

# Marketing intelligence and small firms' performance: the role of entrepreneurial alertness and effectuation

Small firms' performance

Masoud Karami

*Department of Marketing, School of Business, University of Otago, Dunedin, New Zealand, and*

Mokter Hossain

*Center for Entrepreneurship and Organizational Excellence, College of Business and Economics, Qatar University, Doha, Qatar*

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## Abstract

**Purpose** – Knowledge of how entrepreneurial alertness (EA) and effectuation impact small firms' performance in uncertain markets is limited. Suggesting effectuation as a mediation mechanism between EA and small firms' performance, the authors explore how entrepreneurs of small firms apply effectual logic to translate their individual alertness to market opportunities into firms' performance.

**Design/methodology/approach** – A set of hypotheses is tested by partial least squares analysis of survey data collected from small firms in New Zealand.

**Findings** – The results show that effectuation works as a mechanism that mediates a positive association between founders/managers' alertness to market opportunities and small firms' performance.

**Originality/value** – Integrating EA with the effectuation theory, the authors contribute to the literature on new market opportunity development and firm performance. The authors argue that entrepreneurs concentrate on action and resources to further develop their marketing intelligence in developing new market opportunities. The authors also enhance the understanding of entrepreneurial marketing decision-making by small firms in a relatively small economy in the Asia-Pacific region.

**Keywords** Entrepreneurial alertness, Effectuation, Performance, Market opportunities, Small firms

**Paper type** Research paper

## 1. Introduction

The ability to develop and exploit new market opportunities is a key driver of small firms' success (Lechner and Gudmundsson, 2014). Entrepreneurial alertness (EA) as an individual's ability to identify new market opportunities that are overlooked by other actors in the market (Araujo *et al.*, 2023; Kirzner, 1979) is a vital factor in recognizing and developing new opportunities for better market outcomes (Lanivich *et al.*, 2022; Tang *et al.*, 2012). Such market opportunities “may exist in intertemporal markets in which today's resource services do not

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Compliance with Ethical Standards:

*Ethical approval:* All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

*Informed consent:* Informed consent was obtained from all individual participants included in the study.

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accurately reflect the future strength of demand for the products being produced by these services.” (Kirzner, 2009, p. 150). Given the importance of marketing intelligence in small firms (Cacciolatti and Fearn, 2013) and the role of EA in small firms’ growth and survival (Adomako *et al.*, 2018; Araujo *et al.*, 2023), it is pivotal to understand how small firms develop new market opportunities to enhance their performance and thrive in their target markets (Roelandt *et al.*, 2022).

EA is conceptualized as a “cognitive engine” composed of perceptual skills (Gaglio and Katz, 2001) that enable entrepreneurs to identify new market opportunities (Kirzner, 1979, 2009). Entrepreneurs of small firms apply EA as part of their marketing intelligence to recognize changes in market relationships, competition, consumer demand, technological advancements and other changes as new opportunity sources for developing new products, new markets, or any other new artefacts (Kirzner, 1999, 2009; Tang *et al.*, 2012). The alert practice of new opportunity development, in turn, advances small firms’ marketing intelligence (Cacciolatti and Fearn, 2013, which in turn enhances their performance and enables them to grow in their markets (Araujo *et al.*, 2023; Tang *et al.*, 2012).

However, alertness to new market opportunities alone does not guarantee small firms’ success due to intertemporal uncertainty about firms’ “present inputs and future outputs” (Kirzner, 1999, p. 11), spanning the entire new product or market ideation process to implementation. As argued by Kirzner (1999), alert entrepreneurs will need entrepreneurial creativity and boldness to act and transform their alertness into new profitable market opportunities (Tang *et al.*, 2012). Kirzner (1999, p. 13) stated, “the seer who can imagine how the world might be improved by a radical innovation, but who lacks the needed boldness and initiative (to shoulder the risks which he would have to assume in order actually to introduce this innovation to reality in a world fraught with uncertainties) - has in fact not yet really discovered an available, attractive opportunity for innovation.” As such, we need to investigate how small firms overcome intertemporal market uncertainty and enhance their performance in the longer term.

Effectuation theory can effectively address the concerns of alertness theory regarding intertemporal uncertainty and the essential creativity needed to translate alertness into market opportunities and concrete products that cater to immediate needs. Effectuation accomplishes this by leveraging the logic of control, empowering entrepreneurs to use their existing resources to take charge of the situation (Read *et al.*, 2016; Sarasvathy, 2001). Effectuation is defined as processes that “*take a set of means as given and focus on selecting between possible effects that can be created with that set of means*” (Sarasvathy, 2001, p. 245). Effectuation theory builds upon entrepreneurs’ logic of control and their existing resources to elucidate how entrepreneurs navigate the uncertainty of creating new market opportunities (Read *et al.*, 2016; Sarasvathy, 2001). Effectuation as a “mode of action” (Grégoire and Cherchem, 2020) provides key mechanisms such as affordable loss, commitment development, leveraging contingencies and learning that enable entrepreneurs to use their alertness to develop their marketing intelligence and seize market opportunities (Crick and Crick, 2015; Karami *et al.*, 2020). Therefore, effectual logic facilitates the transformation of identified opportunities into improved performance by facilitating the further development of the recognized market opportunity and mobilizing the necessary resources within a network of self-selected stakeholders (Ardichvili *et al.*, 2004; Sarasvathy, 2001; Zhang *et al.*, 2023).

More specifically, we inquire: How do entrepreneurs employ effectual logic to transform their individual alertness into improved small firm performance? This integration assists in elucidating how alert entrepreneurs leverage their existing resources and collaborate with like-minded stakeholders to advance the initial market opportunity and capitalize on it by creating a new product, new market, new process, etc., thereby enhancing their firms’ performance (Gilmore *et al.*, 2001).

Based on survey data from 230 respondents in New Zealand, our findings indicate that effectuation mediates the relationship between Entrepreneurial Alertness (EA) and firms’

sales and financial performance. This research applies both EA and effectuation theories to the context of small firms, thereby deepening our comprehension of these theories. We expand the scope of EA research by articulating its role in advancing small firms' marketing intelligence and providing a more comprehensive exploration of the role of effectuation in transforming individual alertness into firm-level performance. Simultaneously, we contribute to effectuation theory by proposing that individual alertness is a precursor to the effectual process of developing new market opportunities. Our study presents a pragmatic perspective on entrepreneurial opportunity, thus enriching the ongoing discourse surrounding the "made versus found" distinction within the entrepreneurship literature's opportunity stream. With a pragmatist epistemology, we demonstrate that small firms do not necessarily distinguish between whether opportunities are created or stumbled upon; instead, they employ both EA and effectual logic to cultivate profitable opportunities (Hilmersson and Johanson, 2020).

## 2. Literature review and hypothesis development

### 2.1 *Entrepreneurial alertness*

EA has been studied since Austrian economics highlighted the concept and argued for its importance in entrepreneurship and marketing (Kirzner, 1979; Lanivich *et al.*, 2022). Later, Kirzner (1999) conceptualized alertness as a distinct ability to identify new market opportunities and recognize ideas for new offerings (Kirzner, 1979; Tang *et al.*, 2012). He emphasized the critical importance of alertness for developing new opportunities to address an existing gap in the market and bring the market back to equilibrium. EA encompasses personality traits, prior knowledge, experiences and networks (Ardichvili *et al.*, 2004). Tang *et al.*'s (2012) work provided a way to measure alertness. They operationalized the concept into three key dimensions: scanning and search; association and connection and evaluation and judgment (Lanivich *et al.*, 2022; Tang *et al.*, 2012). Since then, many studies have appeared in the literature. Research interest in why and how some individuals can notice market opportunities and others do not have triggered considerable studies on EA (Araujo *et al.*, 2023).

Prior studies have consistently offered the significance of alertness in entrepreneurship research and widely used it to explain entrepreneurial opportunities (Araujo *et al.*, 2023; Lanivich *et al.*, 2022). Alertness research has explored the effects of alertness to some extent. Innovation, new opportunity development (Levasseur *et al.*, 2020; Tang *et al.*, 2021a, b), and small firms' performance has been identified as a major outcome of alertness (Adomako *et al.*, 2018). Research also has identified important intervening factors such as creativity, intelligence, optimism and risk perception (Baron, 2007; Gilmore *et al.*, 2004). Prior research finds that entrepreneurs' self-efficacy and optimism are positively associated with alertness and firm innovation (Tang *et al.*, 2021a, b). The character of strengths and industriousness are also associated with various dimensions of EA, such as scanning, search, evaluation and judgment (Pirhadi *et al.*, 2021).

Although the challenges of measuring the association of alertness with opportunity recognition are well recognized in the literature (García *et al.*, 2015), more research is warranted to investigate the mechanisms through which individual alertness is translated into firm-level performance (Araujo *et al.*, 2023).

### 2.2 *Effectuation*

Effectuation theory elucidates the process by which entrepreneurs initiate contemplation about an alternative future, acquire access to complementary resources and foster commitment among essential stakeholders, including customers, channel members and suppliers. This enables them to exert control over the situation and metamorphose their

initial idea into a tangible market opportunity (Lupp, 2023; Moriarty *et al.*, 2008; Read *et al.*, 2016). It underscores entrepreneurial action as the means to acquire business and market knowledge, unravel the perceived uncertainty, reshape the existing uncertain situation and leverage the newly developed components to create a fresh market, product, firm, or other artifacts (Smit, 2023; Townsend *et al.*, 2018).

Effectuation builds on several principles. Effectual entrepreneurs start with their existing means. Effectuation builds on three types of personal means, including “who I am”, “what I know” and “whom I know” (Sarasvathy, 2001; Van Mumford and Zettinig, 2022). The concept of effectual control empowers entrepreneurs to perceive uncertainty and the future in the context of their current resources, allowing them to devise strategies to expand their control over the situation by acquiring access to new resources (Karami *et al.*, 2023; Sarasvathy, 2001). Entrepreneurs subsequently broaden their access to additional complementary resources through pre-commitments. Stakeholders who express interest in the initial idea self-select to participate in the process, contributing to its further development and refinement (Bandyopadhyay and Ray, 2020). This collective endeavor to make sense of the situation and the following commitment of resources to actualize it is the core tenet of the effectuation process (Kerr and Coviello, 2020; Filieri, 2013). The affordable loss represents the particular control logic employed by entrepreneurs to assess their perceived uncertainty and proceed. Flexibility serves as another critical effectual principle that encourages stakeholders to engage in learning and make revisions as necessary. This flexibility also enables them to embrace unforeseen events and regard them as serendipitous opportunities (Crick and Crick, 2015).

We argue that EA can trigger the effectuation process by enabling entrepreneurs to identify new opportunities or new venture ideas. This argument can be justified in different ways. Kirzner (1999) emphasizes the importance of the psychological characteristics of entrepreneurs in understanding alertness. There is a similar understanding of psychological characteristics as “who I am” in the effectuation theory (Read *et al.*, 2016; Sarasvathy, 2001), which justifies considering alertness as an antecedent of effectuation process. Also, effectual resourcefulness can be used to justify alertness as an entrepreneurial resource. Effectuation is considered a resourceful way of creating new opportunities (Welter *et al.*, 2018). Both market opportunity awareness and available resources hold significant importance in entrepreneurship (Baker and Nelson, 2005). Effectuation theory, on the other hand, posits pure uncertainty (Knight, 1921) as a boundary condition, implying a completely unknown future. However, in practical situations, entrepreneurs contend with different levels of uncertainty, which leads them to flexibly adjust the application of effectuation as needed (Cowden *et al.*, 2022).

### *2.3 Entrepreneurial alertness and firm performance*

We are aware of the close association between the increase in EA and the enhancement of firms’ performance (Adomako *et al.*, 2018). Nevertheless, linking EA to firm performance has not been adequately studied in the opportunity recognition and exploitation literature. Research shows that capabilities, such as entrepreneurial drive, knowledge about markets and the absorption of external knowledge drive EA, which eventually leads to the enhancement of firms’ performance (Crespo *et al.*, 2022). Alertness enhances small firms’ performance in various ways. Founders’ alertness influences entrepreneurial and marketing orientation that results in superior firm performance (Lin *et al.*, 2021; Mole *et al.*, 2019). The effects of alertness are also positively associated with firm innovation, which, in turn, is positively related to financial performance (Tang *et al.*, 2021a, b). EA is also associated with social entrepreneurial performance and personal initiatives of individuals partially mediated by the relationship between EA and social entrepreneurial firm creation (Nsereko *et al.*, 2022).

Alert scanning and search involve gathering relevant market information that aids entrepreneurs in interpreting the market situation and developing an understanding of the uncertain environment. This information encompasses market demand, consumer expectations, channel conditions and more. It equips them with additional options for navigating uncertainty and identifying more promising market opportunities (Sirén *et al.*, 2019; Tang *et al.*, 2012). Alert association and connection allow entrepreneurs to link between different pieces of market information and apply their creativity to interpret the market situation in terms of the type and amount of expected innovation in products, pricing strategy, customer engagement and other important market facts (Ferrer-Estévez and Chalmeta, 2023; Moriarty *et al.*, 2008). Furthermore, it facilitates the alignment of existing resources with the present situation to pinpoint more promising opportunities (Lanivich *et al.*, 2022). The resulting comprehensive perspective equips them with a more robust framework to assess the market situation in relation to their existing resources, enabling them to determine whether the identified market opportunity is worth pursuing and exploiting or not. Put differently, the broader view of the situation, considering resource alignment and situational cues, indicates whether the identified opportunities merit further development (Lanivich *et al.*, 2022). Such alert evaluation and judgment allow entrepreneurs to decide and commit their resources to more promising market opportunities, which enhance their firm performance (Levasseur *et al.*, 2020). Therefore, we state:

*H1. EA enhances small firms' sales and financial performance.*

#### *2.4 Entrepreneurial alertness and effectuation*

As highlighted by Kirzner (1999), Alertness necessitates boldness, self-confidence and creativity to transform into successful market opportunities. We posit that effectuation serves as a mechanism that fosters this creativity and boldness in action by offering flexibility, the logic of control, pre-commitment and experimentation with innovative ideas. Effectuation logic amplifies EA to market opportunities by encouraging entrepreneurs to adopt a mindset concentrated on control rather than predictive logic (Sun *et al.*, 2014). It enables the utilization of existing resources, including a shared understanding of the market situation within an effectual network of relationships, to interpret changes in the market and initiate actions to gather additional pertinent market information for the further development of identified opportunities (Ferrer-Estévez and Chalmeta, 2023; Karami *et al.*, 2023; Read *et al.*, 2016).

The role of effectual partnership as a key mechanism becomes crucial for alert entrepreneurs. This involves sharing their market perception and the identified opportunities with other key stakeholders, such as customers, channel members and suppliers. This sharing process allows stakeholders to associate and connect various pieces of market information and collectively make sense of the market situation. This collective association and connection enable stakeholders to identify the necessary resources required for the further development of the new market opportunity. Subsequently, self-selected stakeholders actively seek access to complementary resources to facilitate the continued development of the initial opportunity (Sarvasvathy, 2001). Alert entrepreneurs utilize alertness to contextualize new pieces of market information in a collective framework (Kerr and Coviello, 2020), evaluate the market situation and judge it; thereby, this process advances small firms' marketing intelligence (Cacciolatti and Fearn, 2013). The effectual strategic decision then enables entrepreneurs to be flexible in dealing with the market situation and to judge and act to transform their identified opportunities into new markets, new products, new services, (Townsend *et al.*, 2018) etc.

Research on the relationship between EA and effectuation is relatively scarce. In a study based on data from nascent Swedish firms, Sirén *et al.* (2019) proposed that EA empowers founders to adopt effectuation as a decision-making approach. Their findings revealed a

positive link between EA and the adoption of effectual decision-making. Previous research has also suggested that EA facilitates the exploration of new product development from unconventional sources (Frese, 2009), ultimately contributing to the development of more innovative products (Deng *et al.*, 2022).

H2. There is a positive association between EA and effectuation in small firms.

### 2.5 Effectuation and firm performance

Firm performance has been a key construct in effectuation literature. Previous research supports a positive relationship between effectuation and firm performance (e.g. Deligianni *et al.*, 2017; Karami *et al.*, 2023). Effectuation enhances small firms' performance in uncertain markets for several reasons. First, the effectual logic of control allows entrepreneurs to act and unpack the uncertainty of the market while others are busy with market research, competition analysis and predictive models (Karami and Tang, 2022). Second, effectuation logic keeps entrepreneurs flexible in their course of action so they can act, learn and fine-tune their next step (Smit, 2023; Wiltbank *et al.*, 2009). Finally, the pre-commitment of self-selected stakeholders ensures the accessibility of required resources to move towards a shared aspiration by experimenting new ideas and learning from each step (Chandler *et al.*, 2011; Kerr and Coviello, 2020).

H3. Effectuation enhances small firms' performance.

### 2.6 Effectuation as a mediation mechanism

Alert entrepreneurs scan, search and assess the market to acquire the necessary market knowledge and identify market opportunities (Valliere, 2013). On the contrary, effectuation is action-oriented and allows entrepreneurs to manage uncertain market situations by using their existing means and focusing on new products or market opportunities to improve their position in the market or to create totally new markets (Read *et al.*, 2016). While research shows a positive effect of EA on firm performance (e.g. Tang *et al.*, 2021a, b), the process and mechanism that make such relationship work is not well established yet. Kirzner (1999) emphasized the importance of boldness, creativity and self-confidence in utilizing alertness and further developing newly identified market opportunities. This emphasis necessitates a more comprehensive investigation of the mechanism through which the identified market opportunities are further developed and transformed into new products, new markets, or new processes (Tang *et al.*, 2012).

Building on Kirzner's (1999) observation, scholars argue that alertness, without entrepreneurial action to further develop and seize a market opportunity, is not entrepreneurial (McMullen and Shepherd, 2006). We argue that effectuation is a key mechanism in transforming alertness into enhanced firm performance. Effectuation emphasizes the significance of cognitive capabilities in pursuing identified opportunities (Levasseur *et al.*, 2020). The effectual logic of control allows entrepreneurs to gain access to other like-minded stakeholders, share their perception of new opportunities and encourage resource sharing to invest in new opportunities. Knowledge and resource sharing help alert entrepreneurs to further develop the initial market opportunity and take bold and creative actions to proceed with the initial idea of a new market opportunity. As a result of collective action, they gain control of a niche segment of the market (Karami and Read, 2021). Taking a pragmatist epistemology, we argue that entrepreneurs concentrate on action and resources to further develop new market opportunities. As such, resource-constrained entrepreneurs apply effectuation in uncertain market situations (Cowden *et al.*, 2022) to translate their EA into new opportunities for their small firms by developing networks, building trust and gaining access to required resources (Kerr and Coviello, 2020).



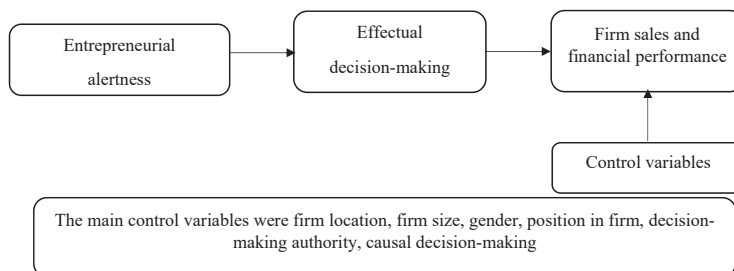
Scanning and search allows entrepreneurs to investigate new product or market ideas persistently and unconventionally, which helps them depict a picture of their market situations (Tang *et al.*, 2012). However, such scanning and search require useful information and knowledge about the resources and potential stakeholders who can be approached for further understanding of the market and complementary resources. Effectuation provides a mechanism for such information and insight sharing. Effectuation logic provides a framework for the association and connection of information by extending the relationships and activating the process of collective learning and sense-making (Kerr and Coviello, 2020). Finally, evaluation and judgment allow the entrepreneurs to judge if the identified potential market opportunity is an opportunity for themselves (first-person opportunity) or an opportunity in general (third-person opportunity) (Tang *et al.*, 2012). Effectuation logic enables entrepreneurs to make a better evaluation and judgment by providing a clearer picture of the existing means and accessible resources (Sarasvathy, 2001). It enables the collective sense-making and judgment process (Karami and Read, 2021). As a result, alertness triggers the effectuation process, which transforms alertness into new market opportunities by generating the required knowledge and commitment among key stakeholders. Figure 1 illustrates the conceptual model of the study.

H4. Effectuation positively mediates the association between EA and small firm performance.

### 3. Methodology

#### 3.1 Sample

We collected data from founders/managers of small firms across different industries in New Zealand. We investigated small firms where founders and managers play a dominant role in strategic marketing decision-making. Firms with fewer than 20 employees or less than one million NZD goods and service tax (GST) turnover are defined as small firms in New Zealand (MBIE, 2020a, b). However, we selected firms with fewer than 50 employees to make our findings more generalizable (European Commission, 2005). We focused on manufacturing and service provider businesses from across the industries and the country excluding dealers, agents of large businesses and retailers. New Zealand is well-regarded as a nation with a significant number of small and micro businesses, totaling 546,000 small firms (97% of all firms in the country, most of them being micro businesses). These firms account for approximately 15.5% of the gross domestic product (GDP) and 29% of total employment (MBIE, 2020a, b). We surveyed founders or top managers with strategic decision-making authority in these firms because they significantly influence the strategic decisions and actions in small firms (Devine *et al.*, 2019; Hambrick and Mason, 1984).



Source(s): Created by authors

**Figure 1.**  
Conceptual model

### 3.2 Data collection

We used an online survey to collect the data. The survey method has been considered an established way of collecting data in entrepreneurship and small business research that enables measuring complex latent constructs using multi-item scales (Kybernetes, Maula and Stam, 2020). Data were collected in 2021. We used a reputable market research agency to collect data (Hagtvedt, 2011). We worked closely with the agency in data collection to ensure the quality of data. The market research agency's comprehensive database allowed us to effectively cover the small firm population in New Zealand and reduce the risk of unrepresentativeness in our sample (Sills and Song, 2002). We applied the social exchange theory rationale to clearly communicate the perceived costs and benefits of participation in the study to our sample respondents (Dillman, 1991), in order to increase the response rate. We took the following steps. First, we pretested the survey with 50 respondents from the sample firms to ensure the face and content validity of the items and also get a realistic idea about the amount of time needed for filling in the online survey (Sills and Song, 2002). After making a few changes, in the wording of some of the survey items, the full survey was launched ( $n = 180$ ). Due to no major changes in the survey after the pilot study, we combined the two datasets (Morgan and Hunt, 1994), thus, the final sample included 230 responses. Second, we ensured the confidentiality of the individual responses and clarified that the results would be aggregated and reported with no personal identifying information (Sills and Song, 2002).

We used two techniques to reduce the nonresponse bias. We first used the independent *t*-test to compare three types of firms in terms of firm size and age: those who did not show any interest in our study, those who showed interest initially but did not complete the survey and those who completed the survey. There was no significant difference between the three, indicating no major risk of nonresponse bias. We also compared early and late responses using *t*-tests and the results revealed no significant differences between the two groups (Armstrong and Overton, 1977).

### 3.3 Controlling common method variance

We took several *ex ante* and *ex post* steps to control common method variance (CMV). First, to reduce the risk of careless responses, we ensured that all respondents agreed in their consent forms to participate voluntarily as potential stakeholders in the study's findings (Podsakoff et al., 2012). Second, we presented some of our items as reverse items as built-in acquiescence checks to control the effect of the acquiescence response (Meyer et al., 1990). Third, we mixed the order of the questions and also used different Likert scales to prevent the respondents from identifying and visualizing interactions and effects (Chang et al., 2020). Finally, we used an informant quality scale as our marker variable (Hultman et al., 2009). The marker variable was presented in a similar format to the rest of the substantive variables in the survey (Simmering et al., 2015).

We also took several *ex post* steps to control CMV to assuage concerns about CMV (Chang et al., 2020). First, we conducted Harman's single-factor analysis (Podsakoff et al., 2012). We entered all items into one exploratory factor and used Varimax principal rotation and Principal axis factoring extraction techniques to run the test. As a result, eight factors emerged, explaining 66.38% of the total variance. The first factor accounted for 12.34% of the total variance, showing that no single factor explained the majority of the variance. Second, we employed SPSS 24 to analyze the marker variable effect. We used an item from the Insomnia scale (Indicate the extent to which you experienced the following symptoms for the night before waking up several times). The item had a relatively large standard deviation (1.83), meaning it had a sufficient degree of variance to be utilized as the marker variable. We produced a bivariate correlation matrix containing the latent variables of our study. Then the



same constructs, along with the marker variable, were used to produce a partial correlation matrix (Hultman *et al.*, 2009). The relatively small average difference between the two models revealed that the influence of the marker variable was unlikely (Chang *et al.*, 2020; Lindell and Whitney, 2001). We also added the marker variable to our structural model, and the mediation model remained the same in terms of the significance of the mediation path (Chang *et al.*, 2020). Combining both *ex ante* and *ex-post* steps ensured that CMV was not a serious risk in our study.

### 3.4 Measures

Several established measures were used to collect our data. Using established measures ensured the content validity of our scales (Peter, 1981). Specific items of each scale are presented in Appendix.

*EA.* We used Tang *et al.*'s (2012) scale to measure alertness. We used six items for scanning and search, three items for association and connection and four items for evaluation and judgment. We used a five-point Likert scale (1 as "Completely disagree", 5 as "Completely agree").

*Effectuation.* We used Chandler *et al.*'s (2011) scale to measure the decision-maker's effectual logic. Following Chandler *et al.* (2011) and Smolka *et al.* (2018), we conceptualized effectuation as a four-dimensional construct entailing experimentation, affordable loss, flexibility and pre-commitment. We used three items for experimentation, three items for affordable loss, four items for flexibility and two items for pre-commitment. We used a five-point Likert scale (1 as "Completely disagree", 5 as "Completely agree").

*Firm sales and financial performance.* We measured the sales and financial performance in terms of growth of sales, sales volume, return on assets, return on sales, growth in productivity, profitability and growth in profitability. We asked "Compared to your industry average, 'how would you grade your company's performance on the following indicators? Please circle the number that best represents your opinion'. We used a 7-point Likert scale (1 as "Far below average", 7 as "Far below average").

### 3.5 Control variables

We controlled several important variables with potential impact on our substantive variables. We measured the *causal logic of decision-making*, considering that causal logic of decision-making may be applied by the decision-makers of small firms depending on the situation (Saravathy, 2001). Causal logic is also important, considering the emphasis on discovery opportunities in alertness research (Kirzner, 1999). We used Smolka *et al.*'s (2018) scale, including 5 items to measure causal logic. We used a 5-point Likert scale (1 as "Completely disagree", 5 as "Completely agree"). *Firm size* was controlled, assuming that the size may influence firms' access to resources (Zahra *et al.*, 2000) and their performance (Storey, 1989). Also, knowing that a larger size may result in the application of more causal logic rather than effectual logic in decision-making (Schweizer *et al.*, 2010). We measured the firm size in terms of the number of its employees. *The respondents' gender* was also controlled for several reasons. First, gender has been important in entrepreneurship research, so the research on gender in entrepreneurship has evolved from "gender as a variable" to gender as an influence, and more recently, "the gendered nature of entrepreneurship" (Henry *et al.*, 2016). Second, gender is argued to be influential in both effectual decision-making and EA (e.g. Cowden *et al.*, 2023). Considering the importance of top management in strategic decision-making in small firms, and their access to the firm's resources, *position in the firm and authority to make decisions* were also controlled. The respondents had to choose from four options as follows: 1 as "I am the sole decision-maker", 2 as "I am the main or joint decision-maker", 3 as "I have some decision-making power" and 4 as "I don't make decisions

for the business.” Finally, we controlled the *location of the firms* to ensure that our respondents represented the entire country. We collected the data from 16 locations across the country, including the north and south islands.

## 4. Analysis and results

### 4.1 Measurement model

We started with the assessment of the validity and reliability of our measures. First, using SPSS 24, we conducted an exploratory factor analysis. We used principal component analysis extraction and a Varimax with Kaiser normalization technique (Peterson, 2000). The Kaiser–Meyer–Olkin (KMO) test of sampling adequacy (0.90) and Bartlett’s test of sphericity ( $\chi^2$  2066.92; df 190; Sig. 0.00), produced satisfactory results for the EA construct (explaining 61% of the total variance). Also, KMO (0.76) and Bartlett’s test ( $\chi^2$  766.13; df 66; Sig. 0.00) produced satisfactory results for the effectuation construct (explaining 66% of the total variance). Finally, KMO (0.89) and Bartlett’s test ( $\chi^2$  1131.06; df 15; Sig. 0.00) produced satisfactory results for the sales and financial performance construct (explaining 75% of the total variance). Using SmartPLS v.3.3.2, a confirmatory factor analysis was employed (Souchon et al., 2016). The final multi-item scales were satisfactory, and all items were loaded to their relevant factors [square root mean error (SRMR) 0.08, RMS Theta 0.12; Henseler et al., 2014].

Second, we assessed Cronbach’s alpha for all variables and the alpha scores were all above the required threshold of 0.7 (Nunnally, 1978). We also calculated the composite reliabilities (CR) to assess the internal consistency of our measurement scales. All CR scores were above the accepted level of 0.7 (Hair et al., 2013). Third, we assessed convergent validity through the average variance extracted (AVE). The AVEs of all items were above the accepted threshold of 0.5 (Hulland, 1999). Fourth, we assessed the discriminant validity of our scales (indicated on the diagonal in Table 1). Table 1 summarizes the descriptive statistics.

### 4.2 Structural model

We examined the explained variance, significance and size of coefficients in our structural paths to test our hypotheses. Following Hair et al. (2013), we tested the precision of the structural paths in the model (Tibshirani and Efron, 1993) by using the bootstrapping technique (with 500 subsamples). Hypothesis 1 proposed that EA enhances small firms’ performance. The path between EA and firm financial performance was significant ( $\beta = 0.31$ ,  $t = 5.76$ ,  $p < 0.01$ ). Hypothesis 2 proposed a positive association between EA and effectuation. The path between EA and effectuation was significant ( $\beta = 0.54$ ,  $t = 12.83$ ,  $p < 0.01$ ). Hypothesis 3 proposed a positive relationship between effectuation and firm financial performance. The path between effectuation and firm financial performance ( $\beta = 0.42$ ,  $t = 8.17$ ,  $p < 0.01$ ) was significant.

Hypothesis 4 proposed a mediation role for effectuation in the association between alertness and firm financial performance. We followed Baron and Kenny’s (1986) advice and considered four conditions for a mediation relationship as follows. (1) The independent variable is significantly correlated with the dependent variable; (2) the independent variable is significantly correlated with the mediator; (3) the mediator is significantly correlated with the dependent variable; and (4) after adding the mediator to the model, the significant correlation between the independent and dependent variables become insignificant. Our results for hypotheses 1–3 met the conditions a, b and c. We then entered the mediator variable into the model. The results showed an insignificant relationship between EA and firm sales and financial performance ( $\beta = 0.06$ ,  $t = 0.78$ , n.s.), indicating that the last condition for full mediation was met. A significant relationship between EA and effectuation ( $\beta = 0.54$ ,  $t = 11.32$ ,  $p < 0.01$ ), effectuation and firm performance ( $\beta = 0.26$ ,  $t = 2.81$ ,  $p < 0.01$ ), revealed a significant mediation path between EA-effectuation-firm financial performance (Figure 2).

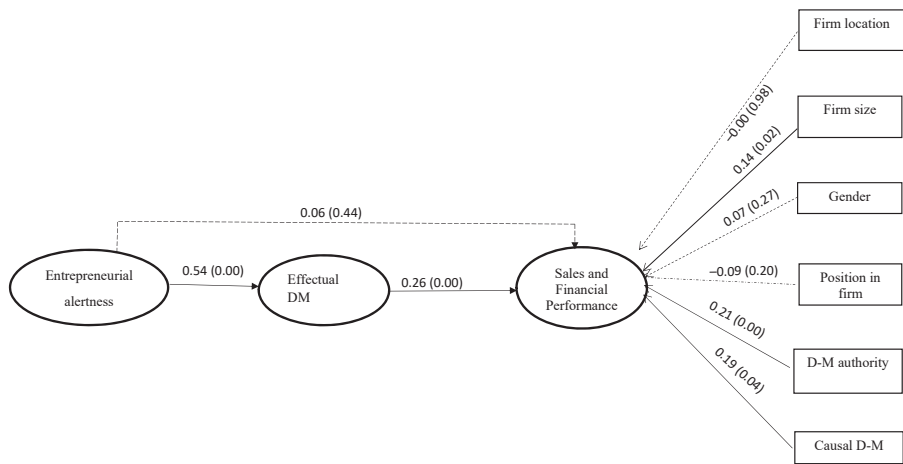
Variable	Cronbach	CR	Mean	SD	1	2	3	4	5	6	7	8	9
1. Location	—	—	6.55	4.88									
2. Firm size	—	—	2.15	1.20	0.01								
3. Gender	—	—	1.50	0.50	0.04	0.05							
4. Position in firm	—	—	1.65	0.95	0.03	0.59**	0.14*						
5. Decision-making authority	—	—	1.65	0.77	0.01	0.56**	0.12	0.64**					
6. Causal decision-making	0.84	0.89	3.40	0.70	−0.02	0.05	−0.02	−0.07	−0.09	(0.78)			
7. EA	0.86	0.88	3.63	0.51	−0.02	0.03	−0.08	0.01	0.00	0.50**	(0.61)		
8. Effectual DM	0.76	0.82	3.55	0.45	−0.13*	0.08	−0.03	0.02	−0.00	0.65**	0.51**	(0.54)	
9. Financial performance	0.94	0.95	4.28	1.10	−0.04	0.23**	0.05	0.11	0.22**	0.36**	0.26**	0.39**	(0.86)
10. Marker	—	—	—	—	0.09	0.03	−0.03	0.07	−0.01	−0.04	0.08	0.11	—

**Note(s):** \*Correlation is significant at the 0.05 level. \*\*Correlation is significant at the 0.01 level. Two-tailed test

**Source(s):** Created by authors

**Table 1.**  
Descriptive statistics  
and pairwise  
correlations for  
comparison analysis

Small firms’  
performance

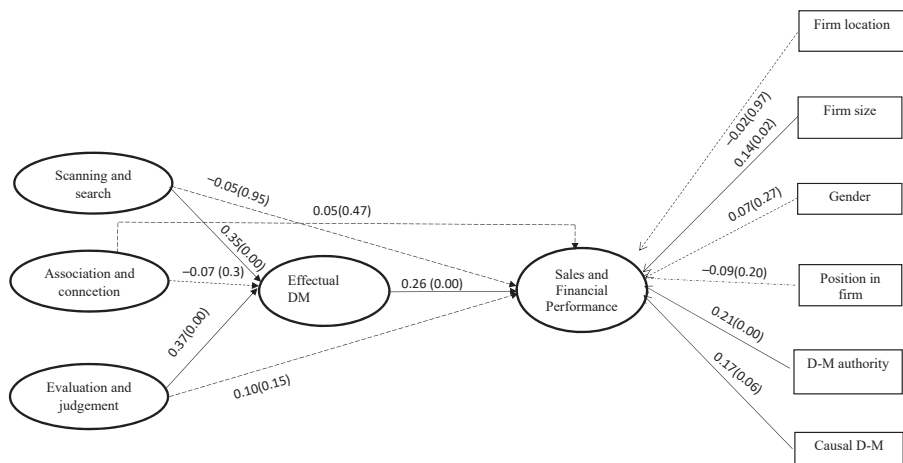


**Figure 2.** Structural equation model of mediators between EA and firm performance

**Note(s):** Standardized parameter estimates are shown with *p*-values  
**Source(s):** Created by authors

4.3 Robustness checks

We tested two alternative models. First, we tested our model by using a different set of theoretically related control variables in search of alternative explanations (Cuervo-Cazurra *et al.*, 2016). We used education, managerial experience and work experience as control variables, and the resultant model was largely consistent with our structural model showing the robustness of our model. Second, we used three different dimensions of EA as our independent variables. As a result, effectuation mediated the relationship between scanning and search and firm performance and also between evaluation and judgment and firm performance. Effectuation did not mediate the relationship between association and connection and firm performance (Figure 3).



**Figure 3.** Structural equation model of mediation between three dimensions of EA and firm performance

**Note(s):** Standardized parameter estimates are shown with *p*-values  
**Source(s):** Created by authors

## 5. Discussion

This study aimed to investigate the role of effectuation logic in mediating the impact of EA on small firm performance. Our findings supported the direct association between alertness and small firm performance (Araujo *et al.*, 2023) and added a further layer of understanding by showing that effectuation is a mechanism that translates individual alertness into firm-level performance. To establish this mediation relationship, our findings revealed that individual alertness is associated with the effectual logic of decision-making (Sirén *et al.*, 2019) and effectuation strongly enhances small firm performance (Lupp, 2023). While each of these associations was independently tested previously, our findings have uncovered a mediated relationship between alertness and effectual decision-making in small firms.

### 5.1 Theoretical implications

The extant literature has limited studies relating EA with effectuation (Sirén *et al.*, 2019). Our study confirms a positive association between EA and effectuation that, in turn, enhances small firms' sales and financial performance. While prior findings show that both EA and effectual decision-making enhance small firms' financial and market performance through the successful development of new market opportunities, the association between the two is less studied. It is partly due to a theoretical debate within the existing literature that positions alertness in the opportunity discovery stream and effectuation in the opportunity creation stream. We take a pragmatist epistemology and acknowledge the critical importance of both individual alertness and effectuation in enhancing small firms' marketing and financial performance. We find strong support for EA as an antecedent for effectuation as all elements of EA have a significant association with effectuation. The effectual entrepreneurs use scanning and search, association and connection and evaluation and judgment in sense-making of uncertain market situations to improve their market share and develop new products or markets. Considering the role of alertness in developing marketing intelligence, this finding adds to our understanding of the association between small firms' strategic marketing approach, firm size and resource allocation and information use (Cacciolatti and Fearn, 2013).

This study contributes to entrepreneurship and entrepreneurial marketing literature by theorizing effectuation as a mechanism that translates individual-level alertness into firm-level performance. As such, alertness adds to small firms' marketing intelligence and enables them to develop new market opportunities. Using distinct elements of alertness: scanning and search, association and connection and evaluation and judgment as proposed by Tang *et al.* (2012), our study provides a more detailed understanding of the association between alertness, effectuation and performance. By doing so, we address Kirzner's (1999) concern about the critical role of entrepreneurial action in translating potential market opportunities into profitable opportunities for product innovation and market extension. Effectuation furnishes a mechanism that empowers alert entrepreneurs to take action, fostering commitment with key stakeholders in the market and facilitating access to their resources for the exploitation of new opportunities in product and market development (Townsend *et al.*, 2018).

Our findings also contribute to effectuation theory by theorizing EA as a critical antecedent for effectuation. The effectual process of a new product or market development starts with "who I am, what I know, and whom I know" (Saravathy, 2001). As argued by Baker and Nelson (2005), alertness toward resources is a critical factor in advancing marketing intelligence and using the existing means in identifying and exploiting new market opportunities. As such, alertness can be considered a critical antecedent for entrepreneurial marketing. By integrating alertness and effectuation theory, we add to the understanding of entrepreneurial marketing as an effectual process.

Traditionally, alertness has been categorized as a theory of opportunity discovery (e.g. Fiet and Patel, 2008; Yu, 2001) and effectuation as a creation theory (Alvarez and Barney,

2007). We take a pragmatist epistemology and argue that entrepreneurs, in reality, do not care about such divisions. On the contrary, they take a pragmatist approach (Read *et al.*, 2016) and use their alertness along with other available means to make sense of the market situation and act to actualize new futures. This aligns with Weick's (1999, p. 135) concept of 'living forward' as "a blend of thrownness, making do, journeys stitched together by faith, presumptions, expectations, alertness, and action".

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### 5.2 Practical implications

The findings also offer guidance for founders and managers of small firms on how to effectively leverage EA and effectuation logic to improve their marketing and financial performance. Firstly, it underscores that managers can harness the power of EA to advance their marketing intelligence and enhance their firm's performance. Marketing intelligence plays a critical role in small firms' strategic marketing. EA empowers firms to identify new product or market development opportunities ahead of their competitors and, therefore, increases their competitive advantages. By dissecting alertness into its key dimensions, small firm founders and managers can recognize the significance of proactively seeking valuable information, networking with key informants, making connections between pieces of information and evaluating the market situation based on available data. Such practices help them develop strategic marketing intelligence in the long term.

Secondly, it suggests that alertness to market opportunities becomes more beneficial in terms of enhancing a small firm's performance when it is employed within an effectual process of new product and market development as part of small firms' marketing strategy. Integrating effectuation into the marketing strategy formation process enables small firm founders and managers to utilize their market alertness and advance their marketing intelligence. As such, they can identify market opportunities and share them with potential customers, channel members, suppliers and other stakeholders. This collaborative effort helps all involved parties collectively make sense of the uncertain market situation, leading to the successful development of new products or markets.

### 5.3 Limitations and future research directions

This study has several limitations. First, effectuation is operationalized as an umbrella concept in this study, encompassing several principles like partnership, learning and serendipity. Future research could delve deeper into the effectuation principles and mechanisms, exploring the associations between each effectual principle and elements of EA.

Second, this study was cross-sectional, offering only a snapshot of reality. Given the evolving nature of both EA and effectuation logic due to work and life experiences, future research may benefit from a longitudinal approach to better understand the association between these two concepts over time and throughout different stages of small firm formation and development.

Third, effectuation theory acknowledges the applicability of causal decision-making logic in strategic marketing planning depending on the situation (Sarvasvathy, 2001). Although we controlled for causation in our model, we did not theorize a different trajectory for causal decision-making. Since the literature emphasizes the association between alertness and opportunity discovery, as well as the relationship between causal decision-making and opportunity discovery, future research could consider juxtaposing both planned and unplanned marketing trajectories in one model to provide a more comprehensive picture of EA and its impact on small firms marketing performance. This is an important issue, considering the prevalence of marketing planning approaches in some firms.

Marketing intelligence is a key concept in marketing with critical importance in marketing strategy (Folsom, 1991). The role of marketing intelligence is especially highlighted for small firms (Caccioliatti and Fearn, 2013), due to their liabilities of limited resources which make



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market research challenging for them. Future research can further develop the concept by integrating it with EA and investigating how the effectuation process yields more marketing intelligence for small firms.

#### 5.4 Conclusions

This study explores how small firms apply effectual logic to transform their individual awareness of market opportunities into firm performance. By integrating EA with effectuation theory, this study contributes to the literature on new market opportunity development and small firm performance. Using survey data from New Zealand, this quantitative study demonstrates that effectuation serves as a mediator, facilitating a positive link between founders/managers' market opportunity awareness, or marketing intelligence and the performance of small firms. The study emphasizes that entrepreneurs of small firms prioritize action and resource allocation to further cultivate new market opportunities. It reveals that small firms' marketing intelligence depends largely on their founders'/managers' alertness to new market opportunities. Additionally, it enriches our understanding of entrepreneurial marketing decision-making within the context of small firms operating in the Asia Pacific region, particularly in relatively small economies.

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## Appendix

## Small firms' performance

Entrepreneurial alertness	Factor loading
<i>Scanning and search</i>	
I have frequent interactions with others to acquire new information	0.44
I read newspapers, magazines or trade publications regularly to acquire new information	0.51
I browse the Internet every day	0.45
I am an avid information seeker	0.63
I am always actively looking for new information	0.59
I always keep an eye out for new business ideas when looking for information	0.70
<i>Association and connection</i>	
I see links between seemingly unrelated pieces of information	0.65
I am good at connecting dots	0.62
I often see connections between previously unconnected domains of information	0.69
<i>Evaluation and judgment</i>	
I have a gut feeling for potential business opportunities	0.69
I can distinguish between profitable opportunities and not-so-profitable opportunities	0.69
I have a knack for telling high-value opportunities apart from low-value opportunities	0.64
When facing multiple business opportunities, I am able to select the good ones	0.62
<i>Effectuation</i>	
<i>Experimentation</i>	
I experimented with different products and/or business models	0.84
The product/service that we now provide is substantially different than we first imagined	0.85
I tried a number of different approaches until I found a business model that worked	0.72
<i>Flexibility</i>	
I allowed the business to evolve as opportunities emerged	0.65
I adapted what we were doing to the resources I had	0.83
I was flexible and took advantage of opportunities as they arose	0.76
<i>Pre-commitment</i>	
I used a substantial number of agreements with customers, suppliers, and other organizations and people to reduce the amount of uncertainty	0.84
I used pre-commitments from customers and suppliers as often as possible	0.85
<i>Affordable loss</i>	
I was careful not to commit more resources than we could afford to lose	0.84
I was careful not to risk more money than I was willing to lose with our initial idea	0.81
I was careful not to risk so much money that the company would be in real trouble financially if things did not work out	0.73
<i>Firm sales and financial performance</i>	
<i>Compared to your industry average, how would you grade your company's performance on the following indicators?</i>	
Growth of sales	0.83
Sales volume	0.86
Return on assets	0.83
Return on sales	0.87
Growth in productivity	0.89
Profitability	0.88
Growth in profitability	0.88
<b>Source(s):</b> Created by authors	

**Table A1.**  
Measurement items  
and validity  
assessment

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**About the authors**

Masoud Karami is Lecturer in the Department of Marketing, at Otago University in New Zealand. Masoud's research area is effectuation theory, co-creative entrepreneurship and international Entrepreneurship. He has published in journals such as the *Journal of Business Venturing*, *Technovation*, *Small Business Economics*, *Asia Pacific Journal of Management*, *Journal of Business Research*, *Industrial Marketing Management* and *Journal of Business Venturing Insights*, among others. Masoud Karami is the corresponding author and can be contacted at: [m.karami@otago.ac.nz](mailto:m.karami@otago.ac.nz)

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Mokter Hossain is Assistant Professor at the Center for Entrepreneurship, College of Business and Economics, Qatar University. His research interests lie at the intersection of entrepreneurship, innovation, and strategy on frugal innovation, open innovation, crowdsourcing, crowdfunding, sharing economy, etc. Dr Hossain's research has appeared in journals such as *California Management Review*, *IEEE Transactions on Engineering Management*, *Journal of Cleaner Production*, *Management and Organization Review*, *Technology Forecasting*, *Social Change* and *R&D Management*.