Article

Configurations of Resources, Strategy, Structure and Environment in Young High-technology Firms: Evidence from Qualitative Comparative Analysis

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Abstract

Traditional configuration approach uses some combinations of four domains, namely, environment, strategy, structure and leadership, for identifying organizational configurations. Responding to call for improving extant theoretical specification, this article draws on resource-based view to argue for the inclusion of resource as a domain. Crisp-set qualitative comparative analysis is used to analyze the primary data collected through questionnaire from 60 Indian, young high-technology firms. Configurations of high-performing young firms from high-technology sector in India exhibit reliance on high entrepreneurial orientation (EO) to balance the issue of unavailability of managers with high-growth experience. Firms either choose new product development strategy or inorganic corporate development strategy depending mainly upon environmental contexts. In none of the configurations achieving high performance, 'high number of experienced managers' and high EO are simultaneously absent; in the majority of the configurations, the condition 'high number of experienced managers' is absent, and the absence of high EO coincides with the absence of 'corporate development strategy' or with 'small size'. These findings on configurations, their internal causal mechanisms and implications are discussed.

Keywords

Configuration approach, qualitative comparative analysis, resource-based view, high-technology firms

Introduction

Configuration means 'any multidimensional constellation of conceptually distinct characteristics that commonly occurs together' (Meyer, Tsui & Hinings, 1993 p. 1175). Taking a holistic view, configuration

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approach (Short, Payne & Ketchen, 2008) regards firms as a complex entity and attributes variation in dependent variable, for example, firm performance to multiple domains of predictors, such as, leadership, strategy, structure and environment (Miller, 1987), and their mutual interactions (Meyer et al., 1993). Traditional configuration models that focus only on the classification of firms into typologies have been criticized for the lack of comprehensiveness of theoretical modelling (Bacharach, 1989; Snow, Miles & Miles, 2005) and suffer from two shortcomings. First, they do not take into account other important firm-level determinants of its performance (Wiklund & Shepherd, 2003). Second, they do not explain how the four domains—leadership, strategy, structure and environment—interact and affect each other. Recent literature has raised this criticism of lack of causal linkages among domains (Snow et al., 2005).

In response, this article aims to contribute to literature in two ways. The first one is the improvement in theoretical specification of configuration approach by arguing for the inclusion of resource, subsuming leadership as a domain. Second, Indian young high-technology firms are chosen as context. Previous researches have studied the drivers, performance and survival of firms from high-technology sector albeit focussing mainly on developed economies. Limited available literature on firms from emerging economies has mainly used contingency approach (Lau & Bruton, 2011). Given the contextual differences, such as, the availability of experienced managers (Valliere & Peterson, 2009; Wood et al., 2011), emerging economies firms have to use different combinations of factors to achieve high performance. Therefore, the articles explores the research question—What organizational configurations of young high-tech Indian firms can be identified using resources, strategy, structure and environment, and what are their performance implications? Crisp-set qualitative comparative analysis (CSQCA) is used to analyze the data collected from 60 Indian firms. The resultant configurations, their internal causal mechanisms and implications are discussed.

Theoretical Background

Configuration Approach

Configuration approach rests on the premise that causal attributes are interdependent and only those firms that achieve internal coherence across domains (Meyer et al., 1993; Snow et al., 2005) and align attributes with the environment outperform others (Ketchen, Thomas & Snow, 1993). Miller (1987) argued that leadership, environment, structure and strategy are the imperatives that guide the evolution of firms' configurations through its life cycle. Empirical research on medium and large firms mainly focused on factors related to these imperatives to study configurations and termed each group of factors as a domain (Frank, Lueger & Korunka, 2007; Ketchen et al., 1993). Past research has mostly used environment–structure–strategy triadic relationships simultaneously and neglected the use of resources along with these three domains to identify configurations (Harms, Kraus & Reschke, 2007; Ketchen et al., 1997; Short et al., 2008; Wiklund & Shepherd, 2003).

Resource and Configuration Approach. Researchers have compared the effects of firm- and industry-level factors on firm performance and concluded that the former cater to about twice the variation of firm performance as compared to latter (Table 1). Meta-analysis of 125 studies on resource-based view (RBV) by Crook et al. (2008) also attributed 22 per cent of the variation of firm performance to strategic resources. Hence, not using resources to identify configuration leaves the theoretical framework of configuration approach weak and distances it from strategic management literature (Kamasak, 2011; Snow et al., 2005; Wiklund & Shepherd, 2003).

Table 1. Firm versus Industry Effect on Firm Performance

Variance Component (in %)	Schmalensee (1985)	Hansen and Wernerfelt (1989)	Rumelt (1991) (sample B)	McGahan and Porter (1997)	Hawawini, Subramanian and Verdin (2003)	Short et al. (2007) (for inductively defined groups)
Firm effect	0.6	37.8	45.8	32	35.8	78.97
Industry effect	19.6	18.5	4	19	8.1	14.68
Context	242 manufacturing industries	60 firms from 300 industries	242 industries	628 industries	55 industries	12 high-technology industries

Source: Authors' literature review.

Which Resource?

Resource though conceptualized and operationalized differently across strategy and entrepreneurship research is regarded as an important determinant of firms' performance (Crook et al., 2008; Gruber, Heinemann & Brette, 2010; Korunka et al., 2003; Song et al., 2008). Barney (1991, p. 101) defines resource as 'all assets, capabilities, organizational processes, firm attributes, information, knowledge etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness'. Resource-based view assumes resource heterogeneity and immobility and attributes firms' competitive advantage to resources exploitation by organizational readiness provided resources are valuable, rare, inimitable and non-substitutable (Barney, 1991). Through its evolution, the RBV literature has categorized resource as tangible and intangible and enriched it to include capabilities and core competencies (Newbert, 2007).

In start-up configurations, among internal factors, leaders' personality factor is most important, however, as firms move to growth phase, the organizational components become more prominent (Frank et al., 2007; Korunka et al., 2003). Top management team attributes and strategic orientation have been used as indicators of managerial (human) capital and organizational capital dimensions of resources, respectively, and also in identifying configurations in strategic management literature (Carmeli & Tishler, 2004; Crook et al., 2008; Hitt et al., 2001; Wright, Dunford & Snell, 2001; Wiklund & Shepherd, 2003). This article thus considers leadership and organizational capital as important indicators of young firms' resource.

Accordingly, resource (subsuming strategic orientation and leadership) is used with strategy, structure and environment for identifying organizational configuration. Building on arguments provided by Cockburn, Henderson and Stern (2000) and Lumpkin and Dess (1996), Wiklund and Shepherd (2003, 2005) used entrepreneurial orientation (EO) as a 'type of strategic orientation'. Accordingly, this article also uses EO as an indicator of young firms' strategic orientation.

Entrepreneurial Orientation. EO refers to 'the processes, practices, and decision making activities towards new entry' (Lumpkin & Dess, 1996, p. 136). EO is an indicator of a firm's propensity to engage in 'the pursuit of new market opportunities and the renewal of existing areas of operation' (Hult & Ketchen, 2001, p. 901). It promotes values, such as, being highly proactive towards market opportunities, risk tolerance and receptive to innovations (Otero-Neira, Arias & Lindman, 2013). Thus, risk-taking, innovativeness and proactiveness are dimensions of EO (Covin & Sevlin, 1989).

Nature of Configurations

This study does not offer any hypothesis concerning the exact nature of configurations. If one draws upon a large number of factors to identify configurations, it becomes difficult to establish the exact role

and contribution of all factors simultaneously (Venkatraman, 1989). Hence, the past research in scholarly management journals (e.g., *Academy of Management Journal*, *Strategic Management Journal* and *Entrepreneurship: Theory and Practice*) did not contain a priori hypothesis about configurations (e.g., Fiss, 2011; Korunka et al., 2003).

Context

High-tech sectors are relatively research and development intensive and span both manufacturing and services industries (Ghosh, 2009). Firms operating in high-tech sectors face dynamic and complex industry structure and display great performance heterogeneity (Song et al., 2008). While there are studies on high-technology ventures in developed economies context, configurations of resources, strategies, structure and environment (Short et al., 2008) of Indian firms have not been examined to date (Lau & Bruton, 2011). In the absence of strong institutional support mechanisms, configurations of internal factors (including resources) assume greater importance in high performance of firms from emerging economies. This makes Indian high-tech firms, especially young ones, suitable for this research study.

Method

Sampling

Sampling unit for this study consisted of Indian firms engaged in high-technology sectors (computer software, information technology and high-tech manufacturing) that are between 3 and 12 years old (Song et al., 2008; Yli-Renko, Autio & Tontti, 2002) and not affiliated to business groups. Units were identified from sampling frame generated from companies' directories. Seven-point Likert-scale-based questionnaire was used for data collection. The respondents were the chief executive officers (CEOs)/ entrepreneurs/founders. Before the full-scale survey, survey was pilot tested on five firms. However, after initial contacts, it was realized that an intensive data collection approach was needed to counter the issues of: large-sized questionnaire, reluctance to share information and issues of credibility. Accordingly, a data-collection agency was used to collect the data from Delhi National Capital Region of India.

Out of 250 surveys, 65 valid responses were received, of which background re-verification led to the removal of five questionnaires. Average experience of respondent with the firm is 6.35 years. Among surveyed firms, 65 per cent belonged to services and 35 per cent belonged to manufacturing sector. Based on the *t* test for difference of mean, it was found that for the given sample, there are no statistically significant differences in the mean values of attributes of the manufacturing and service firms. Hence, they can be used as a single sample.

Measures

Table 2 summarizes the measures used as input in qualitative comparative analysis (QCA). Market dynamism, technological dynamism and competitive intensity are measured to represent environment domain. Strategic focus on growth through new product development and focus on corporate development are used to capture firm strategy. Formalization and firm size represent structural factors, and top manager's prior experience in high-growth companies and EO represents resources. Table 2 also reports definition, number of items and reliability scores (Cronbach's alpha).

Table 2. Measures

Domain	Dimension	Adapted from	Definition	Items	Cronbach's Alpha	Cut-off
Environment	MD	Jaworski and Kohli (1993)	The rate of change in the composition of customers and their preferences	5	0.77	4.6
	CI		The nature of competition	6	0.78	4.83
	TD		The rate of technological change	4	0.76	4.88
Strategy	CD	Lau and Bruton (2011)	Strategies focusing on corporate development (alliances, acquisition and restructuring)	3	0.72	4.84
	PD	Miller (1988)	Degree to the firm develops and introduces new products or services	3	0.72	4.84
Structure	F	Jaworski and Kohli (1993)	Represents the degree to which rules define roles, authority relations, communications, norms and sanctions and procedures	5	0.84	4.9
	EE	-	Number of employees	1	–	35
Resource	TMX	Keeley and Roure (1990)	Number of top managers with at least one year experience in rapidly growing companies (>25% annual growth in sales)	1	–	3.5
	EO	Covin and Slevin (1989)	The processes, practices and decision-making activities towards new product/market entry	9	0.78	5.11
Performance	HoliPerf	Stam and Elfring (2008)	Performance in the past three years in sales growth, employment growth, gross profits, innovation in product and services and speed of developing new products and services	5	0.86	5

Source: Authors' literature review, observations and analysis.

Notes: For all the tables and annexure, refer to the following notations: market dynamism (MD); competitive intensity (CI); technological dynamism (TD); corporate development (CD); new product development (PD); formalization (F); size (EE); number of top managers with high-growth experience (TMX); entrepreneurial orientation (EO); holistic performance (HoliPerf).

Analysis

Qualitative Comparative Analysis

Fiss (2007, 2011) compared the prevalent techniques of identifying organizational configuration and argued for the use of set-theoretic methods of QCA. Set-theoretic methods of QCA use Boolean algebra for the analysis of social science statements in terms of set relations (Marx, 2010). Ragin (2000) argues that the logic of comparative case study is configurational, whereby cases/firms are considered as the configuration/sets of attributes to be analyzed holistically. For a quick overview of QCA and its application, refer to Fiss (2011) and Greckhamer et al. (2008).

Crisp-set QCA is a type of QCA that allows firms to have only either full membership (i.e., the presence of a condition or the outcome) to a set or full non-membership (i.e., the absence of a condition or the outcome). To make the raw data collected using questionnaire amenable to CSQCA, the data are dichotomized as 0 and 1. For this, cut-offs were decided using Tosmana software and cross-checked using cluster analysis (Cronqvist, 2011; Ragin & Rihoux, 2008; Schneider & Wagemann, 2012). Raw values lesser than or equal to this cut-offs are assigned zero (full non-membership) and values greater than the cut-offs are treated as one (full membership).

Following Marx and Dusa (2011), a step-wise approach of applying CSQCA is adopted. First, outcome and conditions are defined as follows. The outcome is labelled 'high-performing organization'. All those firms that had raw score above five (Table 2) on performance are the members of this set, whereas those with raw score equal or less than this are out of this set, that is, not a member of set of high-performing organization. The condition 'highly dynamic operating environment' is used to represent environment domain. To create this condition, raw scores of market dynamism, technological dynamism and competitive intensity are dichotomized. Similarly, remaining conditions and constructs used to create them are listed in Table 3.

As the sample size is limited to 60, all the nine measures (3 + 2 + 2 + 1 + 1) of all the four domains could not be used simultaneously (Marx & Dusa, 2011). Therefore, configurations are identified by using total five indicators at a time: one each for environment, strategy, structure, top managers' prior experience and EO. Thus, the total 12 models (3 × 2 × 2 × 1 × 1) are tested that include a maximum of five conditions out of nine at a time, with top managerial prior growth experience and EO being used throughout. This is within benchmark limits for the condition to case ratio for CSQCA (Marx & Dusa, 2011). Using Tosmana software, truth tables are created for each model. None of the 12 truth tables have contradictory configurations. A sample truth table is presented in Table 4.

Truth table (Table 4) is derived by using market dynamism, strategic focus on new product development, formalization, top managers' prior high-growth experience and EO as conditions and holistic performance as the outcome. Each row represents a configuration that is empirically observed. First column lists the abbreviated names of sample companies. Second through sixth columns indicates five conditions used as input. The values in these columns tell whether that particular condition is

Table 3. Outcome of Interest and Nine Representative Conditions

Set of:	Representative of (domain):	Role in QCA	Calculated using Dichotomization of Raw Score of	Used in Model Number
High-performing organizations	Performance	Outcome	HoliPerf	All
Highly dynamic operating environment	Environment	Condition	MD	1,4,7,10
Highly dynamic operating environment			TD	2,5,8,11
Highly dynamic operating environment			CI	3,6,9,12
Strategic growth focus through new product development	Strategy		PD	1,2,3,7,8,9
Strategic development focus through corporate development			CD	4,5,6,10,11,12
High formalization	Structure		F	1,2,3,4,5,6
Large size			EE	7,8,9,10,11,12
High managerial high-growth experience	Resource: Top managers' attribute		TMX	All
High entrepreneurial orientation	Resource: Organizational capital		EO	All

Source: Authors' definitions of sets and analysis.

Table 4. Sample Truth Table

Case Name	MD	PD	F	TMX	EO	HoliPerf	Number of Companies
TT, SS51, AIP, AI, SS59, QR50, SA, SRM	0	0	0	0	0	0	8
SR, PIS, PS	1	0	0	0	0	0	3
BS18, BS28	0	1	0	0	0	0	2
VC	1	1	0	0	0	0	1
SSR, TNTM	1	1	0	0	1	1	2
BC, MSS, PCI, LLC, ANIN, JE, PE, GG, AI, AT, DE, SS42, SMS, SS20, VMI, JT, IO, IE, CG, RKW, MHGE, GMA, PWH, LS, SN, DC, OTI, BKE, DBW, GI, SSP, GKW, VA, TII, KE, MI, GSS	1	1	1	0	1	1	37
QR42, MPE	0	1	0	0	1	1	2
KIP, IRT	1	0	1	0	1	1	2
DI	0	0	0	0	1	1	1
BI	1	1	1	1	0	1	1
EIS	0	1	0	1	0	1	1

Source: Authors' analysis of the data.

present (1) or absent (0). Second last column indicates, 0 = if that configuration led to the absence of outcome (high performance), and 1 = if it led to the presence of outcome, and the last column tells us how many companies belong to a particular configuration (row).

Configurations

The analysis of complex solution terms identified using fsQCA software (Ragin, Drass & Davey, 2006) for all 12 models (reported in Annexure 1) reveals some prominent configuration types, combinations of conditions (with raw coverage score greater than 0.8) that are sufficient for achieving high performance:

Configuration type A: In the presence of highly dynamic environment (any combination of market dynamism or technological dynamism or competitive intensity), firms that do not have highly experienced managers but adopt high EO succeed in two ways: by either pursuing new product development strategy or adopting high formalization.

Configuration type B: In the presence of highly dynamic market (consumer related) or competitive environment (or combination of these), firms that do not have highly experienced managers but adopt high EO succeed by pursuing corporate (inorganic) development strategy.

Configuration type C: If firms are very small and lack highly experienced managers but adopt high EO, they succeed by focusing on new product development.

Discussion

In most of the configurations that lead to success among young (3–12 years old) Indian high-technology firms, top managers with high-growth experience are absent. This is surprising, as received wisdom

suggests that top managers' related and high-growth experiences are related to better chances of high performance. However, this can rather be seen as a reflection of trend of very little, virtually non-existent, movement of managers across young start-ups, and even rarely so from fast-growing medium and large business to younger firms in India (Koster & Rai, 2008; Valliere & Peterson, 2009).

In configurations type A noted above, when firms operate in an environment where either customer demands are high and volatile or technology is changing very fast or competition is fierce or any combination of these, and if firms do not have access to managerial experience and network and choose to adopt posture of high innovativeness, risk-taking and proactiveness, firms succeed by focusing on newer product development. If firms are unsure about which strategic choice (product development or inorganic growth option) to make, they resort to high formalization to keep a 'check' on run on limited firm resources.

In configurations type B, when firms operate in an environment where either customer demands are high and volatile or competition is fierce or any combination of these, do not have manager with high-growth experience and adopt postures of high innovativeness, risk-taking and proactiveness, they succeed focusing on inorganic growth option. This helps firms compensate for the lack of experience, talent and capabilities and provides the access to resources and market. Especially, a related/vertical integration enables firms to counter fluctuating demand and competitive moves swiftly.

In configurations type C, where the firms are very small, lack manager with high-growth experience and adopt postures of high innovativeness, risk-taking and proactiveness, they succeed by focusing on newer product development irrespective of the prevalent environment. Thus, things depend upon heavily on the capabilities of existing talent pool in the firm. Firm taps the creative, technical and business potential of its employees and succeed by offering personalized and specialized services to the clients.

In none of the configurations, EO and managers with high-growth experience are simultaneously absent. This strengthens the line of reasoning pursued in this article that leadership and organizational process domains dominate firms' configurations as they move from start-up to growth phase (Frank et al., 2007).

Conclusion

The analysis presented in the article indicates that there are multiple ways in which firms can achieve high performance, termed as equifinality (Fiss, 2011). Some interesting findings are: (i) high number of experienced managers and high EO are never simultaneously absent; (ii) in the majority of configurations, 'highly experienced managers' condition is absent; and (iii) the absence of high EO coincides with the absence of corporate development strategy or with small size. Across, all configurations, major presence of EO for firm performance echoes the results of Wiklund (1999) especially for young high-technology firms.

To test for causal asymmetry (if some cause leads to an outcome, its absence does not necessarily lead to the absence of outcome), the absence of outcome is also modelled. Across all 12 models, combined absence of manager with prior high-growth experience and EO appeared as the core element of configuration. Therefore, at least for the sample, simultaneous absence of these two factors is sure way of organizations not achieving high performance. Building on strategic management and configuration literature, this study contributes to the theory by: (i) enriching configuration literature by incorporating resources as domain and extending its application to technology entrepreneurship (Short et al., 2008) and (ii) providing holistic explanation of young high-technology firms' performance.

As some measures of strategy (low cost, market differentiation) and structure (centralization) failed to achieve minimum reliability score, they had to be dropped. Generalization of results of this study is

also constrained due to limited geographical (the National Capital Region of India) and industrial (selected high-technology industries) sampling for specific age group (3–12 years old). Future study can use larger sample size by collecting data from diverse industrial sectors to enhance the generalizability of the results. Further, the study can be extended by including institutional factors to environment domain: How pressures for different types of legitimacies affect the interplay of causal conditions may be one such research area.

Today's hypercompetitive environment presents new challenges for young firms. Thus, the ability of founders to provide young ventures appropriate orientation and configuration suitable for future technologies and environment is crucial. Founders of such firms can compare their configurations with those in this study and use them for developing context-specific insights. Policy makers may benefit by focusing on orientation training of young firms that lack managers with high-growth experience and EO simultaneously before providing them funding.

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Annexure 1. Complex Solutions

Model 1: Performance = f(MD, PD, F, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~MD*~F*~TMX*EO	0.065217	0.021739	1.000000
MD*F*~TMX*EO	0.847826	0.043478	1.000000
~MD*PD*~F*TMX*~EO	0.021739	0.021739	1.000000
MD*PD*F*TMX*~EO	0.021739	0.021739	1.000000
PD*~F*~TMX*EO	0.086957	0.000000	1.000000
MD*PD*~TMX*EO	0.847826	0.000000	1.000000

Model 2: Performance = f(TD, PD, F, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~TD*~F*~TMX*EO	0.043478	0.021739	1.000000
TD*PD*TMX*~EO	0.043478	0.043478	1.000000
TD*F*~TMX*EO	0.847826	0.043478	1.000000
PD*~F*~TMX*EO	0.086957	0.000000	1.000000
TD*PD*~TMX*EO	0.869565	0.000000	1.000000

Model 3: Performance = f(CI, PD, F, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~CI*~F*~TMX*EO	0.043478	0.021739	1.000000
CI*PD*TMX*~EO	0.043478	0.043478	1.000000
CI*F*~TMX*EO	0.847826	0.043478	1.000000
PD*~F*~TMX*EO	0.086957	0.000000	1.000000
CI*PD*~TMX*EO	0.869565	0.000000	1.000000

(Annexure 1 continued)

(Annexure 1 continued)

Model 4: Performance = f(MD, CD, F, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~MD*~F*~TMX*EO	0.065217	0.043478	1.000000
MD*F*~TMX*EO	0.847826	0.021739	1.000000
~MD*~CD*~F*TMX*~EO	0.021739	0.021739	1.000000
MD*~CD*F*TMX*~EO	0.021739	0.021739	1.000000
CD*~F*~TMX*EO	0.065217	0.000000	1.000000
MD*CD*~TMX*EO	0.869565	0.000000	1.000000

Model 5: Performance = f(TD, CD, F, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~F*~TMX*EO	0.108696	0.043478	1.000000
TD*~TMX*EO	0.913043	0.847826	1.000000
TD*~CD*TMX*~EO	0.043478	0.043478	1.000000

Model 6: Performance = f(CI, CD, F, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~F*~TMX*EO	0.108696	0.043478	1.000000
CI*~TMX*EO	0.913043	0.847826	1.000000
CI*~CD*TMX*~EO	0.043478	0.043478	1.000000

Model 7: Performance = f(MD, PD, EE, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~MD*~EE*~TMX*EO	0.065217	0.021739	1.000000
PD*~EE*TMX*~EO	0.043478	0.043478	1.000000
MD*EE*~TMX*EO	0.065217	0.043478	1.000000
PD*~EE*~TMX*EO	0.869565	0.000000	1.000000
MD*PD*~TMX*EO	0.847826	0.000000	1.000000

Model 8: Performance = f(TD, PD, EE, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~TD*~EE*~TMX*EO	0.043478	0.021739	1.000000
TD*EE*~TMX*EO	0.065217	0.043478	1.000000
TD*PD*~EE*TMX*~EO	0.043478	0.043478	1.000000
PD*~EE*~TMX*EO	0.869565	0.000000	1.000000
TD*PD*~TMX*EO	0.869565	0.000000	1.000000

Model 9: Performance = f(CI, PD, EE, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~CI*~EE*~TMX*EO	0.043478	0.021739	1.000000
CI*EE*~TMX*EO	0.065217	0.043478	1.000000
CI*PD*~EE*TMX*~EO	0.043478	0.043478	1.000000
PD*~EE*~TMX*EO	0.869565	0.000000	1.000000
CI*PD*~TMX*EO	0.869565	0.000000	1.000000

Model 10: Performance = f(MD, CD, EE, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~EE*~TMX*EO	0.891304	0.086957	1.000000
~CD*~EE*TMX*~EO	0.043478	0.043478	1.000000
MD*CD*~TMX*EO	0.869565	0.065217	1.000000

Model 11: Performance = f(TD, CD, EE, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~EE*~TMX*EO	0.891304	0.086957	1.000000
TD*CD*~TMX*EO	0.869565	0.065217	1.000000
TD*~CD*~EE*TMX*~EO	0.043478	0.043478	1.000000

Model 12: Performance = f(CI, CD, EE, TMX, EO)			
Solution Terms	Raw Coverage	Unique Coverage	Consistency
~EE*~TMX*EO	0.891304	0.086957	1.000000
CI*CD*~TMX*EO	0.869565	0.065217	1.000000
CI*~CD*~EE*TMX*~EO	0.043478	0.043478	1.000000

Notes: 1. For all models: overall solution coverage and consistency are both 1.
2. ~ = absence
~MD = absence of high market dynamic environment
* = and.
3. How to read a row: ~MD*~F*~TMX*EO means a solution term for which MD, F, and TMX are absent whereas EO is present.

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