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The effects of entrepreneurial orientation and marketing information on the performance of SMEs[☆]

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Abstract

In this study, we investigate the effects of entrepreneurial orientation and marketing information on the performance of small and medium-sized enterprises. We build and test a causal model using data obtained from Singaporean entrepreneurs and find support for most of our hypotheses. The results indicate that entrepreneurial orientation plays an influential role on the acquisition and utilization of marketing information, and also has a direct effect on firm performance. The utilization of information regarding marketing mix decisions (particularly the Promotion and Place elements) positively affects firm performance, and it partially mediates the relationship between entrepreneurial orientation and firm performance. The implications and future research directions are discussed.

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Keywords: Entrepreneurial orientation; Information acquisition; Information utilization; Marketing mix; Firm performance

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1. Executive summary

The literature indicates that entrepreneurial orientation (EO), with its three core dimensions of risk-taking, acting proactively and innovativeness, has a positive impact on firm performance. Previous research has found that firms with high levels of EO tend to constantly scan and monitor their operating environment in order to find new opportunities and strengthen their competitive positions. This suggests that the level of EO in the firm could be a predictor of the acquisition and utilization of information. In this study, we seek to examine how EO affects, both directly and indirectly, the performance of small and medium-sized enterprises (SMEs). Specifically, in addition to the direct impact of EO on firm performance, we also investigate how EO influences information acquisition (IA) and information utilization (IU), and whether IA and IU mediate the relationship between EO and firm performance.

From both practice and research, it has been found that many SMEs are interested in information on their customers and competitors in order to differentiate their offerings and positioning. More importantly, beyond acquiring information, entrepreneurs also need to *use* this information to aid in their marketing decision-making. Based on the marketing mix framework, we define marketing decision-making as decisions pertaining to the 4Ps (Product, Price, Promotion, and Place), which help entrepreneurs to better meet the needs of their customers and compete more effectively against their competitors. As the basic building-block of market orientation consists of the acquisition and utilization of information on customers and competitors to improve marketing decision-making, we expect both IA and IU to have positive impact on firm performance.

In order to test our research framework, we conducted a survey on SMEs located in Singapore. Using contact information from three business directories, we carried out a mass mailing of 2000 emails and 239 regular mails. Of these, we ended up with 294 usable responses. There is a wide spread of businesses in our sample, with the two top sectors being the Retail/Sales (20.1%) and Service (19.7%) sectors. Most firms in our sample are relatively small yet established, with 82% of them having fewer than 35 employees, and 66.3% of them being more than five years old.

The findings from our study show that the level of EO has both direct and indirect (partially mediated by IU) effects on firm performance. EO is a strong predictor of both IA and IU. To take full advantage of EO, in which creative, proactive and risk-taking actions are encouraged, SMEs should comprehensively and accurately acquire and utilize information about customers and competitors to enhance marketing strategy decisions.

Our empirical analysis also indicates that information must be used in order to benefit from it. In particular, we do not find evidence for the positive impact of IA on firm performance. However, we find a positive relationship between information utilization to make marketing decisions and subsequent firm performance. Specifically, we find that the use of marketing information relating to the Promotion and Place (distribution and location) elements have significant impact on firm performance. We conjecture that the Price and Product elements are less influential as (1) SMEs tend to be price-takers in the industry, with little ability to shift the price level for specific product categories or to actively change prices. We believe that there is also a trade-off between Price and Promotion elements, and (2) small firms may not have sufficient funding to invest heavily in R&D efforts to develop radically

new products, and tend to make incremental product changes. This can be explained by the concept of an ‘entry wedge,’ which represents a way to break into the established pattern of commercial activity. The most popular form of entry wedge is ‘parallel competition,’ where the product already exists, and the firm’s advantage derives from minor variations in the product. In addition, many firms in our sample are not from the manufacturing sector.

In summary, our study contributes to a better understanding of the importance of EO in enhancing SME firm performance. EO has both direct and indirect impact on firm performance. IU demonstrates a positive effect on firm performance, and also plays the role of a partial mediator in the relationship between EO and firm performance.

2. Introduction

In entrepreneurship research, entrepreneurial orientation has been found to have a positive impact on firm performance (e.g., [Covin and Slevin, 1991](#); [Smart and Conant, 1994](#); [Wiklund, 1999](#)). Firms with high levels of entrepreneurial orientation tend to constantly scan and monitor their operating environment in order to find new opportunities and strengthen their competitive positions ([Covin and Miles, 1999](#)). As part of their environment scanning and monitoring activities, firms look for information that can help them better meet the needs of their customers, manage their risk taking, as well as challenge their competitors. While large firms typically have the resources to conduct extensive market research to gather such information, it is not clear to what extent small and medium-sized enterprises (SMEs) engage in information acquisition and utilization, and whether such activities influence firm performance.

In both streams of entrepreneurship and marketing literature, it has been noted that information on customers and competitors has significant effect on marketing decision-making ([Smeltzer et al., 1988](#); [Brush, 1992](#); [Menon and Varadarajan, 1992](#); [Deshpandé and Zaltman, 1982](#)). There is a need to continuously gather information on customer needs and competitor capabilities in order to deliver consistently high-quality products and services as well as to create superior customer value ([Slater and Narver, 1998](#)). However, previous research efforts examining the effect of marketing information were limited by the lack of in-depth marketing variables studied ([Perkins and Rao, 1990](#); [Schafer, 1990](#)).

After acquiring information, it is crucial that SMEs use the information to their advantage. Unless the collected information is used, it does not provide any tangible benefit. Unfortunately, with few exceptions ([Johnson and Kuehn, 1987](#); [Brush, 1992](#); [Cooper et al., 1995](#); [Butler et al., 2000](#)), most researchers on SMEs do not consider information utilization. As such, the literature has not addressed how SMEs use marketing information to enhance firm performance. We also do not know how entrepreneurial orientation shapes the extent of information acquisition and utilization.

Based on the identified gaps in the literature, in this article we seek to answer the following questions:

- How does the level of entrepreneurial orientation affect the information acquisition and utilization activities, as well as the performance of SMEs?
- What are the roles of information acquisition and information utilization in the relationship between entrepreneurial orientation and the performance of SMEs?

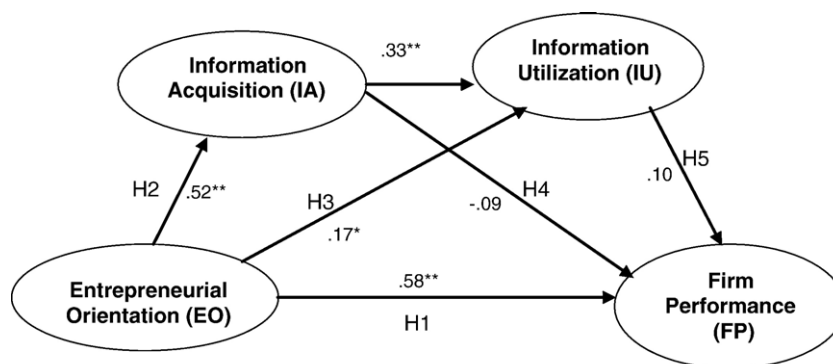
- Do greater acquisition and utilization of marketing information lead to higher levels of SME firm performance?
- Are there differential effects among the four elements of the marketing mix (product, price, promotion and place) on entrepreneurial performance?

This paper is organized in the following manner. In the next section, we develop the model and the associated hypotheses. Subsequently, we describe the methodology, conduct the analysis, discuss the results, and provide managerial implications. Our concluding remarks summarize our contributions, limitations and suggestions for future research.

3. Model and hypotheses development

As shown in Fig. 1, our model explains how entrepreneurial orientation influences the performance of SMEs directly and indirectly via the acquisition and utilization of marketing information.

Since Miller and Friesen (1982) first proposed the construct of entrepreneurial orientation (EO) over twenty years ago, it has become a widely accepted means of explaining firm performance. EO refers to the “processes, practices, and decision-making activities that lead to new entry” (Lumpkin and Dess, 1996, p. 136), and has three core dimensions: entrepreneurial aspects of risk-taking, acting proactively and innovativeness. Risk-taking propensity involves the willingness to commit significant resources to exploit opportunities or engage in business strategies in which the outcome may be highly uncertain (Keh et al., 2002). Proactiveness reflects entrepreneurial willingness to dominate competitors through a combination of proactive and aggressive moves, e.g., introducing new products or services ahead of competition and acting in anticipation of future demand to create change and shape the environment. Finally, innovativeness refers to a firm’s tendency to engage in creative processes, experimentation of new ideas, which may result



* Path coefficients are significant at $p < .05$.

** Path coefficients are significant at $p < .01$.

Fig. 1. Results based on the 4Ps.

in the institution of new methods of production and/or bringing new products or services to current or new markets.

High EO is closely related to first-mover advantages and the tendency to take advantage of emerging opportunities, which ultimately has a positive influence on performance (Wiklund, 1999). In this article, we use both financial and non-financial measures of SME performance (Murphy and Callaway, 2004; Murphy et al., 1996; Gupta and Govindarajan, 1984). Lumpkin and Dess (1996) caution that when using a multi-dimensional construct of firm performance (FP), EO may have positive effect on one dimension (e.g., new product development), and a negative effect on another dimension (e.g., short-run profitability). However, the predominant evidence indicates positive correlations between EO and FP (e.g., Covin and Slevin, 1991; Smart and Conant, 1994; Wiklund, 1999). In particular, Smart and Conant (1994) contend that higher EO, together with a wide variety of distinctive marketing competencies, leads to higher performance. As such,

H1. Entrepreneurial orientation is positively related to firm performance.

Information acquisition processes refer to the collection of primary or secondary information from organizational stakeholders (Moorman, 1995). This involves environmental scanning, intelligence activities and the importation of resulting information into the firm. The construct Information Acquisition (IA) in our study is measured in terms of its sources—personal and impersonal—because in practice, entrepreneurs collect information from both of these sources. Personal sources of information are defined as those involving direct contact with people on a regular basis (Smeltzer et al., 1988), and include family, friends and customers. Some entrepreneurs prefer such intimate sources as they are viewed to be more directly relevant and reflective of their immediate operating environment (Schafer, 1990; Brush, 1992; Cooper et al., 1995). By the same token, impersonal sources are those without direct human contact (Smeltzer et al., 1988). Even though impersonal sources lack intimacy and firm-specificity, a survey by Sawyerr, Edbrahimi and Thibodeaux (2000) indicates that some entrepreneurs rely on impersonal sources such as newspapers and trade publications because they perceive them to have a more balanced approach and indicative of general trends and information. Such impersonal sources are inexpensive and may also provide some information on competitor marketing strategies, which is difficult to be obtained through personal means.

Information utilization (IU) is particularly important to firms' final decisions, because information is deemed to be worthless unless it is put to good use (Wilton and Myers, 1986; Deshpandé and Zaltman, 1982; Ottum and Moore, 1997). Menon and Varadarajan (1992) suggest that information utilization be conceptualized in terms of type and extent of usage in the decision-making process. They classify information utilization into action-oriented use, knowledge-enhancing use and affective use. Action-oriented use refers to information utilization that results in changes in the user's activities, practices or policies; knowledge-enhancing use would change the user's knowledge; while affective use would change the user's psychological status, such as her satisfaction or dissatisfaction, confidence or lack thereof, and trust or mistrust (Menon and Varadarajan, 1992).

Compared to action-oriented use, knowledge-enhancing use and affective use are difficult to measure because of their intangible outcomes. As a result, we measure information utilization as the extent to which a firm directly applies market information to

influence marketing-related actions (Deshpandé and Zaltman, 1982; Menon and Varadarajan, 1992). Past research indicates that small business owners regard marketing decisions as the most important, ahead of other corporate decisions such as finance and employee compensation (Pineda et al., 1998). In this paper, we operationalize marketing decision-making based on the 4Ps framework, which stands for product, price, promotion and place, also known collectively as the marketing mix. Despite its age, the 4Ps classification of the marketing mix remains the predominant method of understanding the essence of marketing (van Waterschoot and van den Bulte, 1992).

Johnson and Kuehn (1987) find that the small business owner/manager spends a large amount of time to seek marketplace information. For this reason, Kaish and Gilad (1991) labeled entrepreneurs as “avid information searchers.” Entrepreneurial orientation will increase a firm’s information acquisition and utilization activities in creative, proactive and risk-taking ways. In most cases, information acquisition and utilization tend to be risky as they involve substantial effort and expenditures. In addition, the outcomes of these activities are uncertain as they depend on many other influencing factors. Therefore, only SMEs with high levels of entrepreneurial orientation are likely to be active in information acquisition and utilization.

Moreover, having a proactive orientation involves discovering and satisfying the latent, unarticulated needs of customers through collecting customer- and competitor-based information (Slater and Narver, 1998). The external culture embedded in the proactive orientation also facilitates information utilization, entailing the design and implementation of marketing actions that influence external constituencies. As such, SMEs that display high levels of entrepreneurial orientation tend to constantly scan and monitor their operating environment in order to find new opportunities and strengthen their competitive positions (Covin and Miles, 1999).

Zaltman (1986) argues that if a firm has a pro-innovation bias, information is more likely to be shared and used. The innovativeness aspect of entrepreneurial orientation would promote change and creative behaviors, which encourage active exchange of ideas, increase information flows and novelty in new product development (Menon and Varadarajan, 1992; Han et al., 1998). Accordingly, we posit that EO has positive relationships with both IA and IU.

H2. Entrepreneurial orientation is positively related to information acquisition.

H3. Entrepreneurial orientation is positively related to information utilization.

Information is a powerful knowledge resource that can enhance competitive advantage. In particular, information pertaining to a firm’s customers and competitors are crucial towards the development of market orientation (Narver and Slater, 1990). Such information identifies changing customer desires and patterns. For example, it can reveal that customers favor certain brands or pay more attention to price and quality than to variety and novelty (Miller and Friesen, 1982), increase awareness on customer purchase trends and buying power (Xu and Kaye, 1995), and alert entrepreneurs to the disadvantages of their product lines and the superiority of the product lines of competitors (Miller and Friesen, 1982). Information on competitor locations and pricing policies are also critical towards the formation of SME competitive strategies (Butler et al., 2000).

Generally, firms that engage in more information search tend to have higher performance (Dollinger, 1984). For instance, Soh (2003) posits that firms with more efficient networking strategy tend to acquire more competitive information about other firms earlier, and this information advantage in turn leads to better new product performance. Brockman and Morgan (2003) also find that firms with more information about the product category tend to enjoy a higher level of new product performance in terms of profit margin and return on investment. We expect a similar relationship between information acquisition and overall firm performance, because information pertaining to customers and competitors enhance a firm's competitive advantage and eventually contributes to its overall performance (Narver and Slater, 1990; Kohli and Jaworski, 1990). This expectation is captured in the following hypothesis,

H4. Information acquisition is positively related to firm performance.

While information acquisition is obviously important, Diamantopoulos and Souchon (1999) contend that any information acquired by entrepreneurs bears little impact on firm performance unless it is put to good use in decision-making. Several studies indicate the crucial role of information utilization (Wilton and Myers, 1986; Miller and Friesen, 1982; Moorman, 1995; Ottum and Moore, 1997). However, these studies tend to look at only a part of the whole marketing strategy, e.g., new product development (Moorman, 1995; Ottum and Moore, 1997; Lybaert, 1998) or using information to assess alliance formation (Ottum and Moore, 1997). To date, research on information utilization based on the 4Ps remains limited. Conant and White (1999) observe that the use of information in market program planning impacts its effectiveness, which subsequently benefits financial performance. Previous research indicates that high levels of market orientation positively impact firm performance (Narver and Slater, 1990; Kohli and Jaworski, 1990). The utilization of information regarding customers and competitors to improve marketing decision-making is considered to be the basic building-block of market orientation. Thus, we postulate that better utilization of marketing information would lead to higher performance.

H5. Information utilization is positively related to firm performance.

In this study, both information acquisition and information utilization are regarded as partial mediators in the relationship between entrepreneurial orientation and firm performance.

4. Research methodology

4.1. Data collection method and sample size

The pool of business owners contacted was selected randomly from different industries (e.g., retail, manufacturing and service sectors) in Singapore. We focused on small businesses with fewer than 100 employees, where the likelihood of strategic influence on the company by the business owners was higher. Small business owners tend to be the most knowledgeable people in the company, and they were our target respondents. The contact list of potential respondents was obtained from three business directories in Singapore.

We contacted 2239 firms (we sent 2000 emails to firms with email addresses, and 239 regular mails to firms that did not provide email addresses). Three weeks after the first wave of mailings, we followed up with further emails and phone calls to nonrespondents (Dillman, 2000). Out of these, 308 surveys were returned, either electronically or through regular mailing, with 14 surveys rejected because of incompleteness. This gave a total of 294 usable responses, yielding a response rate of 13.1%. When conducting survey research, there is a concern related to nonresponse bias. In order to check for nonresponse bias, we compared the answers of early versus late respondents. We used a naturally-occurring breakpoint between the two response waves, and a multivariate *t*-test did not show any significant difference between early and late respondents ($p=.756$), suggesting that nonresponse bias is not a problem in our study (Armstrong and Overton, 1977).

Table 1 presents the characteristics of the respondents' firms. There was a wide spread of businesses, with the two top sectors being the Retail/Sales (20.1%) and Service (19.7%) sectors. In terms of size, 82.3% of the entrepreneurial firms have fewer than 35 employees and 41.2% of them have five or fewer employees. The age of the companies surveyed was skewed towards more established ventures, with 66.3% of them being more than 5 years old, and 42.9% having existed for more than 10 years.

Table 1
Descriptive statistics of firms surveyed

Company characteristics	Frequency	Cumulative frequency	Percentage (%)	Cumulative percentage (%)
<i>Industry:</i>				
Education	18	18	6.1	6.1
Food and beverage	27	45	9.2	15.3
Manufacturing/production	28	73	9.5	24.8
Service	58	131	19.7	44.6
Finance/banking/insurance	9	140	3.1	47.6
IT/computer/internet	21	161	7.1	54.8
Retail/sales	59	220	20.1	74.8
Others	74	294	25.2	100.0
<i>Number of employees:</i>				
0–5	121	121	41.2	41.2
6–10	37	158	12.6	53.7
11–15	29	187	9.9	63.6
16–20	21	208	7.1	70.7
21–25	12	220	4.1	74.8
26–30	16	236	5.4	80.3
31–35	6	242	2.0	82.3
More than 35	52	294	17.7	100.0
<i>Years in business:</i>				
Less than 5 years	99	99	33.7	33.7
6–10 years	69	168	23.5	57.1
More than 10 years	126	294	42.9	100.0

4.2. Questionnaire construction

All items in the questionnaire (Sections A to D) were adapted from published works that were relevant to our study, as shown in Table 2. Section A measures the frequency and the source used by entrepreneurs to collect information. The items for information acquisition are measured using a 5-point Likert scale (1—Never to 5—Always). Section B measures the degree of information utilization by entrepreneurs to make marketing mix decisions. A 5-point Likert scale (1—Strongly Disagree to 5—Strongly Agree) is used, indicating the extent to which the entrepreneurs agree with the sentence. Measures for the three dimensions of entrepreneurial orientation in Section C are extracted from Covin and Slevin (1989) and Miller and Friesen (1982). However, unlike previous works using 7-point numerical differential scales, all items here are measured using 5-point Likert scales (1—Strongly Disagree to 5—Strongly Agree), in order to be consistent with other items in the questionnaire.

In Section D, all performance measures of the companies are subjective, i.e., according to the perception of the respondent. As advocated by Murphy and Callaway (2004), both financial and non-financial performance measures are employed. There is little or no published financial data on our sample, which consists of private firms, and independent business owners are often reluctant to share objective performance information (Smart and Conant, 1994). Financial performance, therefore, is measured by benchmarking the respondents' own business performance to those of competitors' based on profitability, sales growth, market share and overall performance. Although there are limitations to perceptual data in terms of increased measurement error and potential for mono-method bias, previous research indicates that perceptual measures correlate positively with objective measures of firm performance (Murphy and Callaway, 2004; Murphy et al., 1996; Gupta and Govindarajan, 1984). A 5-point Likert scale is used (1—Much Weaker to 5—Much Better). Non-financial performance is captured by three items pertaining to realizing the start-up goals, offering job security to employees, and satisfaction with overall performance. A 5-point Likert scale (1—Strongly Disagree to 5—Strongly Agree) is used to measure the degree of agreement with each item.

5. Results

5.1. Analysis of the measurement model

All the scales in our study were first subjected to exploratory factor analysis (principal components analysis using varimax rotation with a criterion of eigenvalue greater than 1.0) to test the constructs' underlying dimensions and to look for a more parsimonious set of variables for subsequent analysis. The construct reliability was assessed using coefficient alpha. All scales demonstrated good reliability. The final measurement items and coefficient alpha for each scale are presented in Table 2.

In our study, we are particularly interested in the relationships among several constructs: entrepreneurial orientation (EO), information acquisition (IA), information utilization to make marketing mix decisions (IU), and firm performance (FP). For the purpose of parsimony and measurement error reduction, we used composite measures to

Table 2
Final measurement items

Construct	Items	No. of items	Sources of adopted items	α
<i>Section A^a:</i>				
Acquisition of information from both personal sources and impersonal sources	Customers (themselves) Employees/staff Business associates/partners Published company reports Professional books/references Research publications	12	Johnson and Kuehn (1987), Smeltzer, Fann and Nikolaisen (1988), Schafer (1990), Brush (1992), Mohan-Neill (1995), Xu and Kaye (1995)	0.894
<i>Section B:</i>				
Information utilization to make marketing mix decisions — product	Without the information I collected about customers and competitors, the decision made on the type of product/service (provided by my company) would be very different. (more as perceived use of information)	13	Deshpandé and Zaltman (1982), Moorman (1995), Diamantopoulos and Souchon (1999)	0.894 (for all 13 items)
	No product/service offering decision would have been made without the information I collected about customers and competitors. I rely heavily on the information collected on customers and competitors to make decisions relating to the product/service offerings.	3		

(continued on next page)

Table 2 (continued)

Construct	Items	No. of items	Sources of adopted items	α
Information utilization to make marketing mix decision — distribution/location	<p>Without the information I collected about customers and competitors, the decisions made on the distribution/location of my store(s) would be very different.</p> <p>No distribution/location decisions would have been made without the information I collected about customers and competitors.</p> <p>The majority of the customer and competitor information I collect was not used in making distribution/location of store decisions.^b</p> <p>I rely heavily on the information collected on customers and competitors to make decisions relating to my store's distribution/location.</p>	4		0.820
Information utilization to make marketing mix decisions — promotions	<p>Without the information I collected about customers and competitors, the decisions made on the type of promotions for my business would be very different.</p> <p>No promotions decisions would have been made without the information I collected about customers and competitors.</p> <p>I rely heavily on the information collected on customers and competitors to make decisions relating to promotions for my business.</p>	3		0.807

Information utilization to make marketing mix decisions — pricing	<p>Without the information I collected about customers and competitors, the pricing decisions made for my business would be very different.</p> <p>No pricing decisions would have been made without the information I collected about customers and competitors. I rely heavily on the information collected on customers and competitors to make pricing decisions for my business.</p>	3		0.746
<i>Section C:</i>				
Entrepreneurial orientation — innovativeness	<p>In my company, there exists a very strong emphasis on R&D, technological leadership and innovations.</p> <p>My company introduced many new lines of products or services in the past 5 years.</p> <p>The changes in product lines (types/number of products) for my company have usually been dramatic.</p>	8	Miller and Friesen (1982), Covin and Slevin (1989)	0.834
Entrepreneurial orientation — proactiveness	<p>My company is typically the first to initiate actions to competitors, for which the competitors then respond.</p> <p>Very often, my firm is the first company to introduce new products/services, techniques, technologies etc.</p>			

(continued on next page)

Table 2 (continued)

Construct	Items	No. of items	Sources of adopted items	α
Entrepreneurial orientation — risk taking	I have a strong preference for high-risk projects (with chances of very high return). I believe that, owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives. When confronted with decision-making situations involving uncertainty, my firm typically adopts a cautious, 'wait and see' posture in order to minimize the probability of making costly decisions. ^b			
<i>Section D:</i>				
Firm performance — financial	Profitability ^c Sales growth ^c Market share ^c Overall performance ^c	7	Murphy, Trailer and Hill (1996), Wiklund (1999), Butler, Keh and Chamornmarn (2000)	0.892
Firm performance — non-financial	Achieve start-up goals Provide secure job to employees Satisfaction with company's performance		Murphy and Callaway (2004); Murphy, Trailer and Hill (1996); Gupta and Govindarajan (1984)	

^a Items for information acquisition on customers and competitors.

^b Reverse coded item.

^c Performance items are self-reported and are measured relative to those of competitors'.

test the model (Hair et al., 1998). We followed the latent variable approach that the underlying construct is assessed indirectly by measures of its various manifestations (cf., Carver, 1989). Specifically, in this study EO was proposed to have three underlying dimensions (i.e., innovativeness, proactiveness, and risk taking). Since the three subscales are manifestations of EO, we use the summed construct measure instead of the individual subscales. Similarly, IA was measured by its two manifestations (acquisition of personal or impersonal information about customers and competitors), IU was captured using four items (information utilization to make decisions on each of the four marketing mix elements), and FP was assessed using two dimensions (financial and non-financial performance).

The full measurement model was constructed using all eleven indicator variables and the four constructs as latent variables (one exogenous variable and three endogenous variables). The results of the confirmatory factor analysis (using AMOS 4.0) exhibited a good level of fit: $\chi^2(38)=97.51$, $p<.001$. Other fit statistics were RMR=.04, RMSEA=.07, GFI=.94, CFI=.96, and TLI=.94. All t -tests of the indicator variables were significant at the .001 level. We also assessed each construct's reliability based on composite reliability (CR) and variance extracted measure (VE) (Hair et al., 1998). The results are reported in Table 3, showing that all construct reliabilities and variance extracted measures were above the cutoff values of .70 and .50, respectively (Hair et al., 1998).

5.2. Testing the hypothesized structural model

We estimated the structural model using AMOS 4.0. The overall fit statistics indicated a good fit of the model ($\chi^2(38)=97.51$, $\chi^2/df=2.6$, GFI=.934, CFI=.96, TLI=.94, RMR=.04, RMSEA=.07). All fit indices for our structural model achieved or exceeded the usually recommended threshold values. We tested a total of five hypotheses. Fig. 1 provides the standardized path coefficients and associated t -statistics of the model.

As predicted in H1, the path from EO to FP was significant and positive. Our results also support H2 and H3: Entrepreneurial orientation was a significant predictor of information acquisition and information utilization.

Contrary to our expectation for H4, the path from IA to FP was found to be negative and non-significant. Therefore, information acquisition was not a mediator of the relationship between EO and FP. This issue will be discussed subsequently. H5 also failed to obtain support from the data. We posited that firm performance would be higher if entrepreneurs were to make use of the information they collected. Although the relationship was positive

Table 3
Measurement properties

Construct	CR ^a	VE ^b	No. of items
Information acquisition	.93	.87	2
Information utilization	.87	.63	4
Entrepreneurial orientation	.83	.63	3
Firm performance	.86	.76	2

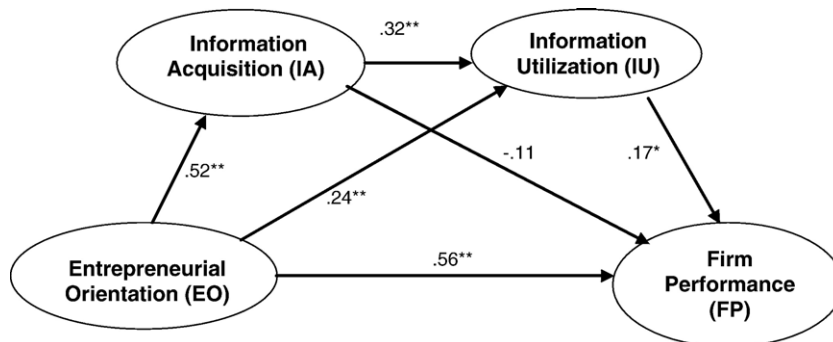
^a Composite reliability.

^b Variance extracted.

as predicted, it was not statistically significant ($\beta=.10$; t -value=1.47). As noted in the previous section, research on information utilization to make marketing mix decisions remains largely unexplored. It could be expected that the information utilization for each element of the 4Ps may impact firm performance at different levels. In addition, we are also interested in finding out the differential effects among the 4Ps on firm performance. Therefore, we examined the effect of information utilization for each element of the marketing mix in our structural model. The results demonstrated that the path from information utilization to firm performance was positive and significant for Place and Promotion ($p<.10$), while it was non-significant for Price and Product. We therefore re-specified our initial model with the Price and Product indicator variables removed.

The re-specified model achieved an acceptable level of fit: $\chi^2(21)=68.24$, $\chi^2/df=3.2$, GFI=.95, CFI=.96, TLI=.93, RMR=.03, RMSEA=.08. The percentage of variance explained was 27% for IA, 24% for IU, and 35% for FP. The standardized path coefficients and associated t -statistics of the re-specified model are presented in Fig. 2. As predicted, the hypothesized relationships between entrepreneurial orientation and firm performance, information acquisition, and information utilization were positive and significant ($\gamma=.56$, t -value=5.78; $\gamma=.52$, t -value=6.06; and $\gamma=.24$, t -value=2.63, respectively), which supported H1, H2 and H3.

The path from information acquisition to firm performance was negative and not significant, thus, H4 was not supported. As expected, information utilization demonstrated a significant and positive effect on firm performance ($\beta=.17$, t -value=2.21), lending support to H5. The results, therefore, revealed that information utilization served as a partial mediator in the relationship between entrepreneurial orientation and firm performance. To test the mediating effect of information utilization, we examined two alternative models, one without the direct path from EO to FP, and one with both direct and indirect paths from EO to FP (cf., Zhang et al., 2003). Chi-square for the model without the direct path from EO to FP was 116.94 ($df=22$); while chi-square for the model with the direct path from EO to FP added was 68.24 ($df=21$). The results showed that there was significantly lower value of chi-square for the



* Path coefficients are significant at $p < .05$.

** Path coefficients are significant at $p < .01$.

Fig. 2. Results based on the place and promotion elements.

model with the direct path from EO to FP added ($\Delta\chi^2(1)=48.70, p<.01$). The added direct path from EO to FP did not change the significance of the mediated paths through information utilization. This provided evidence that entrepreneurial orientation had both direct and indirect effects (through information utilization as a partial mediator) on firm performance.

6. Discussion and implications

We find information acquisition and utilization to be important activities, particularly salient for firms that have high levels of entrepreneurial orientation. We infer that business owners should have creative, proactive and risk-taking ways to seek innovative information and utilize the acquired information. Firms that closely monitor customers' needs tend to improve creativity by producing novel and meaningful offerings and marketing programs that, in turn, reinforce organizational innovations through the firm's entire business system (Im and Workman, 2004). A deep understanding of customers, such as their purchasing habits, psychological makeup and lifestyles, can help SMEs to conduct better market segmentation and find new niche markets. Secondly, entrepreneurial willingness to dominate competitors by a combination of proactive and aggressive moves can be more effectively realized by acquiring and using information about customers and competitors. With the appropriate information, SMEs can have a better understanding of their customers' changing needs and act accordingly. Finally, intelligent entrepreneurial risk management also demands information acquisition and utilization because it is widely recognized that information can reduce risk during decision-making. With valuable information, SMEs can evaluate their options, identify the most profitable opportunity, and thus control uncertainty to some extent (Keh et al., 2002). In this way, SMEs can exploit risky opportunities as well as lessen, though not eliminate, unnecessary uncertainty. Overall, our results support the notion that having an entrepreneurial orientation pays off in the long run (Wiklund, 1999).

Our sample of entrepreneurs shows that, on the whole, they obtain and use information on customers and competitors from both personal and impersonal sources. However, we did not find evidence supporting the hypothesis that information acquisition is positively related to firm performance, thus, it plays the role of a mediator in the relationship between entrepreneurial orientation and firm performance. This finding can be explained as follows. First, previous studies (e.g., Brockman and Morgan, 2003; Soh, 2003) found that acquiring information can result in greater new product performance. In our sample, most firms are not involved in manufacturing, and only a few firms in the sample engage in new product development. Second, a study by Moorman (1995) also found that information acquisition was not related to new product performance. She cited the possibility of information overload, especially complex and ambiguous information, entering and moving within the firm. She also suggested that the effect of information acquisition on new product performance was probably mediated by the information utilization process. Consistent with Moorman (1995), even though information acquisition was not found to have direct impact on firm performance in our study, it showed significant and positive impact on information utilization, which in turn enhanced firm performance.

This finding has important implications for entrepreneurs. Entrepreneurs should actively engage in information acquisition as an aid to effective marketing strategy

formulation. More importantly, proactive use of such information allows entrepreneurs to predict oncoming trends and enact strategies, supporting the view that the competitive advantage associated with information depends increasingly on whether a firm is able to make the best use of acquired information (cf., [Moorman, 1995](#)). The mere fact of information availability does not necessarily lead to better performance. Information utilization enables SMEs to gain competitive advantage and maintain a stronger position relative to the competition. The information may unveil latent needs, which exist and are unmet, but are not apparent to competitors ([Jaworski et al., 2000](#)). Being the first to uncover such latent needs provides impetus to adjust the marketing mix elements accordingly.

The non-significant relationship between Price and Product information utilization and firm performance in our model may be explained by the characteristics of our sample SMEs. As noted earlier, our sample consists of many small firms mainly from retail and service industries, with 41% of them having five or fewer employees. As small businesses are usually the price-takers in the industry, they have no capacity to shift the price level for specific product categories or to actively change prices. Instead, they are probably price followers in the market, keeping in line with the pricing strategies of the larger enterprises or market leaders as a defensive measure to avoid the aggressive tactics of larger competitors. We find that the relationship between information utilization and firm performance is significant for promotion information but non-significant for price information; we conjecture that SMEs make a trade-off in the decision regarding price and promotion. The information about a competitor's promotional tactic may lead to a firm's decision to carry out a promotion based on extra unit or other item purchase rather than to change the price per unit. Such promotions may in turn affect the prices of other items.

We attribute the non-significant relationship between product information and firm performance to the fact that few of the sample SMEs engage heavily in R&D efforts to develop radically new products. In most cases, among the manufacturing firms in our sample, they just make trivial alterations on the physical form of products (e.g., style and size). This is consistent with the concept of an 'entry wedge,' which is "a strategic competitive advantage for breaking into the established pattern of commercial activity" ([Vesper, 1989](#), p. 176). The most popular form of entry wedge is 'parallel competition,' where the product already exists, and the firm's advantage derives from minor variations in the product.

On the other hand, we empirically establish a positive relationship between information utilization in marketing decision-making concerning the Promotion and Place elements and subsequent firm performance. As SMEs also tend to have limited resources, they should focus their activities on marketing elements that generate the highest impact on performance. This implies that SMEs have to carefully channel their marketing resources towards greater promotional and distribution activities, where they have more control. In practice, this means that entrepreneurs need to emphasize more promotional and advertising activities, particularly in terms of enhancing customer awareness and building customer retention. In addition, based on our sample, the SMEs should also pay attention to location and distribution issues, which affect customer convenience and accessibility.

7. Conclusion

Based on our analysis, we now have empirical evidence that:

- entrepreneurial orientation plays an important role in enhancing firm performance. It has both direct and indirect effects (partially mediated by information utilization) on firm performance,
- although information acquisition is not positively related to firm performance, it is a strong predictor of information utilization. Information utilization, in turn, has positive impact on firm performance, and
- there is a positive relationship between information utilization to make marketing decisions (i.e., promotion and place elements) and subsequent firm performance.

Overall, these findings contribute to a better understanding of entrepreneurial orientation and its impact on firm performance. This study also demonstrates the importance of using marketing information pertaining to customers and competitors in making marketing-mix decisions, which contributes to higher firm performance in the entrepreneurial setting. We conclude that information acquisition and utilization should not be a one-time event; rather it should be an on-going process through day-to-day interactions with customers, suppliers, and other business associates. This also suggests the need to have good communication and networking skills. Such practices would not only allow entrepreneurs to formulate superior strategies, but also enable them to identify new business opportunities.

There are several limitations that suggest caution in assessing our findings. In particular, the lack of objective financial performance data limits us to use perceptual firm performance measures. This is because we are studying SMEs, for which there is no legal requirement in Singapore to publicize their financial results. However, the use of perceptual measures is a common issue in organizational research, and as reflected in other studies, objective and subjective measures are highly correlated, even though they are separate constructs (see [Murphy and Callaway, 2004](#); [Murphy et al., 1996](#)).

Other limitations pertain to our sample. In particular, our sample firms concentrate in the retail and service sectors, with a high percentage having five or fewer employees. This characteristic of the Singapore entrepreneurial scene may well explain the non-significance of the Price and Product marketing elements in our results. We could not control for the industry effect in our model. An extension of this study would be to collect SME samples from larger markets and capture industry differences. As for information utilization, we examined only its action-oriented use in this study. Future research can examine the other two types of information utilization and study their different roles in the relationship between entrepreneurial orientation and firm performance. We also did not include control variables in this study such as personal characteristics (e.g., educational level), which could affect the owners' ability to process and use information to make marketing decisions. Additional research with larger samples should also consider firm differences, such as firm age and size.

The overriding contribution of this study is that we provide empirical evidence on how entrepreneurial orientation has not only direct impact, but also indirect impact on SME firm performance via the mediating effect of information utilization. There are rewards for using

information to make marketing decisions, particularly those related to promotion and place elements. As our study was cross-sectional in nature, it would be worthwhile to investigate the long-term effects of marketing information on performance, which calls for a longitudinal study complete with control variables.

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