

## **Technology Orientation and Inbound Open Innovation in LMT Firms: An Empirical Study in Sri Lanka**

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### **Abstract**

During the latter part of the twentieth century, the innovation landscape underwent a drastic change due to various causes which erode the underpinnings of closed-innovation and induce open innovation (OI). Building on the resource based view, the study recognizes the need of capabilities in achieving competitive advantages through novel strategies. Owing to the limited scholarly work in this area, the role of firms' strategic capability in evoking OI remains largely unknown. Similarly, current OI studies largely neglect the low-and-medium-low-technology (LMT) firms despite their salient economic role and higher potential for the advancement in technologically less advanced countries (TLAC). Aimed at filling these gaps, this study attempts to explain how strategic orientation (SO) affects OI. Particularly, the study examines the impact of technology orientation (TO) on implementation of inbound OI (IOI) at LMT firms in TLAC. Also, previous studies suggest that the effect of SO is contingent to the environment, and the environment uncertainty stimulates the changes in business strategy. Thus, the study assesses the direct and moderate effect of technology turbulence (TT) and market potential (MP).

The study used the data from 242 LMT firms (response rate: 68 percent) by a questionnaire based on the cross-sectional survey. According to the OECD categorization of industries, five industries out of nine in LMT category were selected based on the number of firms in each industry. The previously tested reflective measures were used to operationalize constructs. A seven-point Likert scale captured the responses. Also, the results confirmed the adequate convergent and discriminant validity and reliability of each construct.

Results of the descriptive analysis revealed that LMT firms in TLAC adapt IOI at a moderate level ( $M = 5.69$ ,  $SD = 1.80$ ). LMT firms demonstrate moderate level of TO ( $M = 5.12$ ,  $SD = 1.28$ ), and face an above average level of environment turbulence (TT:  $M = 4.48$ ,  $SD = 1.17$ ; MP:  $M = 4.60$ ,  $SD = 1.06$ ). The explanatory power of the variables were assessed by hierarchical regression analysis, and two models were fitted. The model 1 considered the direct effect of the variables. The

model is significant ( $F = 27.61, p < .01$ ), and explains 34 percent of variance in implementing IOI ( $R^2 = 0.34, p < .01$ ). Both TO ( $\beta = 0.40, p < .01$ ) and MP ( $\beta = 0.27, p < .01$ ) indicate significant and positive effects on IOI, but no significant effect is reported by TT ( $\beta = -0.02, p = .13$ ). The model 2 considered the interaction effect of environment turbulence: TT and MP. The model is significant ( $F = 21.76, p < .01$ ) and interaction terms account for 4 percent of variance in implementing IOI ( $R^2 = 0.37, \Delta R^2 = 0.04, p < .01$ ). The results show that TT has a significant negative moderating effect ( $\beta = -0.22, p < .01$ ), whereas the MP has a significant positive moderating effect ( $\beta = 0.19, p < .01$ ).

Accordingly, LMT firms in TLAC incline towards IOI, and explore its advantages. This supports the scholars' speculation that OI counts across firms and countries irrespective of their technology and R&D intensity, and has become a global trend. Moreover, LMT firms are technology oriented and thereby, proactive in acquiring and using new and sophisticated technologies, products and innovations. Also, they are exposed to the pressure of moderately turbulent environment. The study recognizes the TO as an antecedent condition to IOI. Firms introducing and using sophisticated technologies in their development endeavours are more inclined to IOI as LMT firms are lagging in internally developed knowledge by owned R&D. The effect of TO on IOI is weak in a technologically turbulent environment but, stronger in highly potential markets. This negative effect may be attributed to the rising cost of accessing external technology assets due to the frequent changes in technology. Also, the opportunities created by MP increase the needs for new technological knowhow to satisfy customers' evolving current and latent needs, making LMT firms turn to external sources of knowledge.

This study extends the literature on strategic capability and innovation in several areas. First, it broadens our understanding on IOI at LMT firms in TLAC, and their trend towards TO. Second, it comprehends the effect of TO on implementing IOI in low-technology and low-R&D intensity contexts. Finally, it deepens our knowledge on the effect of dynamic environment on OI implementation.

**Keywords:** Inbound open innovation; LMT firms; Market potential; Technology orientation; Technology turbulence

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