

## THE EFFECT OF KNOWLEDGE AND NETWORKING ON RELATIONSHIP BETWEEN ENTREPRENEURIAL ORIENTATION AND PERFORMANCE OF SMALL AND MEDIUM AGRO-BASED ENTERPRISES: ROLE OF TECHNOLOGY, STRATEGY AND PERCEIVED ENVIRONMENT

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**Abstract** - Small and medium agro-based enterprises (SMAEs) in Malaysia is progressing parallel with the developed nations' direction in 2020. The progress in this sector could be enhanced with the support of strategic entrepreneurship variables. Entrepreneurial orientation, knowledge, business network, technology, strategy and perceived environmental factors showed significant impact on growth, efficiency and effectiveness of the SMAEs. A total of 615 observations were collected from owner or manager of multi sectoral SMAEs. The study substantiated specific EO patterns among SMAEs between regional growth corridors (RGCs) on the peninsular. EO among SMAEs in Malaysia shows some forms of strategic entrepreneurship. Knowledge, network and EO were important determinants for SMAEs' growth, efficiency and effectiveness. Moreover, social network showed significant intervening effect for higher SMAEs effectiveness when EO was used. Presence of technology, strategy and perceived environment justified higher SMAEs' growth, efficiency and effectiveness when knowledge, network and EO were utilized.

**Keyword** - Knowledge; networking; entrepreneurial orientation; technology; strategy; perceived environment; performance; SMAEs.

### INTRODUCTION

Research in strategic entrepreneurship is at the embryonic stage [1] whereby creative and innovative inputs were crucial to develop variables and measurements towards formulating a model. The study explores the variables such as, knowledge, networking, entrepreneurial orientation, technology, strategy and perceived environment pertaining to the RGCs.

The study capitalizes on Malaysian agro-based industry performance especially among the SMAEs that found lacking, even though the sector had been targeted as the main contributor to the economy. On the other hand, in-depth study regards to agro-based entrepreneurship were found being left out compared to other imperatives in the economy. Consequently, strategic factors in agro-based industry need to be reviewed against their effectiveness, growth and efficiency.

The literature review reveals the overview of agro-based economics in Malaysia since the inception of our economic plans until the recent phenomena of regional growth corridors. Furthermore, the issues pertaining to the

variables under study were discussed in term of the research gaps found in the methodology and findings of previous studies in Malaysia and other parts of the world.

### LITERATURE REVIEW

#### A. *Malaysian RGCs and EO*

Under the ninth Malaysia plan (RMK9) where the goals of its socio-economic development to be materialized within 2006-2010. Among them were to revitalize the agro-based sectors as a powerful economic engine through the development of regional growth corridors (RGCs). They were the extension of our growth strategy focused at regional levels. The master plan was strategized through the New Economic Policy (NEP) in 1970-1990 continued with the New Development Policy in 1990-2000 and finally the Vision Development Policy in 2000-2020. However, Malaysia [2] reported that the economic distribution among major races as well as states' wealth remain unbalanced. One of the key indicator was the economic participation achievement among races that showed the majority group

achieved less than 19% and some states remained poor. Among the reasons of the under achievement was the entrepreneurial quality of the entrepreneurs and enterprises [2]. This has led to the 10th and 11th Malaysia Planning (2010-2020) that aimed to boost the development of new generation of entrepreneurial oriented human capital and firms capable to take part in global market. The plan also suggests that the focus will be concentrated on regional basis. Thus, we aim to explore to what extent does differences in EO explain whole SMAEs and SMAEs in the three RGCs on the Peninsular?

#### *B. EO-The Concept and Strategic Relationships*

EO refers to the behavior influences the process, decision-making styles and practices of a firm's management and employees [3] that leads to superior firm performance. This section discusses the building blocks of EO concept and its operationalization approach. Consequently, the five dimensions of EO were elaborated individually and recapitulated with some concluding remarks.

Issues in EO measurement were argued by entrepreneurship scholars since the last three decades, dimensionality issue has spark numbers of studies. Dimension found in studies [4, 5, 6, 7], EO was operationalized using a 9-items construct. Issue in dimensionality hinges on unidimensional versus multidimensional argument, a study [7] concluded that multidimensionality was found justified, however unidimensional or aggregate dimension could be used for specific occasion but after careful consideration.

Final remark for this section refers to [8] who iterated that today's enterprises will not be able to survive in this era of rapid 'creative destruction' and the ICT driven economy without entrepreneurship drivers. Entrepreneurs have to ensure that they behave as strategic leaders driving their firms with EO proficiency in this new competitive landscape. Therefore, embracing an entrepreneurial orientation, knowledge and networking capabilities in the entrepreneurs-led firms would secure survival and sustainability of enterprises [9, 10]. A strategic entrepreneurship should be a compulsory option for firms' adoption into themselves and their team [28]. Thus the study shall answer the question of to what extent do knowledge, network affect EO relationship with performance? And how do technology, strategy and perceived environment interact on those relationship?

### **RESEARCH METHODOLOGY**

#### *A. 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 six agro-based development agencies such as Malaysian Agriculture Department, Farmer' Association Organization, Muda Development Authority (MADA), Kelantan Development Authority (KADA), Farmers' Marketing Authority (FAMA) 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. After scrutinizing about 850 returned responses 615 samples were usable.

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.

#### *B. Measures*

The instrument was adopted from variety of sources such as Lumpkin and Dess [3] - EO (29 items) [11] - knowledge (11 items) [12] - networking (11 items) [13] - technology (7 items) [4] - strategy (12 items) [14] - perceived environment (19 items) [15] - efficiency (ROI) (objective measures) [16] - firm's growth (4 items) [17] - firm's effectiveness (4 items). EO, knowledge, networking, technology, strategy and perceived environment variables measured in 5-point Likert scale. The dependent variables utilized firms' efficiency in objective mode, firm's growth in 7-point interval scales, and firm's effectiveness measured in 10-point percentages interval scales.

All variables proven to achieve normality observed in Kolmogorov-Smirnov ( $k_s$ ) test when the  $k_s$  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 [18, 19]. The items loaded in each variable compiled into composite score through mean score summated scale as suggested [20].

#### *C. Analytical Techniques*

We controlled for firms' type, size, legal form, firm cycle and agro dependency by recoding the dichotomous scale into dummy-coded scale. The control variables were analyzed in model 1 of the regression analysis followed by independent, mediator and interaction's variables.

Prior to the regression analysis, some assumptions were assured, such as normality, linearity, multicollinearity free, error term free, homoscedasticity, and outlier free were ascertained [19].

Factor analysis were run on independent and mediator variables to ascertain their construct-convergent 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 [21].

Mediating effect analysis was observed in a three-step regression analysis proposed in [22]. Mediator type was ascertain as suggested [23]. Estimation criteria suggested in equations as follows: (1)  $Y = i_1 + cX$ , (2)  $M = i_2 + aX$ , (3)  $Y = i_3 + c'X + bM$ .

According to [22], 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 [24]. 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 [22].

Moderating effect analysis follows [25] and [26] suggested that independent variable (IV) and moderators are suggested to be centered or standardized. The analysis is done in a four-step process, first step observes the effect of control variables, followed by the IV, moderators and in the fourth step, the interaction terms (IV x moderator). Aiken and West [25] claimed that beta coefficient of the interaction terms were arbitrary whereby positive and negative beta did not justify moderated relationship without a post-hoc analysis. The post-hoc justifies the interaction effect on a 2x2 curves' graph (IV on x-axis, DV on y-axis) showed by moderator curves (high and low curves) [25]. Both IV and moderators will be split into two dichotomous dimensions of high and low. Decision for interaction effect can be observed on the slope steepness of the curves, steeper slope explains more interaction of the moderator on the relationship [25, 26].

## RESULTS

### A. Descriptives

Most firms were represented by owners at 95.3% and smaller firms' size [27]. The gender was female represented by 59% more than male. The age brackets were dominated by older respondents who are more than 40 years old represented more than 70%. Education background showed most representations were those finishing lower level education represented more than 85% than the college graduates. SMAEs entrepreneurs' profile resembled the global entrepreneurship monitor (GEM) survey in Asian regions noted similar findings prevailed in developing economies [27].

Firms' demographics divided into five categories. First, BSMAEs type of business mostly represented by 70% were the manufacturers and processors. Second, 78.9% were the sole proprietor. Third, firms' size according to

number of employees 77.9% were those firms categorized as micro business that employed less than 5 workers. Fourth, firms' cycle influence, 71% were those influenced by the cycle and the rest free from cyclical influence. And fifth, agriculture dependence and non-dependence were about equally represented. Dummy-coded control variables among the firm's demographics showed some interesting effect on all performance and growth measures of the SMAEs.

### B. Item, Factor, ANOVA and Discriminant Analysis

The item analysis produced six items showed mean value more than 4.00 on scale of 5.00. Most of the items were on 3.0 scales, and five items showed mean value less than 2.5. Eleven items showed their standard deviation less than 1.0 indicating the items parameter tend to concentrate around the mean. Item analysis for 29 EO items based on the three regional corridors under the study showed twelve of them were significantly different at  $p < .05$ .

Five factors loadings of EO sub-dimensions' eigenvalue (in parantheses) namely the competitive aggressiveness (2.12), risk taking (1.73), autonomy (1.98), innovativeness (1.55) and product market innovativeness (1.51) explained BSMAEs in Iskandar development region (IDR) (KMO=.68, Bartlett's  $\chi^2=905.27$ ,  $p < .01$ ) shown in Table 1. NCER states' BSMAEs (KMO=.72, Bartlett's  $\chi^2=1062.27$ ,  $p < .01$ ) were explained by six EO dimensions eigenvalue, risk taking (2.83), competitive aggressiveness (2.67), product innovativeness (2.56), autonomy (2.67), market innovativeness (1.75) and proactiveness (1.62) as shown in Table 2. And EO in eastern growth corridor (ECER) (KMO=.72, Bartlett's  $\chi^2 = 1062.27$ ,  $p < .01$ ) showed that five factors explained their EO eigenvalues, market innovativeness (2.03), autonomy (2.03), product innovativeness (1.63), participative innovativeness (1.38) and proactiveness dimensions (1.45) as shown in Table 3. SMAEs EO's differences between the economic regions in Malaysia proved in one-way ANOVA that showed significant different among EO dimensions except innovativeness dimension ( $p=.12$ ) that proved otherwise as shown in Table 4. More in-depth interrogation then utilized stepwise DA that ascertained only two dimensions of EO i.e autonomy and proactiveness were the main contributor to the discriminant functions. Wilk's lambda = .95 of the discriminant function ( $\chi^2 = 29.79$ ,  $df = 4$ ,  $p < .000$ ) held significance for the whole model. Autonomy dimension was found to be the most important variable in explaining the discriminant function at Wilk's lambda = .97 ( $F = 10.3$ ,  $p < .01$ ), followed by proactiveness dimension with Wilk's lambda = .95 ( $F=4.8$ ,  $p < .01$ ). The classification result of DA where prediction of group membership using classification function coefficient was at 56.6 percent.

### C. Control, Direct, Mediation and Moderation Effect - Multiple regression analysis (MRA)

Some dummy-coded control variables, EO, network and human capital directly explained firms' growth, efficiency and effectiveness showed in the lower order beta

coefficients at  $p < .05$ . Mediation effect was detected in two level MRA showed social networking as a significant mediator. The four step process proved that social network managed to reduce competitive aggressiveness relationship to effectiveness to a certain degree but not to zero, which justified social network as a partial mediator [22] as shown in Table 5 and 6.

Moderation effect were done in two separate analysis. First, technology and strategy were found moderate EO–knowledge–network relationship. Second, perceived environmental factors moderate knowledge–network–performance relationship showed in higher order coefficient beta significant at  $p < .05$  as shown in Table 7 to Table 10. The findings conclude that some of the moderators were found interacted significantly on both relationship showed in simple slope 2x2 curves [25].

## DISCUSSION AND CONCLUSION

Entrepreneurs representation proved typical nature of agro-based industry in Malaysia with feminine, older and lower educated entrepreneurs' domination, however Cowling [29] found those variables varied in explaining entrepreneurship across countries.

The study justified first research question as to what extent does EO explains overall SMAEs and SMAEs in specific RGCs. Multidimensionality of EO dimensions were justified as claimed in [30] when all factors in the whole peninsular and RGCs were found somewhat stable. The analysis of 615 observations manage to reconfigure all IVs pertaining to Malaysian SMAEs that address the applicability of the strategic entrepreneurship concept [31]. Some EO dimensions proved critical in explaining the variance

among the Malaysian RGCs, whereby each region needs different approach of EO development.

Second question justified in the direct, mediating and moderating effects among the variables under study. EO, knowledge and network are crucial for SMAEs growth, efficiency and effectiveness. Social network is pertinent in enhancing effectiveness when SMAEs exercise competitive aggressiveness. Fine-grained technology and strategic capabilities enhance knowledge–network when EO was employed. Perceived environmental factors enhance growth, efficiency and effectiveness in the presence of knowledge and network capabilities.

The study implies that entrepreneurial development policy need some reviews in present entrepreneurship development protocols in Malaysian Agro-based authorities as found in [32, 33].

Limitation of the study pertains only to areas on the peninsular, thus generalization does not encompasses SMAEs in Sabah and Sarawak. The study focuses on firm level analysis whereby general Bumiputera SMAEs are the unit analyzed.

Future studies shall emphasize on more antecedents and outcomes of strategic entrepreneurship concept that fit and sustain the Malaysian entrepreneurial firms' development and their outcomes respectively. The study also should emphasize on the growing ventures phenomenon such as the entrepreneurial leadership under the domain of strategic leadership [28].

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The effect of knowledge and networking on relationship between entrepreneurial orientation

Table 1 - Entrepreneurial Orientation (EO) Factor Analysis (IDR):

EO statements and dimensions	Comm unality	Component				
		1	2	3	4	5
<b>1. Competitive aggressiveness</b>						
A26. Our firm acts boldly in order to achieve objectives	.60	<b>.768</b>	.033	-.030	-.071	.050
A20. Our firm typically adopt a very competitive posture	.56	<b>.705</b>	-.079	.155	.165	.050
A27. Our firm acts promptly to reduce losses	.50	<b>.686</b>	.097	-.105	.043	.056
A19. Our firm acts assertively in order to achieve objectives	.51	<b>.646</b>	-.127	.185	.192	.033
<b>2. Autonomy</b>						
A5. Our firm favors new idea beyond rules and regulation	.60	.010	<b>.746</b>	-.042	.185	.051
A3. Our employees are encouraged to implement newness	.50	.032	<b>.674</b>	.107	-.143	.015
A2. Our employees are free to make decision	.52	-.070	<b>.655</b>	.113	-.135	.226
A6. Our firm ignores employment rules to involve worker in new idea	.46	-.030	<b>.637</b>	.229	.041	-.033
<b>3. Risk taking</b>						
A23. Our firm invests heavily in marketing	.64	.203	.088	<b>.756</b>	.117	-.045
A25. Our firm invests in high cost projects	.61	.123	.243	<b>.706</b>	-.201	.001
A12. Our firm spends large amount of money in new product/services	.63	-.206	.104	<b>.701</b>	.131	.252
<b>4. Innovativeness</b>						
A7. Our firm gives special attention to research and development	.70	.120	.038	-.017	<b>.825</b>	.034
A8. Our firm considers new idea/approach as very important	.65	.113	-.075	.069	<b>.784</b>	.123
<b>5. Product market innovativeness</b>						
A11. Our firm frequently changes product/services since last 5 years	.76	.095	.048	.101	-.013	<b>.857</b>
A10. Our firm markets many lines of product/services since last 5 years	.69	.082	.128	.012	.185	<b>.793</b>
Eigenvalue		2.12	1.98	1.73	1.55	1.51
Percent of variance (Total = 59.24%)		14.15	13.21	11.51	10.31	10.06
Cronbach's alpha		.68	.64	.61	.60	.66
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.681					
Bartlett's Test of Sphericity	Approx. Chi-Square	905.269				
	Df	105				
	Sig.	.000				

n = 135

Table 2 - EO factor analysis (NCER):

EO statements and dimensions	Component					
	1	2	3	4	5	6
<b>1. Risk taking</b>						
A19. Our firm acts assertively in order to achieve objectives (.68)	<b>.798</b>	.058	.144	-.075	-.077	.071
A20. Our firm typically adopt a very competitive posture (.59)	<b>.728</b>	-.014	.057	-.178	-.005	.153
A26. Our firm acts boldly in order to achieve objectives (.55)	<b>.709</b>	.161	-.122	-.063	-.060	.062
A27. Our firm acts promptly to reduce losses (.60)	<b>.664</b>	-.124	.066	-.067	.342	.121
A9. Our firm treats usage of new method as very important (.60)	<b>.617</b>	.178	.316	.007	.198	-.214
<b>2. Competitive aggressiveness</b>						
A25. Our firm invests in high cost projects (.60)	-.049	<b>.739</b>	.015	.128	-.192	-.034
A13. Our firm expends substantially large amount in R & D (.71)	-.056	<b>.695</b>	.140	-.043	.447	-.022
A12. Our firm expends substantially large amount in new product/services(.58)	.170	<b>.666</b>	-.163	.039	.289	-.001
A23. Our firm spends substantially large amount in marketing (.53)	.084	<b>.623</b>	.026	.251	.080	.250
A29. Our firm sells new products/services in new market (.52)	.146	<b>.595</b>	.150	.078	.289	.180
<b>3. Innovativeness</b>						
A7. Our firm give special attention to research and development (.75)	.127	.290	<b>.774</b>	-.187	.133	.006
A4. Our employees are free to spark new idea (.69)	-.036	-.212	<b>.748</b>	.222	-.092	.167
A8. Our firm considers new idea/approach as very important (.61)	.343	.129	<b>.680</b>	-.050	.106	.058
A1. Our employees participate in firm's planning (.56)	-.068	-.098	<b>.641</b>	.324	.039	.157
<b>4. Autonomy</b>						
A2. Our employees are free to make decision (.66)	-.201	.074	.021	<b>.767</b>	.093	-.136
A3. Our employees are encouraged to implement newness (.63)	-.207	.020	-.050	<b>.754</b>	.122	-.041
A6. Our firm overrules employment rules to involve worker in new idea (.64)	-.046	.198	.057	<b>.749</b>	.006	.173
A5. Our firm favors new idea beyond rules and regulation (.67)	.130	.128	.426	<b>.663</b>	-.015	.111
<b>5. Product market innovativeness</b>						
A10. Our firm markets many lines of product/services since last 5 years (.66)	.045	.151	.073	.058	<b>.793</b>	-.028
A11. Our firm frequently change product/services since last 5 years (.62)	.060	.223	.022	.187	<b>.679</b>	.268
<b>6. Proactiveness</b>						
A16. Our firm always the first to offer new product/services (.80)	.138	.029	.087	.122	.074	<b>.870</b>
A15. Our firm always the first to introduce new technology (.73)	.114	.286	.336	-.137	.130	<b>.697</b>
Eigenvalue	2.83	2.67	2.56	2.56	1.75	1.62
Percent of variance (Total = 63.57%)	12.87	12.11	11.63	11.62	7.96	7.38
Cronbach's alpha	.77	.76	.73	.76	.60	.71
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.						.716
Bartlett's Test of Sphericity						Approx. Chi-Square
						1062.27
						Df
						231
						Sig.
						.000

$n = 349$ , communality is in parantheses.

Table 3 - EO factor analysis (ECER):

EO statements and dimensions	Communal ity	Component				
		1	2	3	4	5
<b>1. Product market innovativeness</b>						
A10. Our firm markets many lines of product/services since last 5 years	.78	<b>.860</b>	.060	.141	-.128	-.023
A11. Our firm frequently change product/services since last 5 years	.67	<b>.788</b>	.014	.131	.169	.002
A16. Our firm always the first to offer new product/services	.54	<b>.700</b>	-.001	.095	.093	.184
<b>2. Autonomy</b>						
A3. Our employees are encouraged to implement newness	.67	-.109	<b>.794</b>	.002	.053	.139
A2. Our employees are free to make decision	.60	-.049	<b>.764</b>	.013	-.107	-.062
A6. Our firm overrules employment rules to involve worker in new idea	.50	.127	<b>.664</b>	.200	-.005	-.002
A5. Our firm favors new idea beyond rules and regulation	.47	.187	<b>.550</b>	-.034	.310	.182
<b>3. Innovativeness</b>						
A13. Our firm spends large amount of money in R & D	.82	.157	.029	<b>.862</b>	-.121	.187
A12. Our firm spends large amount of money in new product/services	.69	.207	.136	<b>.745</b>	.263	-.081
<b>4. Proactiveness</b>						
A24. Our firm adopts "follow the leader" strategy in the market (Recode)	.76	.036	-.038	-.078	<b>.866</b>	.032
A17. Our firm always take unrelated opportunities	.56	.072	.119	.392	<b>.618</b>	.087
<b>5. Participative innovation</b>						
A1. Our employees participate in firm's planning	.78	-.011	.183	-.069	-.057	<b>.861</b>
A7. Our firm give special attention to research and development	.69	.212	-.056	.284	.247	<b>.706</b>
Eigenvalue		2.03	2.03	1.63	1.45	1.38
Percent of variance (Total = 65.57%)		15.65	15.63	12.55	11.11	10.63
Cronbach's alpha		.72	.66	.68	.44	.51
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.716					
Bartlett's Test of Sphericity	Approx. Chi-Square	1062.27				
	Df	101				
	Sig.	.000				

n = 131

Table 4 - Analysis of Variance (ANOVA) of EO based on Region:

Significance test single variate				Region Mean		
Dimension	F	Df	Sig.	NCER	IDR	ECER
<b>Risk taking</b>	5.92	2, 612	.003	4.01	4.17	4.18
<b>Autonomy</b>	4.07	2, 612	.018	2.33	2.24	2.49
<b>Competitive aggressiveness</b>	3.13	2, 612	.044	2.97	3.12	3.14
<b>Innovativeness</b>	2.15	2, 612	.117	61.07	63.34	63.11
<b>Product innovativeness</b>	2.97	2, 612	.052	3.34	3.44	3.56
<b>Proactiveness</b>	5.71	2, 612	.000	3.28	3.60	3.47

Table 5 – Direct Relationship between EO, Social Network and Effectiveness

	Social Network		Effectiveness	
	Model 1	Model 2	Model 1	Model 2
Constant (Intercept)	3.04	.29	<b>3.74*</b>	2.39
Manufacture	-.15	-.04	-.14	-.19
Producer	.26	.13	.26	.13
Fishery	.24	.16	.93	.75
Livestock	.25	.00	.13	-.09
Sole proprietor	-.61	-.48	2.59	2.24
Partnership	-.46	-.39	2.83	2.42
Private limited company	-.10	-.08	2.88	2.49
Firm size (Micro)	.23	.39	-.58	-.54
Cycle (1 month)	.08	-.03	<b>-.56*</b>	-.63
Cycle (more than 3 months)	.08	-.06	<b>-.95**</b>	-1.03
Agriculture dependence	-.10	-.08	.09	.03
Risk taking		.09		<b>.37*</b>
Autonomy		.05		.10
Competitive Aggressiveness		<b>.11*</b>		<b>.32*</b>
Innovativeness		<b>.18**</b>		-.21
Product innovativeness		.05		-.16
Proactiveness		<b>.29**</b>		.14
R-square	.05	.18	.03	.06
Adj R-square	.03	.16	.01	.06
R-square change	.05	.13	.03	.03
F-value	<b>2.82**</b>	<b>16.14**</b>	<b>1.79*</b>	<b>2.77*</b>

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

Table 6 – The Mediating Effect of Social Network between EO and Effectiveness

	Effectiveness	
	Model 1	Model 2
Constant (Intercept)	<b>3.74*</b>	2.40
Manufacture	-.14	-.16
Producer	.06	.05
Fishery	.93	.65
Livestock	.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)	<b>-.95**</b>	-.98
Agriculture dependence	.09	.05
Human capital development		-.29
Tacit knowledge		.01
Strategic alliance		.04
Social network		<b>.25*</b>
Risk taking		<b>.44*</b>
Autonomy		.08
Competitive Aggressiveness		<b>.31*</b>
Innovativeness		-.16
Product innovativeness		-.17
Proactiveness		.09
R-square	.03	.07
Adj R-square	.01	.04
R-square change	.03	.04
F-value	<b>1.79*</b>	<b>2.49*</b>

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

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Table 7 - Multiple Hierarchical Regression Analysis (Moderating impact of technology and strategy on EO-Human capital development relationship):

Variables	Model 1	Model 2	Model 3	Model 4
Mfg/Processor	.109 (.18)	.024 (.17)	.032 (.16)	-.026 (.12)
Producers	.059 (.20)	-.043 (.19)	-.040 (.18)	-.084 (.14)
Fishery	-.038 (.29)	-.040 (.27)	-.033 (.27)	-.020 (.20)
Livestock	.143 (.23)	.064 (.21)	.059 (.21)	.054 (.16)
Proprietor	.072 (.497)	.017 (.46)	.077 (.45)	.049 (.33)
Partnership	.134 (.501)	.066 (.47)	.113 (.46)	.086 (.34)
Private Ltd Co.	.132 (.45)	.059 (.47)	.098 (.46)	.075 (.33)
Firm size (micro)	.006 (.28)	.036 (.26)	.038 (.26)	.034 (.19)
<b>Sales cycle (1 month)</b>	<b>.238**</b> (.08)	.109 (.08)	.117 (.08)	.109 (.06)
<b>Sales cycle (3 months)</b>	<b>.308**</b> (.10)	.099 (.09)	.097 (.09)	.099 (.07)
Agro dependence	.000 (.074)	.041 (.07)	.037 (.07)	.010 (.05)
<b>Proactive risk taking (RT)</b>		<b>.421**</b> (.04)	.397 (.04)	.425 (.03)
Autonomy (AUT)		.054 (.03)	.053 (.03)	.029 (.02)
Competitive aggressiveness (CA)		.091 (.04)	.071 (.03)	.076 (.03)
<b>Innovativeness (INN)</b>		<b>.397**</b> (.04)	.390 (.04)	.376 (.03)
<b>Product innovativeness (PM)</b>		<b>.086**</b> (.03)	.068 (.03)	.031 (.03)
<b>Proactiveness (PRO)</b>		<b>.149**</b> (.04)	.146 (.04)	.170 (.03)
Technology development (TD)			.059 (.04)	.060 (.03)
Strategic capability (SC)			.029 (.04)	.011 (.03)
Strategic resources (SR)			.060 (.04)	.041 (.03)
Strategic change (SCH)			.020 (.04)	.060 (.03)
RT x TD				-.054 (.03)
AUT x TD				.058 (.03)
<b>CA x TD</b>				<b>-.181**</b> (.03)
INN x TD				-.008 (.03)
<b>PM x TD</b>				<b>-.065*</b> (.03)
<b>PRO x TD</b>				<b>.153**</b> (.04)
RT x SC				.075 (.03)
AUT x SC				-.023 (.03)
<b>CA x SC</b>				<b>.067*</b> (.03)
<b>INN x SC</b>				<b>.069*</b> (.03)
PM x SC				.013 (.03)
<b>PRO x SC</b>				<b>-.174**</b> (.03)
<b>RT x SR</b>				<b>.186**</b> (.03)
AUT x SR				.016 (.03)
CA x SR				.038 (.03)
<b>INN x SR</b>				<b>-.083**</b> (.03)
PM x SR				.044 (.03)
PRO x SR				.021 (.03)
<b>RT x SCH</b>				<b>-.133**</b> (.03)
AUT x SCH				-.051 (.03)
CA x SCH				.023 (.03)
<b>INN x SCH</b>				<b>-.143**</b> (.03)
<b>PM x SCH</b>				<b>-.076**</b> (.03)
<b>PRO x SCH</b>				<b>.173**</b> (.03)
<b>Change R<sup>2</sup></b>	.107	.606	.014	.113
<b>F Change</b>	4.260**	135.429**	4.875**	10.462**
<b>Adj R<sup>2</sup></b>	.082	.701	.712	.802
<b>Durbin-Watson = 1.917</b>				

n = 402, \*p<.05, \*\*p<.01.

Table 8 - Multiple Hierarchical Regression Analysis (Moderating impact of technology and strategy on EO-Tacit Knowledge relationship):

Variables	Model 1	Model 2	Model 3	Model 4
Mfg/Processor	.103	.109	.071	.132

Producers	<b>.241*</b>	.217	.170	.263
Fishery	-.042	-.006	.013	.048
Livestock	.019	-.007	-.041	.031
Proprietor	.494	.494	.505	.707
Partnership	<b>.451*</b>	.426	.442	.667
Private Ltd Co.	.282	.266	.293	.400
Firm size (micro)	.018	.032	.031	-.019
<b>Sales cycle (1 month)</b>	.012	-.043	-.033	-.019
<b>Sales cycle (3 months)</b>	<b>.133*</b>	.074	.096	.078
Agro dependence	.067	.077	.078	.017
<b>Proactive risk taking (RT)</b>		<b>.163**</b>	.157	.067
Autonomy (AUT)		.087	.077	.055
<b>Competitive aggressiveness (CA)</b>		<b>.147**</b>	.150	.120
<b>Innovativeness (INN)</b>		<b>.238**</b>	.252	.204
Product innovativeness (PM)		.035	.025	.035
Proactiveness (PRO)		-.034	-.031	.039
Technology development (TD)			-.157	-.125
Strategic capability (SC)			.032	.154
Strategic resources (SR)			.078	-.026
<b>Strategic change (SCH)</b>			<b>.199**</b>	.104
<b>RT x TD</b>				<b>-.410**</b>
<b>AUT x TD</b>				<b>.115**</b>
CA x TD				.004
INN x TD				-.034
PM x TD				.002
PRO x TD				.049
<b>RT x SC</b>				<b>-.287**</b>
<b>AUT x SC</b>				<b>-.109*</b>
<b>CA x SC</b>				<b>-.157**</b>
<b>INN x SC</b>				<b>.140**</b>
PM x SC				.052
<b>PRO x SC</b>				<b>.346**</b>
<b>RT x SR</b>				<b>.342**</b>
<b>AUT x SR</b>				<b>.137**</b>
<b>CA x SR</b>				<b>.283**</b>
INN x SR				-.056
PM x SR				-.045
<b>PRO x SR</b>				<b>-.281**</b>
RT x SCH				.040
<b>AUT x SCH</b>				<b>-.174**</b>
CA x SCH				.016
<b>INN x SCH</b>				<b>-.308**</b>
PM x SCH				.048
<b>PRO x SCH</b>				<b>.094*</b>
<b>Change R<sup>2</sup></b>	.083	.154	.048	.365
<b>F Change</b>	3.343**	13.450**	6.590**	16.129**
<b>Adj R<sup>2</sup></b>	.058	.205	.247	.608
<b>Durbin-Watson = 1.843</b>				

$n = 417$ , \* $p < .05$ , \*\* $p < .01$ .

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Table 9 - Multiple Hierarchical Regression Analysis (Moderating impact of technology and strategy on EO-Strategic alliance relationship):

Variables	Model 1	Model 2	Model 3	Model 4
Mfg/Processor	-.112	-.132	.036	.004
Producers	.035	.013	.121	.080
Fishery	.023	.034	.056	.050
Horticulture	.044	-.002	.042	.016
Proprietor	-.610	-.496	-.217	-.189
Partnership	-.435	-.381	-.188	-.153
Private Ltd Co.	-.060	-.026	.062	.063
<b>Firm size (micro)</b>	<b>.122*</b>	.142	.171	.172
<b>Sales cycle (1 month)</b>	<b>.119*</b>	.060	.020	.010
<b>Sales cycle (3 months)</b>	<b>.124*</b>	.049	.053	.050
Agro dependence	-.014	-.019	-.036	-.026
Proactive risk taking (RT)		.013	-.091	-.084
<b>Autonomy (AUT)</b>		<b>.137**</b>	.096	.069
<b>Competitive aggressiveness (CA)</b>		<b>.092*</b>	.058	.068
Innovativeness (INN)		.005	-.064	-.052
Product innovativeness (PM)		.057	.015	.005
<b>Proactiveness (PRO)</b>		<b>.295**</b>	.291	.343
<b>Technology development (TD)</b>			<b>.713**</b>	.732
Strategic capability (SC)			-.101	-.185
Strategic resources (SR)			.003	.049
Strategic change (SCH)			-.079	-.091
RT x TD				-.016
<b>AUT x TD</b>				<b>.111**</b>
CA x TD				-.041
INN x TD				-.013
PM x TD				-.014
<b>PRO x TD</b>				<b>.167**</b>
RT x SC				-.030
<b>AUT x SC</b>				<b>-.114**</b>
CA x SC				.020
<b>INN x SC</b>				<b>.082*</b>
PM x SC				.058
PRO x SC				-.011
RT x SR				-.046
AUT x SR				-.020
CA x SR				.057
<b>INN x SR</b>				<b>-.082*</b>
PM x SR				.002
PRO x SR				.231
<b>RT x SCH</b>				<b>-.070*</b>
<b>AUT x SCH</b>				<b>.071*</b>
CA x SCH				.017
<b>INN x SCH</b>				<b>-.103**</b>
PM x SCH				-.019
PRO x VY				-.038
<b>Change R<sup>2</sup></b>	.204	.161	.345	.103
<b>F Change</b>	8.927**	15.934**	111.270**	8.068**
<b>Adj R<sup>2</sup></b>	.182	.337	.695	.790
<b>Durbin-Watson = 1.977</b>				

n = 394, \*p<.05, \*\*p<.01.

Table 10 - Multiple Hierarchical Regression Analysis (Moderating impact of technology and strategy on EO-Social network relationship):

Variables	Model 1	Model 2	Model 3	Model 4
Mfg/Processor	.025	-.042	-.011	-.009
Producers	.134	.071	.092	.103
Fishery	.079	.051	.082	.102
<b>Livestock</b>	<b>.167*</b>	.102	.080	.089
Proprietor	-.239	-.191	.068	.115
Partership	-.185	-.140	.045	.080
Private Ltd Co.	-.008	-.008	.108	.151
Firm size (micro)	.019	.045	.062	.066
Sales cycle (1 month)	.062	-.019	-.001	.004
Sales cycle (3 months)	.031	-.047	-.033	-.034
Agro dependence	-.069	-.064	-.081	-.075
Proactive risk taking (RT)		.023	-.097	-.096
Autonomy (AUT)		.004	-.042	-.058
<b>Competitive aggressiveness (CA)</b>		<b>.187**</b>	.133	.132
<b>Innovativeness (INN)</b>		<b>.173**</b>	.153	.174
<b>Product innovativeness (PM)</b>		<b>.084*</b>	.007	-.002
<b>Proactiveness (PRO)</b>		<b>.204*</b>	.209	.211
<b>Technology development (TD)</b>			<b>.472**</b>	.481
Strategic capability (SC)			.031	-.002
<b>Strategic resources (SR)</b>			<b>.116**</b>	.116
Strategic change (SCH)			-.001	.020
RT x TD				-.004
AUT x TD				.060
CA x TD				-.011
INN x TD				-.029
<b>PM x TD</b>				<b>.135**</b>
PRO x TD				-.009
RT x SC				-.025
AUT x SC				-.022
CA x SC				.083
INN x SC				.042
PM x SC				-.002
PRO x SC				.088
RT x SR				.048
<b>AUT x SR</b>				<b>.095*</b>
CA x SR				.019
INN x SR				.067
<b>PM x SR</b>				<b>-.138**</b>
<b>PRO x SR</b>				<b>-.122**</b>
RT x SCH				-.008
AUT x SCH				-.045
CA x SCH				-.059
INN x SCH				-.012
PM x SCH				-.056
PRO x SCH				.015
<b>Change R<sup>2</sup></b>	.071	.195	.261	.043
<b>F Change</b>	3.500**	21.827**	67.404**	1.950**
<b>Adj R<sup>2</sup></b>	.051	.241	.506	.528
<b>Durbin-Watson = 1.841</b>				

$n = 512$ , \* $p < .05$ , \*\* $p < .01$ .