structural model. By replicating two studies in the same model, EO-performance linkage is investigated. To test this view, we propose the following two hypotheses.

*Hypothesis 3: Under the lower-order dimensions of EO, managerial attitude towards risk (MATR) in time 2 is likely to influence performance in time 3: (MATR2  $\rightarrow$  performance3)*

*Hypothesis 4: Under the lower-order dimensions of EO, entrepreneurial behavior (EB) in time 2 is likely to influence performance in time 3: (EB2  $\rightarrow$  performance3)*

All proposed hypotheses mentioned above are tested under a perceived three-wave time line in two studies. When all of these hypotheses are combined, the following hypotheses of EO as a mediator model can be deduced. It is our attempt to investigate the mechanism of performance-EO-performance relationship over a long period of time.

*Hypothesis 5: Performance in time 1 is likely to influence managerial attitude towards risk (MATR) and entrepreneurial behavior (EB) in time 2 under which a joint definition of EO conceptual domain is likely to influence performance in time 3: (performance1  $\rightarrow$  EO2(MATR2 & EB2)  $\rightarrow$  performance3)*

Figure one is the basic analytical EO model and hypotheses from 1 through 5.

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### **Relationship between MATR and EB**

There is an ongoing argument about the relationship of a dimensionality of a lower order EO, questioning whether or not they are dispositional, behavioral or mixed. To solve this problem, as previously mentioned, we use MATR and EB exhibiting dispositional and behavioral indicators, respectively. Nonetheless, the questions still remains whether or not they mutually reinforce each other, or does the one influence more than the other.

The literature posited that a behavior is an outcome of an attitude. When the engagement is sustained in a particular behavior, it may in turn strengthen an attitude (Koslowsky *et al.* 1997). Stated differently in EO context, it suggests that senior managers' attitude/belief/philosophy towards risk comes before an entrepreneurial posture/act in a strategy making process although both may be mutually linked and reinforced.

To uncover the inside of EO, we freed the joint exhibition of EO conceptual domain and investigated the relationship among two lower-order dimensions of EO (EB and MATR). In



addition, following the argument of hypothesis 5, we sought to identify the role of EB and MATR as a mediator between prior and future performance and compare the result of hypothesis 5. Taken all together, the following two hypotheses are induced.

*Hypothesis 6: Managerial attitude towards risk (MATR) is likely to influence entrepreneurial behavior (EB) : (MATR2  $\rightarrow$  EB2)*

*Hypothesis 7: Performance in time 1 is likely to influence managerial attitude towards risk (MATR) in time 2 through which entrepreneurial behavior (EB) in time 2 is prompted. Then, the enlarged magnitude of EB in time 2 is likely to influence performance in time 3: (performance1  $\rightarrow$  MATR2  $\rightarrow$  EB2  $\rightarrow$  performance3)*

Figure two is the modified analytical EO model and hypothesis 6 and 7.

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## METHOD AND RESULTS—STUDY 1

### Sample

In order to test the above hypotheses, we selected small Japanese firms which were awarded the government certification<sup>1</sup>. This decision was made because: (1) a large number of small firms received the award; and (2) its awarding procedure seemed standardized; and (3) the address database was publicly available.

In the winter of 2007, we mailed the survey to presidents or CEOs of these firms (2,451), and received 527 responses—the response rate was 21.5%. In the summer of 2010, we mailed the exactly same surveys to these 527 respondents. As a result, we received 209 responses for our analysis. The response rate was 39.7%.

The 2007 and 2010 data was chosen, because a period of three and a half years over which to observe change seems a reasonable time frame, especially where product life-cycles are short. Too long a time frame might under-represent change that occurred and then was reversed, while too short a time frame might miss changes that were in the process of occurring (Arundale, 1980).

We checked non-respondent bias by observing the size and industry of the firms that did not respond to our survey. We found that non-responding firms showed no statistically significant difference in both size and industry from those who did respond in both 2007 and

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<sup>1</sup> It is based on “the Law Concerning Measures for Promoting Management Innovation of Small and Medium sized Enterprises (SMEs)” in Japan. This was initiated by the Japanese government, attempting to support growth-oriented SMEs to revitalize the stifled Japanese economy.

2010 surveys.

## Measures

**Performance.** The perceived financial performance was used as the performance indicator here. It was measured by three indices—profitability, sales and market share over the past three years. Each index was measured by respondents’ perceived measurements. Respondents were asked the following statements and respond to what degree a firm achieved each statement in comparison with their industry rivals, ranging from “very low”(=1), “average”(=3) to “very high”(=7).

The profitability index was measured by average operational profit divided by total sales for the last three years relative to their competitors. Similarly, the sales and the market share was measured by growth rate of sales and market share for the last three years relative to their competitors. By using these indicators, we modeled the latent performance construct in time 1 and time 3, respectively.

**EO.** Using the Covin and Slevin (1989)’s entrepreneurial orientation scale (e.g., INN1,2,3, PRO1,2,3 and RISK1,2,3, see the table3) and re-conceptualized Anderson *et al.* (2015) measurement model, we measured two lower-order dimensions of EO, entrepreneurial behaviors (EB) and managerial attitude toward risk (MATR). Conceptually and operationally, EB is derived from a firm’s strategic behavior/act as reflected in INN1, 2, 3 and PRO1, 2, 3’s Covin & Slevin (1989)’s indicators. By the same token, MATR refers to senior managers’ disposition/belief as reflected in RISK1, 2 and 3 indicators.

In operationalizing them in our study, three indicators (INN1, INN2 and PRO2) were eliminated due to poor loading on their intended construct (EB), resulting in three indicators for EB and for MATR. Please see the table 4 for our measurement model.

Not precisely following Anderson, *et al.* (2015), we chose not to model EO’s lower-order dimensions to a higher-order formative EO construct due to endogeneity reason in the structural path between lower dimensions and higher EO. Instead, following Eshima & Anderson (2017), a measurement error covariance is freed between two distinct dimensions, reflecting a joint definition of EO conceptual domain.

To note, for clarification of the time line in the longitudinal study, we treated the performance in time 1 as a perceived average three-year growth between time 1 and time 2. Similarly, performance 3 is treated as an average three-year growth between time 2 and time 3. We used EB and MATR in time 2.

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**Control variables.** To tease out the effect of performance-EO-performance mechanism, the following potentially influencing variables are controlled in this study: firm size and hostility. As for the firm size, we used the log of firm employees in time 1. Regarding hostility, a single 5-point Likert style indicator in time 1 was used (“business environment is very safe, little threat to the survival and well-being of the business” =1 *versus* “business environment is very risky, a false step can lead to the businesses undoing” =5 (3= neutral).

The correlation matrix and descriptive statistics for Study 1 and Study 2 are present in table 2 and table 3, respectively.

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 Insert Table 2 here  
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### **Measurement model**

We estimated all models using Structural Equation Model (Amos22.0). The confirmatory factor analysis reports that our model fits the data well after freeing a measurement error covariance between EB and MATR, and between P1 and P2. ( $\chi^2= 54.05$ ; d.f.=48;  $p=.25$ ). Loading value, alpha and average value extracted (AVE) of each construct are all reported in table 4 and no major measurement problems appeared in the model, confirming reliability and validity of the constructs.

Additionally, we evaluated the discriminate validity to test the value of mediator constructs (EB and MATR). We compared AVE within a focal construct to the maximum share variance (MSV) between these constructs. When an AVE score within a construct is higher than MSV value of its expected outcome, there appears evidence that the mediator construct explains more variance within its indicators than the shared variance between the mediator and expected outcome (Fornell & Larcker, 1981).

The empirical results showed that two focal mediator constructs (EB and MATR) crossed the validity barrier. There was a large difference between performance 1 and MATR 2 (AVE = .530 and .550, respectively; MSV between = .069), between MATR 2 and performance 3 (AVE = .550 and .652, respectively; MSV between = .006), between performance 1 and EB 2 (AVE = .530 and .400, respectively; MSV between = .072), and between EB 2 and performance 3 (AVE = .440 and .652, respectively; MSV between = .148).

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Insert Table 4 here  
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### Analysis

The result of our structural model in study 1 is reported in table 5. As it is shown, our hypothesized model fits the data well ( $\chi^2 = 82.357$ ; d.f. = 65;  $p = .072$ ; RMSEA=0.05; CFI=0.961; TLI=0.945). The result showed that the performance in time 1 has a positive and significant relationship with MATR ( $\beta = 0.302$ ,  $p < .01$ ) and EB ( $\beta = 0.231$ ,  $p < .05$ ) in time 2 although MATR has a slightly stronger magnitude than EB to capture an outcome from a prior performance. Apart from this different magnitude path, MATR and EB are likely to be strengthened by the firm's past performance. Hypothesis 1 and 2 are supported.

However, MATR in time 2 has a negative but an insignificant relationship with the performance in time 3 whereas EB in time 2 shows a positive and a weak linkage to the performance in time 3. Hypothesis 3 is not supported and hypothesis 4 is partially supported. Further, since EO's conceptual domain is defined as a joint exhibition of EB and MATR in this model, the above results did not support for EO as a mediator between performance in time 1 and time 2. Accordingly, hypothesis 5 is not confirmed.

To note, we evaluated Miller (1983)/Covin and Slevin(1989)'s EO measurement model in comparison with our model. The result appeared a poor fit in comparison with our measurement model ( $\chi^2 = 98.844$ , d.f.=70,  $p = .013$ ; RMSEA= .062, CFI= .935, TLI= .915). Similar to our model result, the linkage between the performance in time 1 and EO in time 2 was positive and significant whereas EO in time 2 and the performance in time 3 was positive but insignificant.

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Insert Table 5 here  
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To test hypotheses 6 and 7, we deviated joint covariance between EB and MATR and then searched for the best structural model. Through explorative model search, the positive and significant path was shown among performance in time 1, MATR in time 2, EB in time 2, and performance in time 3 ( $P1 \rightarrow MATR2$  ( $\beta = 0.351$ ,  $p < .01$ );  $MATR2 \rightarrow EB2$  ( $\beta = 1.124$ ,  $p < .01$ );  $EB2 \rightarrow P3$  ( $\beta = 0.346$ ,  $p < .01$ );  $\chi^2 = 118.061$ ; d.f. = 92;  $p = .035$ ; RMSEA= 0.052; CFI= 0.954; TLI= 0.939). Please see the table 6 for details.

It may suggest that MATR was capable of capturing an outcome from firm performance through which EB magnitude was strengthened. Then, the enlarged EB led a firm to a high performance. Bypassing prior and future performance, MATR and EB were playing a

mediating role. Hypotheses 6 and 7 were supported.

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Insert Table 6 here  
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## **METHOD AND RESULTS—STUDY 2**

### **Sample**

Following Study 1, we selected small Japanese firms for our analysis in Study 2. In so doing, we used the small firms' database from the Tokyo Shoko Research Data File, one of the largest business information services in Japan<sup>2</sup> to mail the same survey questionnaire as in Study 1.

This study defined small firms according to the definitional criteria of SMEs by the Japanese government<sup>3</sup>. In the sampling process, we controlled firms' growth level and industries due to the constraints of our research budget.

First, observing sales growth distribution of SMEs in the database, firms were chosen according to the distribution ratio: high (12.1%), average (77.3%) and low (10.6%) sales growth<sup>4</sup>. Next, we chose firms from four industries based upon the distribution ratio in the database: manufacturing (100 to 300 employees), wholesale (10 to 100 employees), retail (10 to 100 employees) and ICT (100 to 300 employees). Then, firms were randomly selected to reach 5,000 potential survey respondents that met the SMEs' definitional criteria.

Mail questionnaires were sent to these CEOs or relevant top executives in July 2011. Usable returned responses were 1,027 (20.5% response rate). However, due to lack of research variables in the study, the final usable data for the analysis was 972. In Feb 2014, we mailed the exactly same surveys to these 972 respondents. As a result, we received 337 responses for our analysis. The response rate was 34.7%.

For the same as Study 1, the 2011 and 2014 data was chosen, because a period of two and a half years over which to observe change seems a reasonable time frame. To note, the sample representative bias was checked by conducting a *t* test for their sales growth in both 2008/2009 and 2009/2010, and no statistically significant relationship was found.

### **Measures**

We used the same measures and control variables in study 1 and study 2 with minor

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<sup>2</sup> It is similar to Dun and Bradstreet in the US.

<sup>3</sup> The definition of SMEs in Japan is derived from a 2007 national survey of Japanese businesses conducted by the Japanese equivalent of the U.S. Small Business Administration.

<sup>4</sup> High, average and low are categorized as follows. High is more than 100% sales growth both in the 2008-2009 and 2009-2010 periods. Average is more than 100% sales growth either in 2008-2009 or 2009-2010, and between 90% and 100% sales growth in the other period. Low is with less than 90% sales growth both in the 2008-2009 and 2009-2010 periods.

exceptions. Regarding the performance construct, we used profit and sales indicators eliminating the market share indices due to a lower loading score. For the same reason as Study 1, to construct EB, four measurement indicators were used: PRO1, PRO2, INN2 and INN3. The correlation matrix and descriptive statistics for Study 2 were presented in table 3.

### **Measurement model**

Replicating the measurement model from Study1, the result of confirmatory factor analysis and measurement model from Study 2 is reported in table 4. After freeing a measurement error covariance between EB and MATR, between P1 and P2, between INN2 and INN3, and between PRO1 and PRO2, our measurement model substantially improved the overall fit to the data ( $\chi^2= 57.17$ ; d.f.=36;  $p=.014$ ).

We tested loading value, alpha and AVE score of focal latent constructs. Accordingly, it confirmed the reliability and validity of all constructs of our interests. Discriminant validity test was also conducted to identify the value of mediator constructs (EB and MATR). As examined in Study 1, we compared AVE within a focal construct to the maximum share variance (MSV) between these constructs.

In the results, two focal constructs crossed the validity hurdle. There was a large difference between performance 1 and MATR 2 (AVE = .750 and .582, respectively; MSV between = .076), between MATR 2 and performance 3 (AVE = .582 and .679, respectively; MSV between = .006), between performance 1 and EB 2(AVE = .750 and .410, respectively; MSV between = .195), and between EB 2 and performance 3(AVE = .410 and .679, respectively; MSV between = .148).

### **Analysis**

As shown in table 5, our structural and hypothesized model fits the data well ( $\chi^2 = 75.458$ ; d.f.= 51;  $p= .015$ ; RMSEA=0.039; CFI=0.983; TLI=0.969). The overall model fit to the data was confirmed both in Study 1 and in Study 2.

The result of our model in Study 2 showed that prior performance in time 1 had a positive and significant relationship with MATR ( $\beta=0.301$ ,  $p<.001$ ) and EB ( $\beta=0.209$ ,  $p<.001$ ) in time 2. Thus, hypothesis 1 and 2 were supported. An association of MATR in time 2 with the performance in time 3 was negative and statistically significant ( $\beta = -0.351$ ,  $p<.01$ ). Similarly, the relationship between EB in time 2 and the performance in time 3 was positive and statistically significant ( $\beta =0.454$ ,  $p<.01$ ). Recognizing MATR and EB as a joint definition of EO conceptual domain, it was interpreted that EO played the mediating role of capturing an outcome of prior performance and strengthening an entrepreneurial magnitude through which a post high performance was achieved. As such, hypothesis 3, 4 and 5 were supported.

To note, as conducted in Study 1, we evaluated Miller (1983)/Covin and Slevin(1989, 1991)'s EO measurement model. It appeared a poor fit compared to our measurement model

( $\chi^2 = 162.104$ , d.f.=56,  $p < 0.000$ ; CFI= .924., TLI= .877, RMSEA= .077). Further, the relationship between the performance in time 1 and EO in time 2 was positive and significant whereas EO in time 2 and the performance in time 3 was negative but insignificant.

We tested hypotheses 6 and 7 by using the same modified structural model as used in Study 1. As a result, positive and significant results were shown. It was a similar output as reported in Study 1 ( $P1 \rightarrow MATR2 (\beta = 0.297, p < .001)$ ;  $MATR2 \rightarrow EB2 (\beta = 1.53, p < .001)$ ;  $EB2 \rightarrow P3 (\beta = 0.364, p < .001)$ ;  $\chi^2 = 113.260$ ; d.f.= 53;  $p = .000$ ; RMSEA= 0.06; CFI= 0.957; TLI= 0.926). It implied that an outcome from prior firm performance encouraged MATR through which EB was strengthened. Then, the enlarged EB stimulated firms' high performance. Hypotheses 6 and 7 were supported. Detailed results are reported in table 6.

## DISCUSSION AND IMPLICATIONS

There is an ongoing ontological question about the relationship of a dimensionality of the lower-order EO, arguing whether or not it is a dispositional or behavioral or mixed latent construct. By using the newly developed measurement model (Anderson *et al.*, 2015), we evaluated the reliability and validity of two lower-order dimensions of EO conceptual domain, namely a disposition-oriented MATR and a behavior-oriented EB in two replicated studies. In addition, we compared our model with the classic EO measurement model (Miller, 1981; Covin & Slevin, 1989, 1991). As a result, it was confirmed that our model fit better.

Understanding the nature of entrepreneurial phenomena, EO scholars argue that the proclivity of dimensions of EO should be examined and clarified. In the literature, an ongoing weighted concern of such issues remains conceptually and empirically, particularly when researchers operationalize the EO measurement model. Through replicating studies, our findings confirmed the usefulness of our model as a measurement tool of EO and contribute to the ontological argument of the EO construct although more empirical researches is needed to generalize the model.

From the result of two studies, it became clear that prior performance was the same antecedent of both MATR and EB. It implies that both variables are likely to capture a firms' past achievement. However, a future performance as a consequence of MATR and EB was not always the case. The result of Study 2 demonstrated the positive linkage of the two constructs and future performance whereas the result of Study 1 did not. EB had a positive and a weak significant relationship to future performance but MATR did not. Since the two dimensions are jointly defined as EO, the relationship between EO and future performance did not stand in Study 1. Because the two studies were not able to report the same result, it could be difficult to conclude EO as a mediator between prior and future performance in our study.

However, by using MATR and EB as a split construct in a different model, a new mediating process as well as the relation of two variables became clear. Recognizing that MATR is a

disposition-oriented latent construct and EB is a behavior-oriented latent construct, each role has to be different and unique. As analyzed in the modified model (see table 6), MATR and EB played a key role of capturing prior and future high performance, respectively. Two studies replicated the same result.

The findings from the two studies implied that an outcome from firm's prior growth promoted senior managers' risk-taking attitude (MATR) through which the entrepreneurial behavior (EB) was strengthened. Then, the enlarged EB magnitude led a firm to a higher performance. It can be said that gained financial and/or non-financial benefits may be seen for senior managers as a risk-hedge for potential failure of new exploration. It also may be perceived as an excess of their aspiration levels from which a risk-taking manner is prompted (Schneider, 1992).

From this implication, a new mechanism is proposed. It is a mediating process to connect, maintain and enlarge past and future corporate performance. In it, two distinct entrepreneurial engines (MATR and EB) were bypassing prior and future performance. The premise is that MATR and EB are solely playing a unique role.

The literature says that a behavior is a consequence of a disposition. The reverse linkage is difficult to observe in business practice. It should be rational to consider that decision makers' risk-taking mindset is a precondition of whether or not firms take a bold action. Entrepreneurial activity in the marketplace usually comes after senior managers' long or short strategic decision making process in which a risk-taking mind is central.

Reviewing the EO development process in the literature, the nature of the entrepreneurial mind or activity was studied in association with proactive, bold, risk-taking, innovative, aggressive and/or autonomous strategic posture or action at the individual and/or firms' level (Mintzberg, 1973; Khandwalla, 1977; Miller, 1983; Covin & Slevin, 1989, 1991). However, such an entrepreneurial strategic mode or characteristic does not necessarily have to be exhibited all together.

Lumpkin and Dess (Lumpkin & Dess, 1996, 2001; Lumpkin, Coglisier & Schneider, 2009) argue that each factor does not have to appear simultaneously to be entrepreneurial. It is posited that each element is solely playing an important and unique role. Following this view, our study used two lower-order dimensions of EO separately. As a result, it appeared that the role of factors within the classic EO component (Miller, 1983; Covin & Slevin, 1989, 1991) was more clarified than before.

That being said, the implication from our findings does not deny the importance and usefulness of the most popular classic EO construct (Miller, 1983; Covin & Slevin, 1989, 1991) in the literature. Rather, our findings supported this view and attempted to develop the mechanism of the EO conceptual domain. By using two distinct characteristics of EO and by freeing them from joint exhibition in the EO model, we attempted to test how each factor is associated with and is mediating firm's prior and future growth.



Our study shed light on the inside of EO components and uncovered it. By so doing, it became clear that two factors under EO conceptual domain played a key role as the search light in exploring antecedents and consequences of EO. One factor, the senior managers' risk-taking mindset (MATR) was a critical precondition determining firms' entrepreneurial behaviors (EB) which is another factor of EO. In addition, the entrepreneurial behaviors (EB) boosted firms' growth under which senior managers' risk-taking attitude gradually goes up to prepare for being entrepreneurial.

In practice, it is induced that the perceived balance between the utilization of outcome from firms' past growth and top managers' present risk-taking attitude is a key of firms' entrepreneurial exhibition and future development. Stated differently, whether or not firms can grow through entrepreneurial activity may be rooted in the managers' aspiration level. The key question is how much the decision makers are satisfied with an outcome from the prior performance. Aspiration theory says that the higher an excess level over their satisfactory criterion, the more likely they tend to take a risk (Schneider, 1992).

Accordingly, managers should be aware of the importance of the balance of their personal risk-aversion and opportunity-driven management practice. Too much risk-taking under the perceived low outcome from past performance may be a poor strategic choice. Similarly, low risk-taking with perceived ample outcome from past performance may lose an opportunity for growth. The aspiration perspective can be considered as a critical tool in the strategic making process both analytically and practically. Focusing on managers' fear of loss and/or prospect of gain in exploiting and/or exploring an opportunity could be a weighting research agenda to investigate the linkage of the firms' past growth, future entrepreneurial behavior and continuing growth. Both conceptual and empirical research is needed in future study.

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**TABLE 1**

**Scale of Entrepreneurial Orientation based on Covin & Slevin (1989)<sup>a</sup>**

|       |  |   |   |   |   |   |   |   |  |   |  |
|-------|--|---|---|---|---|---|---|---|--|---|--|
| INN1  | In general, top managers of my firm favour ...   |   |   |   |   |   |   |   |  |   |  |
|       | ... a strong emphasis on the marketing of tried and true products or services  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... a strong emphasis on R&D, technological leadership, and innovations   |  |
|       | During the past three years my firm marketed ...   |   |   |   |   |   |   |   |  |   |  |
| INN2  | ... no new lines of products or services   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... very many new lines of products or services   |  |
|       | Changes made to the products or services my firm marketed during the past three years are ...  |   |   |   |   |   |   |   |  |   |  |
| INN3  | ... mostly of a minor nature   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... mostly quite dramatic   |  |
| PRO1  | In dealing with competitors, my firm ...   |   |   |   |   |   |   |   |  |   |  |
|       | ... typically responds to actions which competitors initiate   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... typically initiates actions to which competitors respond  |  |
| PRO2  | In dealing with competitors, my firm ...   |   |   |   |   |   |   |   |  |   |  |
|       | ... is very seldom the first business to introduce new products or services, administrative techniques, operating technologies, etc. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... is very often the first business to introduce new products or services, administrative techniques, operating technologies, etc. |  |
| PRO3  | In dealing with competitors, my firm ...   |   |   |   |   |   |   |   |  |   |  |
|       | ... typically seeks to avoid competitive clashes, preferring a "live-and-let-live" posture   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... typically adopts a very competitive "undo-the-competitors" posture  |  |
| RISK1 | In general, top managers of my firm have ...   |   |   |   |   |   |   |   |  |   |  |
|       | ... a strong proclivity for low risk projects (with normal and certain rates of return)  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... a strong proclivity for high risk projects (with chances for very high returns)   |  |
| RISK2 | In general, top managers of my firm believe that ...   |   |   |   |   |   |   |   |  |   |  |
|       | ... owing to the nature of the environment, it is best to explore it gradually via cautious, incremental behaviour                   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives                  |  |
| RISK3 | When confronted with decision making situations involving uncertainty, my firm ...   |   |   |   |   |   |   |   |  |   |  |
|       | ... typically adopts a cautious "wait and see" posture in order to minimise the probability of making costly decisions               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |  | ... typically adopts a bold, aggressive posture in order to maximise the probability of exploiting potential opportunities          |  |

<sup>a</sup> INN = Innovativeness; PRO = Proactiveness; RISK = Risk-taking.

**TABLE 2**  
**Correlation Matrix and Descriptive Statistics<sup>a</sup> in Study 1**

|   | Mean   | $\alpha$ | 1      | 2      | 3     | 4      | 5 |
|---|--------|----------|--------|--------|-------|--------|---|
| 1. Performance (P1)                         | 0.281  | 0.767    |        |        |       |        |   |
| 2. Entrepreneurial behavior (EB2)           | -0.299 | 0.655    | 0.281  |        |       |        |   |
| 3. Managerial attitude towards risk (MATR2) | 0.112  | 0.784    | 0.267  | 0.854  |       |        |   |
| 4. Performance (P3)                         | 0.257  | 0.844    | 0.326  | 0.386  | 0.073 |        |   |
| 5. Hostiligy                                | 3.495  | -        | -0.087 | 0.029  | 0.217 | -0.077 |   |
| 6. Employment                               | 1.345  | -        | 0.187  | -0.165 | -0.21 | 0.164  | 0 |

N = 107

<sup>a</sup> Composite latent constructs except for hostitliy and employment, and log transformed employment size are reported. Correlations at or above  $\pm 0.19$  is significant at the 0.05 level or higher.

**TABLE 3**  
**Correlation Matrix and Descriptive Statistics<sup>a</sup> in Study 2**

|   | Mean   | $\alpha$ | 1      | 2      | 3      | 4      | 5 |
|---|--------|----------|--------|--------|--------|--------|---|
| 1. Performance (P1)                         | -1.769 | 0.855    |        |        |        |        |   |
| 2. Entrepreneurial behavior (EB2)           | -0.226 | 0.777    | 0.448  |        |        |        |   |
| 3. Managerial attitude towards risk (MATR2) | 0.178  | 0.804    | 0.275  | 0.632  |        |        |   |
| 4. Performance (P3)                         | -0.918 | 0.808    | 0.502  | 0.389  | 0.07   |        |   |
| 5. Hostility                                | 3.312  | -        | -0.362 | -0.286 | -0.061 | -0.223 |   |
| 6. Employment                               | 1.668  | -        | -0.093 | 0.068  | 0.056  | -0.057 | 0 |

N = 321

<sup>a</sup> Composite latent constructs except for hostitliy and employment, and log transformed employment size are reported. Correlations at or above  $\pm 0.10$  is significant at the 0.05 level or higher.

**TABLE 4**  
**Confirmatory Factor Analysis <sup>a</sup>**

| Constructs / Measures   | Study 1            | Study 2             |
|---|--------------------|---------------------|
| <i>Performance in time 1</i> (Average Variance Extracted / Alpha)   | (.53 / .77)        | (.75 / .86)         |
| Total profit/sales growth (average over the past 3 years)   | .70                | .83                 |
| Total sales growth (average over the past 3 years)  | .81                | .90                 |
| Total market share growth (average over the past 3 years)   | .67                | -                   |
| <i>Performance in time 3</i> (Average Variance Extracted / Alpha)   | (.65 / .84)        | (.68 / .81)         |
| Total profit/sales growth (average over the past 3 years)   | .73                | .80                 |
| Total sales growth (average over the past 3 years)  | .88                | .85                 |
| Total market share growth (average over the past 3 years)   | .81                | -                   |
| <i>Entrepreneurial Behavior (EB) in time 2</i>  | (.40 / .66)        | (.42 / .78)         |
| Very many new lines of products or services have marketed (INN2)  | -                  | .63                 |
| Changes in product or service lines have usually been quite dramatic(INN3)  | .54                | .61                 |
| Our business typically initiates actions to which competitors respond(PRO1)   | .53                | .56                 |
| Our business is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.(PRO2) | -                  | .75                 |
| Our business typically adopts a very competitive “undo-the-competitors” posture(PRO3)   | .79                | -                   |
| <i>Managerial Attitude Towards Risk (MATR) in time 2</i>  | (.55 / .78)        | (.58 / .80)         |
| A strong proclivity for high risk projects (with chances for very high returns)(RISK1)  | .76                | .78                 |
| Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm’s objectives(RISK2)                           | .68                | .80                 |
| Our business unit typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities(RISK3) | .73                | .72                 |
| $\chi^2$ (df)   | 54.05 (48; p= .25) | 57.17 (36; p= .014) |
| RMSEA   | .034               | .043                |
| CFI   | .986               | .985                |
| TFI   | .980               | .976                |

<sup>a</sup> Standardized coefficients reported.

**TABLE 5**  
**Estimation Results (Basic Model)**

| Structural parameter      |      |           | Study1 (N=107)                 |       | Study2 (N=321)                 |       |
|---------------------------|------|-----------|--------------------------------|-------|--------------------------------|-------|
|                           |      |           | $\beta$                        | s.e.  | $\beta$                        | s.e.  |
| <i>Hypothesized paths</i> |      |           |                                |       |                                |       |
| MATR2                     | <--- | P1        | 0.302 **                       | 0.113 | 0.209 ***                      | 0.051 |
| EB2                       | <--- | P1        | 0.231 *                        | 0.102 | 0.301 ***                      | 0.061 |
| P3                        | <--- | MATR2     | -1.228                         | 0.784 | -0.351 **                      | 0.124 |
| P3                        | <--- | EB2       | 1.815 +                        | 1.014 | 0.454 **                       | 0.143 |
| <i>Controlled paths</i>   |      |           |                                |       |                                |       |
| P1                        | <--- | Hostility | -0.093                         | 0.115 | -0.317 ***                     | 0.051 |
| P1                        | <--- | Emp       | 0.45 +                         | 0.264 | -0.43                          | 0.263 |
| MATR2                     | <--- | Emp       | -0.585 +                       | 0.226 | 0.271                          | 0.196 |
| MATR2                     | <--- | Hostility | 0.233 *                        | 0.098 | 0.029                          | 0.04  |
| EB2                       | <--- | Emp       | -0.383 +                       | 0.202 | 0.36 +                         | 0.216 |
| EB2                       | <--- | Hostility | 0.043                          | 0.084 | -0.089 *                       | 0.044 |
| P3                        | <--- | Hostility | 0.126                          | 0.196 | -0.094 +                       | 0.05  |
| P3                        | <--- | Emp       | 0.369                          | 0.334 | -0.264                         | 0.234 |
| $\chi^2$ (df)             |      |           | 82.357 <sub>(65; p=.072)</sub> |       | 75.458 <sub>(51; p=.015)</sub> |       |
| RMSEA                     |      |           | 0.05                           |       | 0.039                          |       |
| CFI                       |      |           | 0.961                          |       | 0.983                          |       |
| TLI                       |      |           | 0.945                          |       | 0.969                          |       |

<sup>a</sup> Standardized coefficients errors are reported.

MATR=managerial attitude toward risk; EB=entrepreneurial behavior;

P=performance; Emp=log employment numbers.

+ p<.1; \* p<.05; \*\* p<.01; \*\*\* p<.001.



**TABLE 6**  
**Estimation Results (Modified Model)**

| Structural parameter      |      |           | Study1 (N=107)       |       | Study2 (N=321)      |       |
|---------------------------|------|-----------|----------------------|-------|---------------------|-------|
|                           |      |           | $\beta$              | s.e.  | $\beta$             | s.e.  |
| <i>Hypothesized paths</i> |      |           |                      |       |                     |       |
| MATR2                     | <--- | P1        | 0.351 **             | 0.108 | 0.297 ***           | 0.053 |
| EB2                       | <--- | MATR2     | 1.124 **             | 0.303 | 1.53 ***            | 0.395 |
| P3                        | <--- | EB2       | 0.346 **             | 0.204 | 0.364 ***           | 0.093 |
| <i>Controlled paths</i>   |      |           |                      |       |                     |       |
| P1                        | <--- | Hostility | -0.088               | 0.117 | -0.369 ***          | 0.051 |
| P1                        | <--- | Emp       | 0.191 +              | 0.268 | -0.086              | 0.253 |
| MATR2                     | <--- | Emp       | -0.28 **             | 0.219 | 0.082               | 0.195 |
| MATR2                     | <--- | Hostility | 0.24 *               | 0.095 | 0.049               | 0.04  |
| EB2                       | <--- | Emp       | 0.081                | 0.198 | -0.018              | 0.303 |
| EB2                       | <--- | Hostility | -0.191               | 0.89  | -0.192 *            | 0.059 |
| P3                        | <--- | Hostility | -0.091               | 0.11  | -0.124 +            | 0.046 |
| P3                        | <--- | Emp       | 0.215 *              | 0.257 | -0.079              | 0.228 |
| $\chi^2$ (df)             |      |           | 118.061 (92; p=.035) |       | 113.260(53; p=.000) |       |
| RMSEA                     |      |           | 0.052                |       | 0.06                |       |
| CFI                       |      |           | 0.954                |       | 0.957               |       |
| TLI                       |      |           | 0.939                |       | 0.926               |       |

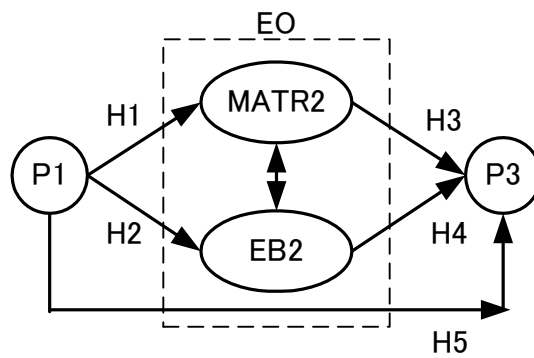
<sup>a</sup> Standardized coefficients errors are reported.

MATR=managerial attitude toward risk; EB=entrepreneurial behavior;

P=performance; Emp=log employment numbers.

+ p<.1; \* p<.05; \*\* p<.01; \*\*\* p<.001.

**FIGURE 1**  
**Basic Analytical EO Model and Hypotheses**



**FIGURE 2**  
**Modified Analytical EO Model and Hypotheses**

