

Entrepreneurial Orientation and Effectiveness of Small and Medium Agro-Based Enterprises (SMAEs) in Malaysia – Mediating Effect of Knowledge and Network Strategies

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ABSTRACT

This paper aims to explore the mediating role of knowledge and networking on entrepreneurial orientation (EO)-performance relationship among the small and medium agro-based enterprises (SMAEs) in Malaysia. The concept is somewhat vague thus knowledge-base and networking strategies are some basic features to understand in the relationships. EO, knowledge and network were entrepreneurial capabilities under the purview of the resource-

based view (RBV) that were found to explain firm's effectiveness. Results of the study noted that EO dimensions among SMAEs entrepreneurs showed strong relationship to knowledge-base elements of human capital development and tacit knowledge and network variables (consist of strategic alliance and social network capabilities). The analysis done to 615 Malaysian agro-based small business entities (SMAEs) discovered social network as mediator in the EO's competitiveness-effectiveness relationship. The results imply that Malaysian SMAEs consider social networking as an efficient means of entrepreneurial firms to be more effective. The study encapsulates proposed future research directions.

Keywords: *Entrepreneurial orientation, knowledge, networks, small and medium agro-based enterprises (SMAEs)*

Introduction

Small and Medium Agro-Based Enterprises (SMAEs) in Malaysia paved some significant contributions to the economy couple of years back (Malaysia, 2006). Among the effective contributor is the agro-based industry, which revived in Malaysia new leadership. In order to boost the industry Malaysian government provide abundant financial and fiscal supports (Malaysia, 2006). Development of human capital and entrepreneurship in agro-based sector has been among the critical agenda to achieve Vision 2020 that will make Malaysia among a developed countries in year 2020 (Malaysia, 2006).

Studies in Malaysian agro-based was leftout due to the intense focus in industrial sector in the beginning of its economic development. This new beginning in agriculture capitalizes on its human capital development as cited in Vision 2020 (Malaysia, 2006).

The achievement of a progress may be related to the resource-based view studies noted in Penrose (1959), Wernerfelt (1984) and Barney (1991). A review in Wilklund and Shepherd (2003) iterated that among the determinants of sustainable competitive advantage were resources found in the knowledge-base of entrepreneurs in an entrepreneurial firm. According to Helfat (2000) many studies focused heavily on the direct link between individual strands of configurations of resources and performance whereby neglected on how to utilize these resources effectively.

Research on the entrepreneurial orientation (EO) of small and medium enterprises (SMEs) has recently captured growing interest of scholars (e.g. Miller, 1983; Lumpkin and Dess, 1996; Wilklund, 1998; Kreiser, Marino and Weaver, 2002; Covin, Green and Slevin, 2006). According to Lumpkin and Dess (1996), EO refers to a firm's strategic orientation, portraying entrepreneurial decision-making styles, methods and practices. Since entrepreneurship is important to firm's effectiveness (McGrath, Tsai, Venkataraman, & MacMillan, 1996), EO could be a measurement for firms to be ahead of their competitors. Miller (1983) and Zahra and Covin (1995) are among scholars who explores independent effect of EO on performance followed by Covin and Slevin (1989) who found that internal and external environment support EO towards firms' performance. However, the studies have largely neglected Lumpkin and Dess's (1996) proposal to investigate how characteristics internal to the firm moderate and mediate the EO-performance relationship.

This study focuses on knowledge and networking capabilities, which are important variables to develop entrepreneurial human capital within entrepreneurial firms (Hitt, Clifford, Nixon & Coyne, 1999; Moensted, 2007; Zhou, Wu and Luo, 2007). EO variable adopted from Miller (1983) with some addition of items proposed by Covin and Slevin (1989), Wilklund (1998) and Dess and Lumpkin (2005). Firms' effectiveness as dependent variable refers to Mahoney and Weitzel (1969) and Handa and Adas (1996) proposed firm's effectiveness measures. The theoretical framework conjectured five direct hypothesis and two mediating hypothesis.

The study leads us to the following research questions, from the RBV perspective: Does knowledge and networking resources improve firm effectiveness? Does each of the EO dimensions intervene by human capital development and tacit knowledge and social networking savvy and alliances of entrepreneurial firms improve firm's effectiveness?

Theoretical Development and Hypothesis

Penrose (1959) proposed resource-based perspective to predict performance of a firm. Barney (1991) extends the theory, which suggests that resources should possess value, rare, inimitable and organized (VRIO) in order to uphold firms' sustainable competitive advantage. EO, network and knowledge are resources that fulfilled all the

requirements ultimately produce entrepreneurial capabilities. Capabilities possess both characteristics, tangibles and intangibles (Halls, 1996). According to Hall (1993), intangible capabilities seem more important because they are firm specific and hard or maybe impossible to be imitated or substituted. Resource-based perspective in entrepreneurship discussed in Alvarez and Barney (2001) noted that entrepreneurial capabilities such as knowledge and networking still longing for many unanswered questions as discussed in entrepreneurship and strategic management studies.

The works on EO-Performance relationship have been steadily attended to since early 1980s. Miller (1983) proved that entrepreneurship dimensions of innovativeness, proactiveness and risk taking correlated to environmental factors and strategy making process (SMP). Similar statistically significant findings of EO-Performance relationship was ascertained in Miller and Friesen (1982), Begley and Boyd (1987), Covin and Covin (1990), Brown and Kirchoff (1997), Dess, Lumpkin and Covin (1997), Wilklund (1998, 1999), Lou (1999), Lumpkin and Dess (2001), Kreiser et al. (2002), Lindsay (2003), Loos and Coulthard (2005), Stam and Elfring (2006) and Awang (2006). Hence we posit:

H1: Each EO dimensions relates positively to SMAEs effectiveness

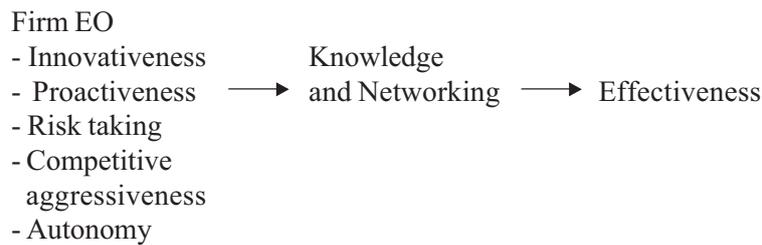
Knowledge is an important element to develop skill and know-how in area suits the interest of individuals or firms (Oliviera, 1999). Knowledge prevails in direct, indirect and tacit forms acquired through formal or informal learning (Hitt et al., 1999). Wilklund and Shepherd (2003) found that EO contribute significantly in knowledge-based resources and performance relationship. Knowledge-based resources operationalized in Wilklund and Shepherd (2003) comprised of procedural and tacit type. Lumpkin and Dess (1996) noted that knowledge should be among the variables contribute to higher EO. Hence we posit that:

H2: Each EO dimensions relates positively to SMAEs knowledge

Networking is a firm process of relating themselves to others in order to obtain resources, information or connections. The assumption in this paper is that EO does not solely depend on physical resources but mostly depend on intangible factors such as social networking and strategic alliances as a result of the entrepreneurs social skills (Schiavone, 2007). Zhou et al. (2007) found that social network played

significant mediator role in internationalization and performance. Granovetter (1973) cited by Runyan et al. (2006) developed network ties and density as a social capital construct contributed to competitive advantage. Hence we posit that:

H3: Each EO dimensions relates positively to SMAEs networking



H4:

Figure 1: Theoretical framework

Studies in the effect of knowledge on performance found in literatures such as Hitt et al. (1999), Oliveira (1999), Wilklund and Shepherd (2003), Zhou et al. (2007). Wilklund and shepherd (2003) studied procedural knowledge and discovery and found them statistically significant in explaining SMEs performance. The study marked a contribution to body of knowledge in entrepreneurship studies. Hence, we posit:

H4: Knowledge relates positively to SMAEs effectiveness

Various studies from countries such as China and Russia (e.g. Peng & Lou, 2000; Batjargal, 2003) proved social network explain performance of their SMEs. Lou and Chen (1997) noted that sales force marketing and credit granting in *Guanxi*-based business affected the firms' profitability. Therefore, we posit:

H5: Network relates positively to SMAEs effectiveness

Lumpkin and Dess (1996) cautioned that EO is not always predicts higher performance. The relationship would be enhanced with presence of other variables. Mediation effect of other variables such as knowledge and networking suggested by Lumpkin and Dess (1996) promoted few studies (e.g. Stam & Elfring, 2006; Schiavone, 2007; Zhou et al., 2007). Stam and Elfring (2006) found that centrality in

communication network and informal network mediate EO performance relationship in the Dutch software industry.

SMAEs in Malaysia face deficiencies due to their position in the economy besides lack of internal resources and capabilities. Moreover, they face challenges from rapid environmental changes and new policy. Access to information and knowledge base should expedite SMAEs learning process and minimize risks (Eriksson, Johanson, Majkgard & Sharma, 1997; Leonidou & Theodosiou, 2004). Hence knowledge and network offer a potentially efficient way to overcome resource and capability deficiencies and enhance the likelihood of success:

H6: Knowledge mediates the relationship between EO and SMAEs effectiveness

H7: Networking mediates the relationship between EO and SMAEs effectiveness

Methodology

Sample and Data Collection

Data for this study were collected from the SMAEs located in 11 states of peninsular Malaysia. Population frame was provided by five agro-based development agencies such as Malaysian Agriculture Department, Farmer' Association Organization, Muda Development Authority (MADA), Kelantan Development Authority (KADA) and Malaysian Agro Bank in every state under study. The list of SMAEs were then randomly selected, whereby the numbers of the firm in each state vary widely due to disproportionate random sampling.

For ease of control in data collection process the area was divided into three zones; northern, southern and eastern. Each zone was represented by a research assistant to supervise a group of 5-10 students to conduct a face-to-face interview. The students were trained to collect the data and provided with financial support to go back to their hometown and served as local interviewers.

Measures

The instrument was adopted from variety of sources such as Lumpkin and Dess (1996) for EO measures (29 items), Oliviera (1999) for knowledge measures (11 items), Hitt et al. (1999) for networking measures

(11 items), and Mahoney and Weitzel (1969) for firm's effectiveness measure. EO, knowledge and networking variables measured in 5-point Likert scale. The dependent variable utilized 4-item firm's effectiveness measured in 10-point interval scales.

All variables proven to achieve normality observed in Kolmogorov-Smirnov (*ks*) test when the *ks* were non-significant proving non-normality to be rejected. Linearity of variable relationship utilized on *P-P* plot that showed all data fit on the plotted line.

Data internal consistency and reliability of most variables in the study assured by Cronbach's alpha that showed the coefficient of more than .50 as suggested (Hair et al., 1998; Nunnally, 1978). The items loaded in each variable compiled into composite score through mean score summated scale suggested by Hair et al. (2003).

Analytical Techniques

We controlled for firms' type, size, legal form, firm cycle and agro dependence by recoding the dichotomous scale into dummy-coded scale. The control variable were analyzed in model 1 of the regression analysis followed by independent and mediator variables. Prior to the regression analysis, some assumptions were assured. Besides the normal and linear data, multicollinearity, independence of error term, homoscedasticity, and outlier free were ascertained (Nunnally, 1978).

Factor analysis were run on independent and mediator variables to ascertain their construct validity and underlying dimensions preceding the reliability analysis. In factor analysis, the principal component analysis utilizing varimax rotation were observed to detect the orthogonal rotated dimensions. Factor analysis proved the sample free from common method variance when independent and moderator variables did not produce a single-factor structure, suggesting that common method variance is not a threat to the sample (Podsakoff & Organ, 1986).

Mediating effect analysis was observed in a three-step regression analysis proposed in Baron and Kenny (1986). Mediator type was ascertain as suggested by Preacher and Hayes (2004). Estimation criteria suggested in equations as follows:

$$Y = i1 + cX \quad (1)$$

$$M = i2 + aX \quad (2)$$

$$Y = i3 + c'X + bM \quad (3)$$

According to Baron and Kenny (1986), four conditions to be observed in determining the mediation effect. First condition as in equation (1), the effect of X on Y denotes the total effect c. Second condition as in equation (2) the effect of X on M denotes the total effect a. Third condition as in equation (3) the effect of M on Y denotes the total effect of b. And, fourth condition as in equation (3) the indirect effect of X on Y denotes the total effect of c'. When the effect of X on Y decreases to zero with the inclusion of M, full mediation is said to have occurred (James & Brett, 1984). When the effect of X on Y decreases by a nontrivial amount, but not to zero, partial mediation is said to have occurred.

Two further assumptions of mediation were observed, first, the measurement was combined in a mean score summated scale as a remedy. Second, moderator variable was ascertain did not cause the dependent variable (Baron & Kenny, 1986).

Results

Demographic Descriptives

Most of the firms' response to questionnaires were 95.3% among the owners and 4.7% were among the managers. Most of them were female represented by 59% and male 41%. The age brackets were dominated by respondents who were more than 40 years old represented more than 70%, whereas those with 40 years or younger represented by about 30%. Education background showed most representations were among those finishing lower level education represented more than 85%, on the other hand only 15% were college graduates.

Firms' demographics divided into five categories. First, SMAEs type of business represented by 70% were among the manufacturers and processors of agro-based product, 15% were agricultural product producers, 8% were those in livestock sectors and 3.7% were firms that offer services in agriculture sector, and 2.9% were SMAEs in fishing industry. Second, firms' legal registration status 78.9% were among the sole proprietorship, both private limited company and partnership represented by 10.4%, and only 2 SMAEs were public limited companies. Third, firms' size according to number of employees 77.9% were among those firms categorized as micro business that employed less than 5 workers, 22% were those firms employed between 6-50 employees and only one SMAEs employed more than 50

employees. Fourth, firms' cycle influence, 71% were among those influenced by the cycle and only 22% were those firms free from cyclical influence. And fifth, agriculture dependence were represented by 48.3% of those SMAEs fully dependence on agriculture sector and 51.7% were those not totally dependence on the sector.

Factor Analysis and Reliability Analysis

Ensuring the data to be free from measurement error, factor analysis was conducted to segregate independent and mediating instruments. The independent and mediating variables items were analysed separately since those variables represent distinct concepts. KMO and Bartlett test showed significant result of principal component analysis on all variables under study.

Factor analysis on EO explained by 55.76% of the variance loaded with six factors labeled as risk taking (4 items, $\alpha = .70$), autonomy (4 items, $\alpha = .68$), competitiveness (4 items, $\alpha = .68$), innovativeness (4 items, $\alpha = .61$), product market innovation (2 items, $\alpha = .64$), and proactiveness (3 items, $\alpha = .55$). Knowledge variables were explained by 56.38% of the variance loaded with two factors namely human capital development (6 items, $\alpha = .80$) and tacit knowledge (2 items, $\alpha = .61$). Network variables capitalised with 66.35% of the variance loaded by two factors labeled strategic alliance (3 items, $\alpha = .87$) and social network (4 items, $\alpha = .73$). On the other hand, SMAEs effectiveness was explained by 84.22% of the variance loaded on one factor (4 items, $\alpha = .94$).

Intercorrelation Among Variables

Descriptive of the variables observed in mean, standards deviation (SD), reliability and intercorrelations analysis displayed in Table 1.

Model 1 as in Table 2, the regression analysis showed statistical significant of coefficient of determination among the control variables in explaining SMAEs effectiveness (Adj. $r^2 = .01$, $F = 1.97$, $p < .05$). However, both 1 month and more than 3 months cycle of SMAEs were negatively explained the effectiveness whereas other were found statistically non-significant in explaining SMAEs effectiveness.

Two EO dimensions were found to be statistically significant in explaining the effectiveness of SMAEs. The regression model showed sufficient variance in explaining changes in SMAEs effectiveness (Adj. $r^2 = .03$,

$F = 2.77, p < .01$). Risk taking ($\beta = .37, p < .05$) and competitiveness ($\beta = .32, p < .05$). Therefore, hypothesis 1 was partially supported.

The analysis showed potential effect of risk taking and competitiveness on SMAEs effectiveness fulfilled first condition of empirical basis to proceed for in-depth interrogation of the mediating analysis procedure (Baron & Kenny, 1986).

The role played by control variables affected differently on both knowledge dimensions. Both 1 month and more than 3 months cycles affected human capital development among the SMAEs. Model 1 showed sufficient variance to explain changes in the human capital development caused by EO dimensions (Adj. $R^2 = .05, F = 3.97, p < .01$). However, model 1 of EO-tacit knowledge relationships found to be non-significant.

The result of the regression analysis showed expected outcomes for hypothesis 2. Three EO dimensions predicted both knowledge dimensions. Risk taking ($\beta = .35, p < .01$), competitiveness ($\beta = .10, p < .01$) and innovativeness ($\beta = .32, p < .01$) predicted knowledge dimension of human capital development (refer to Table 3). Prediction of EO towards tacit knowledge as the other knowledge dimension showed similar outcome. Risk taking ($\beta = .17, p < .01$), competitiveness ($\beta = .15, p < .01$), and innovativeness ($\beta = .12, p < .05$) predicted higher tacit knowledge (refer to Table 4).

The effect of control variables toward strategic alliance among SMAEs significantly explained due to sufficient variance in adjusted $R^2 = .06, F = 4.32, p < .01$. Both SMAEs size in employees number of less than 20 and cycle of more than 3 months affected strategic alliance. On the other hand, none of the control variables explained social network even though the model showed significant variance.

The effect of some EO dimensions against networking dimensions were statistically significant. In predicting enhanced strategic alliance, autonomy ($\beta = .13, p < .05$) and proactiveness ($\beta = .23, p < .05$) proved that they were important (refer to Table 5). However, for improved social network, competitiveness ($\beta = .11, p < .05$), innovativeness ($\beta = .18, p < .01$) and proactiveness ($\beta = .29, p < .01$) were the determinants (refer to Table 6).

The significant findings in EO-mediator relationship fulfilled second condition for mediation effect analysis. The conjectures that claimed EO enhanced both internal and external resources of the firm were justified. Therefore, the result lends support to hypothesis 2 and 3.

Third and fourth conditions for mediation analysis utilized results in Table 7 with the presence of mediators, the two EO dimensions, risk

taking and competitiveness remain significant as they were in the first condition. However, competitiveness showed slight reduction in its beta from $\beta = .32$, $p < .05$ to $\beta = .31$, at $p < .05$. And social network also showed significant effect ($\beta = .25$, $p < .05$) (refer to Table 5). This suggests that social network partially mediates the effectiveness impact of SMAEs competitiveness.

Social networking predicted higher effectiveness of the SMAEs ($\beta = .25$, $p < .05$). However, both knowledge dimensions and effectiveness relationship was non-significant. Therefore, hypothesis 4 was not supported and hypothesis 5 were partially supported.

Hypothesis 6 and 7 conjectured mediation effect of knowledge and networking on EO dimensions-SMAEs effectiveness relationship. The result of first condition as cited earlier indicated a statistically significant effect of risk taking and competitiveness in predicting SMAEs effectiveness. Next, second condition also found risk taking and competitiveness predicted both knowledge and network strategies significantly. Third condition was fulfilled when comparison between models showed that the positive competitiveness-effectiveness relationship managed to reach significance when social network was controlled for. Finally, fourth condition justified social network as partial mediator when regression coefficient of competitiveness-effectiveness relationship was somewhat reduced but remained significant with the effect of the mediator. Hence hypothesis 7 partially supported and hypothesis 6 rejected.

Discussions and Conclusion

The study proved support to some of the hypothesis. Network and EO are directly related to firms' effectiveness but knowledge explains otherwise. General view on EO strongly related to performance remain supported in this study (cf. Miller, 1983; Wilklund 1998; Wilklund, 1999). All EO dimensions explain both network and knowledge capabilities of SMAEs. Our results complement Stam and Elfring (2006) and Schiavone (2007) that the presence of networking enhances SMAEs effectiveness. Results of the direct impact of EO dimensions towards knowledge capabilities showed a converging trend, but not on the network capabilities. The advancement of human capital development and tacit knowledge in SMAEs would be possible when the firms employ risk taking, competitiveness and innovativeness orientations. On the other hand, to be successful in their strategic alliances requires the firms to

exercise autonomy and proactiveness. For social network, risk taking, innovativeness and proactiveness orientations are the main determinants.

This study contributes in three ways. First for EO scholars, two EO dimensions of risk taking and competitiveness positively affect SMAEs effectiveness. RBV remains justified in entrepreneurship studies when the entrepreneurial capabilities explain higher firms' effectiveness. EO dimensions are important to enhance knowledge and network capabilities among SMAEs entrepreneurs. Second, for network scholars, SMAEs in Malaysia need more efforts to establish multiple types of linkages. The ties and linkages such as smart partnership, licensing, being part and/or participate in associations and merging strategies are among ways and means how Malaysian entrepreneurs could shape their initial networks capabilities. Social network should be part and parcel of the firms' critical factor to ensure their effectiveness. Third, for knowledge scholars, EO dimensions are critical to boost human capital development and tacit knowledge endowment among SMAEs entrepreneurs in Malaysia.

One practical implications of this study is that Malaysian SMAEs consider social networking as an efficient means of entrepreneurial firms to be more effective. Therefore, beyond the support and assistance given by the five agro-based development agencies such as Malaysian Agriculture Department, Farmer' Association Organization, Muda Development Authority (MADA), Kelantan Development Authority (KADA) and Malaysian Agro Bank, Malaysian SMAEs would benefit from more social networking interactions where the exchange of ideas, expertise and advise could be facilitated.

Future studies in Malaysian entrepreneurship should embark on in-depth analysis in EO psychometric among their micro-size businesses, SMEs and SMAEs. Other entrepreneurial capabilities such as internationalization, dynamic capabilities and skills development should be considered as variables for study.

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Appendix

Table 1: Intercorrelation of the Variables in the Study

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Effectiveness	5.28	2.32	(.94)																					
2. Production ^a	nc	nc	-.02	(nc)																				
3. Producer ^b	nc	nc	.01	-.65**	(nc)																			
4. Fishery ^c	nc	nc	.05	-.27**	-.07	(nc)																		
5. Horticulture ^d	nc	nc	-.01	-.45**	-.12**	.05	(nc)																	
6. Sole proprietor ^e	nc	nc	-.02	-.02	.03	.02	-.01	(nc)																
7. Partnerships ^f	nc	nc	.01	.06	-.07	.00	-.00	-.66**	(nc)															
8. Private Limited Co.g	nc	nc	.03	-.03	.04	-.03	.02	-.66**	-.12**	(nc)														
9. Firm size (micro) ^g	nc	nc	-.03	.04	-.06	.02	.04	.17**	.04	-.27	(nc)													
10. Cycle (1 month) ^h	nc	nc	-.03	.09*	-.04	-.08*	-.10*	-.09*	.04	.08	.02	(nc)												
11. Cycle (>3 months)	nc	nc	-.09	-.30**	.13**	.16**	.26**	.06	.06	.03	-.07	-.56**	(nc)											
12. Agric. Dependence ^k	nc	nc	.03	-.24**	.21**	.06	.16**	.09*	-.08*	-.04	-.05	-.09*	.09*	(nc)										
13. Risk taking	4.08	.60	.09*	-.13**	.07	.06	.10*	-.03	.02	.04	-.04	-.02	.13**	.01	(.70)									
14. Autonomy	2.35	.74	.04	-.01	.02	-.08*	.01	-.08*	.04	.06	.02	.03	-.04	.02	-.07	(.68)								
15. Competitiveness	3.04	.77	.11**	.02	-.03	.02	.09*	-.07	.05	.05	-.04	.10*	.00	.07	.17**	.27**	(.68)							
16. Innovativeness	3.97	.64	-.02	-.04	.03	-.02	.07	-.13**	.07	.09*	-.07	.04	.07	-.06	.27**	.12**	.18**	(.61)						
17. Product mkt innov.	3.41	.93	-.02	.02	.01	-.06	-.02	-.02	-.04	.07	-.05	.07	.02	-.05	.22**	.17**	.29**	.19**	(.64)					
18. Proactiveness	3.39	.76	.06	-.10*	.03	.01	.14**	-.09*	.02	.10*	-.06	-.01	.16**	-.01	.38**	.16**	.31**	.34**	.19**	(.55)				
19. Human capital dev.	3.86	.65	-.01	-.07	.02	-.04	.13**	-.15**	.07	.13**	-.04	.09*	.11**	.00	.A9**	.07	.28**	.A9**	.24**	.40**	(.80)			
20. Tacit knowledge	3.62	.82	.01	-.02	.10*	-.07	-.03	.00	.03	-.03	-.02	-.05	.08*	.04	.17**	.10*	.18**	.15**	.13**	.11**	.36**	(.61)		
21. Strategic alliance	1.99	1.06	.07	-.13**	.09*	.03	.07	-.15**	.01	.20**	.02	.04	.09*	.04	.17**	.16**	.19**	.16**	.14**	.27**	.29**	.07	(.87)	
22. Social network	2.77	.97	.12**	-.12**	.09*	.02	.07	-.14**	.03	.16**	-.02	.03	.06	-.03	.21**	.13**	.21**	.25**	.17**	.34**	.31**	.12**	.58**	(.73)

*p<.05; **p<.01; .^a service=0, production = 1, producer = 0, fishery = 0, horticulture = 0, service = 0, production = 0, producer = 0, fishery = 0, horticulture = 0, .^b service = 0, production = 0, producer = 0, fishery = 0, horticulture = 1, .^c proprietorship = 1, partnership = 0, private limited co. = 0, limited co. = 0, .^d proprietorship = 0, partnership = 0, private limited co. = 0, limited co. = 0, .^e proprietorship = 0, partnership = 0, private limited co. = 1, limited co. = 0, employee < 20 = 1, employee > 20 = 0, .^f influence by cycle (1 day) = 0, cycle (1 month) = 1, cycle (3 months) = 0, .^g proprietorship = 0, partnership = 0, private limited co. = 1, limited co. = 0, employee < 20 = 1, employee > 20 = 0, .^h agriculture dependence (yes) = 1, agriculture dependence (no) = 0. Cronbach's alpha is in parentheses on the diagonal.

Entrepreneurial Orientation and Effectiveness of SMAEs

Table 2: Regression analysis (Direct effect of EO and SMAEs' effectiveness)

	Model 1 β	Model 2 β
Constant (Intercept)	3.74*	2.39
Process	-.14	-.19
Producer	.26	.13
Fishery	.93	.75
Horticulture	.13	-.09
Sole proprietor	2.59	2.24
Partnership	2.83	2.42
Private limited company	2.88	2.49
Firm size (Micro)	-.58	-.54
Cycle (1 month)	-.56*	-.63**
Cycle (more than 3 months)	-.95**	-1.02**
Agriculture dependence	.09	.03
Risk taking		.37*
Autonomy		.10
Competitiveness		.32*
Innovativeness		-.21
Product market innovation		-.16
Proactiveness		.14
R-square	.03	.06
Adj R-square	.01	.03
R-square change	.03	.03
F-value	1.79*	2.77**

* $p < .05$, ** $p < .01$.

Table 3: Regression Analysis (Direct Relationship between EO and Human Capital Development)

	Model 1 β	Model 2 β
Constant (Intercept)	3.56**	.29
Process	.07	-.05
Producer	.10	-.08
Fishery	-.10	-.27
Horticulture	.31	.02
Sole proprietor	.04	-.05
Partnership	.18	.03
Private limited company	.27	.10
Firm size (Micro)	-.02	.17
Cycle (1 month)	.23**	.12*
Cycle (more than 3 months)	.24**	.10
Agriculture dependence	-.01	.03
Risk taking		.35**
Autonomy		-.01
Competitiveness		.10**
Innovativeness		.32**
Product market innovation		.03
Proactiveness		.10
R-square	.07	.43
Adj R-square	.05	.42
R-square change	.07	.36
F-value	3.97**	63.49**

*p<.05, **p<.01.

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Table 4: Regression Analysis (Direct Relationship between EO and Tacit Knowledge)

	Model 1 β	Model 2 β
Constant (Intercept)	2.90**	1.20
Process	.15	.11
Producer	.30	.25
Fishery	-.25	-.05
Horticulture	-.02	-.01
Sole proprietor	.58	.29
Partnership	.66	.24
Private limited company	.50	.18
Firm size (Micro)	-.08	-.01
Cycle (1 month)	.01	-.06
Cycle (more than 3 months)	.17	.12
Agriculture dependence	.05	.04
Risk taking		.17**
Autonomy		.06
Competitiveness		.15**
Innovativeness		.12*
Product market innovation		.03
Proactiveness		-.02
R-square	.03	.09
Adj R-square	.01	.07
R-square change	.03	.07
F-value	1.54	7.33**

*p<.05, **p<.01.

Table 5: Regression Analysis (Direct Relationship between EO and Strategic Alliance)

	Model 1 β	Model 2 β
Constant (Intercept)	2.05*	-.26
Process	-.16	-.21
Producer	.08	.01
Fishery	-.04	-.06
Horticulture	.06	-.12
Sole proprietor	-.95	-.87
Partnership	-.91	-.88
Private limited company	-.20	-.21
Firm size (Micro)	.74*	.84*
Cycle (1 month)	.18	.09
Cycle (more than 3 months)	.24*	.13
Agriculture dependence	.06	.06
Risk taking		.12
Autonomy		.13*
Competitiveness		.11
Innovativeness		.06
Product market innovation		.04
Proactiveness		.23**
R-square	.07	.16
Adj R-square	.06	.13
R-square change	.07	.08
F-value	4.32**	9.73**

* $p < .05$, ** $p < .01$.

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Table 6: Regression Analysis (Direct Relationship between EO and Social Network)

	Model 1 β	Model 2 β
Constant (Intercept)	3.04**	.29
Process	-.05	-.14
Producer	.26	.13
Fishery	.24	.16
Horticulture	.25	-.00
Sole proprietor	-.61	-.48
Partnership	-.46	-.39
Private limited company	-.10	-.08
Firm size (Micro)	.23	.39
Cycle (1 month)	.08	-.03
Cycle (more than 3 months)	.08	-.06
Agriculture dependence	-.10	-.08
Risk taking		.09
Autonomy		.05
Competitiveness		.11*
Innovativeness		.18**
Product market innovation		.05
Proactiveness		.29**
R-square	.05	.18
Adj R-square	.03	.16
R-square change	.05	.13
F-value	2.82**	16.14**

* $p < .05$, ** $p < .01$.

Table 7: Regression Analysis (Mediating Effect of knowledge and networking on EO-Effectiveness relationship)

	Model 1 β	Model 2 β
Constant (Intercept)	3.74*	2.40
Process	-.14	-.16
Producer	.06	-.05
Fishery	.93	.65
Horticulture	.13	-.07
Sole proprietor	2.59	2.38
Partnership	2.83	2.56
Private limited company	2.88	2.54
Firm size (Micro)	-.58	-.62
Cycle (1 month)	-.56*	-.59*
Cycle (more than 3 months)	-.95**	-.98**
Agriculture dependence	.09	.05
Human capital development		-.29
Tacit knowledge		.01
Strategic alliance		.04
Social network		.25*
Risk taking		.44*
Autonomy		.08
Competitiveness		.31*
Innovativeness		-.16
Product market innovation		-.17
Proactiveness		.09
R-square	.03	.07
Adj R-square	.01	.04
R-square change	.03	.04
F-value	1.79*	2.49**

* $p < .05$, ** $p < .01$.