Environmental Dynamism, HR Flexibility, and Firm Performance: Analysis of a Multi-Level Causal Model

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Abstract While strategic HRM scholars have conceptualized HR flexibility as an important source of sustainable superior firm performance in dynamic environments, the process through which HR flexibility creates value for the firm has not been empirically investigated. Based on a study of 98 manufacturing and 103 service firms from a wide array of industries in India, this paper attempts to illuminate the black box of causal linkages between environmental dynamism, flexibility of human assets, and firm level human-, operational-, and financial- outcomes by developing and testing a multi-level causal model. Evidences indicate that HR flexibility mediates the influence of environmental dynamism on firm performance and that irrespective of the nature of the industry and the degree of environmental turbulence, superior firm performance ensues when HR flexibility as actually possessed by the firm matches the environmental demands for such flexibility as perceived by the firm managers. The results also support the notion of HR value chain that postulates that HR system has direct impact on firm-level HR outcomes which are most proximal, and its effects on increasingly more distal operational- and financial- outcomes are mediated by HR outcomes. Another important finding is that HR practices as a system have both direct and indirect (mediated by behavioural flexibility) effects on firm-level HR outcomes. Existence of significant direct effects highlights the important role that HR practices play as a structural mechanism in achieving superior firm performance.

The contingent relationship between a firm’s business environment and its performance is well recognised in strategic management and organisational literatures (Duncan, 1972; Thompson, 1967). In an uncertain environment, having the flexibility or an option to decide what to do after some of that uncertainty is resolved definitely has value (Merton, 1998). From the resource-based view (RBV), a firm can sustain its competitive advantage in a dynamic environment if it possesses strategic flexibility which requires that its resources are inherently flexible, and it has capabilities to reconfigure and redeploy such resources quickly and at low cost to meet the demands of the changing environment. Real options theory suggests that firms can proactively exploit uncertainties in their environment rather than just absorb it, if it creates the strategic flexibility by investing in the real options that the firm can exercise when some of the uncertainties in the environment are removed (Kogut & Kulatilaka, 2001). Flexibility is a fundamental approach to the management of environmental uncertainty (Sanchez, 1993).

Organisational responses to dynamic environments have been studied in strategic management and organisational literatures mostly in terms of the specific actions taken which range from major changes in strategy, structures, process technologies, or product/service offerings to enhancing flexibilities of operations (Nayyar & Bantel, 1994; Volberda, 1998). Organisational flexibility has been conceived of as a dynamic capability of a firm to pro-act, or to respond, to changing competitive environment that may create sustainable competitive advantage for the firm (Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997). Strategic HRM scholars have advocated flexibility in HR systems and processes for enhancing organisational effectiveness in a dynamic environment (Wright & Snell, 1998) and they have perceived HR flexibility as a dynamic capability that helps the organisation to adapt to changing environmental contingencies (Bhattacharya, Gibson, & Doty, 2005). However, in spite of their obvious importance, the role of HR flexibility and the process through which it helps to maintain organisational effectiveness in a dynamic environment have not been adequately addressed through empirical research in the SHRM literature.

The present study, conducted across 98 manufacturing and 103 service firms belonging to a wide variety of...
industries in India, addresses this gap in empirical research and hopes to make three important contributions to the SHRM literature. First, it attempts to unravel how firm responses to environmental dynamism vary across the various dimensions of HR flexibility (Wright & Snell, 1998). Second, it explores how the HR flexibility components attenuate the effects of environmental uncertainties on firm-level human-, operational-, and financial-outcomes. Finally, it develops and tests a multi-level causal model that links the dimensions of environmental uncertainty, HR flexibility, and firm performance through a hypothesised causal network. Hopefully, this would help in illuminating to some degree the 'black box' of HR-firm performance linkage and in guiding managerial policy and practices aimed at sustaining superior firm performance under conditions of environmental uncertainty.

THEORY AND HYPOTHESES

Environment Dynamism and Firm Performance

Organizational scholars from diverse research disciplines agree that in today’s dynamic environment, organizations need to be ambidextrous - aligned and efficient in their management of today’s business demands, while also adaptive enough to be able to meet the demands of the environment they are likely to encounter tomorrow (Gibson & Birkinshaw, 2004; Johnson, Lee, Saini, & Grohmann, 2003; Raisch & Birkinshaw, 2008; Teece, 2007; Wright & Snell, 1998). While structural ambidexterity embodied in dual structures has been suggested as means of negotiating the environmental uncertainty long back (Duncan, 1976), there is a growing recognition and evidence that the organizational processes and systems can create the necessary context (contextual ambidexterity) that provides an alternative, which may be equally valuable but more difficult to imitate, mode of creating organisational ambidexterity (Gibson & Birkinshaw, 2004; Marks, Mathieu, & Zaccaro 2001). Scholars using the dynamic or contingent resource-based perspective argue that sustainability of competitive advantage in an uncertain environment is contingent upon firms meeting two criteria (Aragón-Correa & Sharma, 2003; Chan, Shafer, & Snape, 2004; Helfat & Peteraf, 2003; Makadok, 2001; Sirmon, Hitt, & Ireland, 2007). First, they not only meet the initial condition of possessing valuable resources at any given point of time but are also able to renew, reallocate, rejuvenate, and redefine their resources synchronously with the environmental changes. Second, they are able to orchestrate through organisational processes and systems increasing levels of complementarities or co-specialization between the various types of resources they possess.

Recent advances in dynamic capability literature identify a firm’s ability to achieve “value-enhancing orchestration of assets” as one of the micro-foundations of dynamic capabilities of firms (Teece, 2007: 1344). According to this perspective, firms build long-run stakeholder value through sensing, seizing, and transformational activities that help firms combine and reconfigure specialized and cospecialized assets to meet changing market demands (Teece, 2007). Similarly, from the perspective of the real options theory, an organization is viewed as a set of resources that generate “strategic choices” and “allow preferential access to future opportunities” (Bowman & Hruby, 1993: 760). The dynamic process of organisational change is depicted as a sequential option chain; each investment conferring preferred access to a subsequent investment opportunity (Bowman & Hruby, 1993; McGrath, Ferrier, & Mendelow, 2004; Trigeorgis, 2001) that helps the firm to exploit opportunities and/or guard against downside risks in an uncertain environment. In this perspective too, the process involves sense making, proactive learning, and appropriate exercise of managerial choices aided by the organisational systems and processes (McGrath et al., 2004).

Role of HR Flexibility

It is being increasingly realised that in a globally integrated market environment, the enduring
sources of sustainable competitive advantage for firms lie in their distinctive intangible assets and in their capabilities to acquire, develop, and leverage those firm specific assets effectively (Hitt, Keats, & DeMarie, 1998; Sirmon et al., 2007; Teece, 2007). Human resources comprising the knowledge, skills, and abilities as well as the behavioural repertoires and commitment to apply those towards organisational goals by the firm employees are identified as the most critical of such resources in uncertain environments (Sirmon et al., 2007).

Environmental uncertainty demands that a firm acquires and develops a broad, rather than a narrow, range of employee skills and behaviours that at once allow the firm to exploit future market opportunities and/or avoid risks of obsolescence of human assets (Bowman & Hurry, 1993). Different environmental contexts require different configurations of resource bundles. So, the firms need to continuously renew, resynthesise, and reconfigure their resources in order to remain viable. Finally, since competitive advantage ultimately comes from not mere possession of resources but their actual use (Penrose, 1959), firms need to have the capabilities to mobilize, integrate, and actually deploy the relevant resources and capacities to create value for the customers and the stakeholders. Thus, as conceptualised by Sanchez (1995), a firm needs to possess two basic types of flexibility: 1) resource flexibility - implying the extent to which a resource can be applied to alternate uses; and 2) coordination flexibility - indicating the extent to which the firm can reconfigure and redeploy its resources with ease, speedily, and cost effectively.

The construct was first conceptualised by Wright and Snell (1998) around three generic variables: 1) employee skills, 2) employee behaviours, and 3) HR practices. Skill flexibility refers to two attributes: the number of potential alternative uses to which employee skills can be applied (resource flexibility), and how individuals with different skills can be quickly redeployed (coordination flexibility). Behavioural flexibility signifies availability of a sufficiently broad range of behavioural scripts among employees which they can adapt to the demands of situations (resource flexibility) while maintaining similarity of responses by different members to similarly perceived situations (coordination flexibility). However, Wright and Snell (1998) conceptualised flexibility of HR practices as "the extent to which they can be adapted and applied across a variety of situations" (p. 762) and "how quickly the practices can be resynthesised, reconfigured, and redeployed." (p. 763). Thus, they conceptualise even the sub-dimension of resource flexibility of HR practices in terms of ease of application across different situations (p. 762).

This conceptualisation ignores the explicit role that HR practices can play in promoting HR flexibility otherwise than by being amenable to flexible and speedy redeployment. Ketkar and Sett (In press) identifies this gap and extends the Wright and Snell’s conceptualisation of HR flexibility further through their empirical study. Based upon a survey of extant literatures, they identified a set of flexibility inducing HR practices HR practices (see Appendix A) that could help the firms achieve resource flexibility by continuously renewing and rejuvenating its human resources in tune with the environmental demands.

Drawing upon the common threads of the dynamic resource based view (Sirmon et al., 2007; Teece et al., 1997; Zajac et al., 2000), real options theory (Bowman & Hurry, 1993; Kogut & Kulatilaka, 2001; McGrath et al., 2004), and dynamic capabilities literature (Teece, 2007), they contend that flexibility inducing HR practices as a system is distinguished by its unique focus on creating organisational ambidexterity (Gibson & Birkinshaw, 2004; Raisch & Birkinshaw, 2008) that is defined as an organisational capability to simultaneously demonstrate alignment and adaptability, and accordingly, could be termed as ambidextrous HR system that provides both performance management context and social context of superior firm performance in a dynamic environment by framing the behaviour of employees at individual, group, and organisational levels
In their study, Ketkar and Sett (In press) empirically tested and validated a four-factor model of the construct of HR flexibility that included *flexibility inducing HR practices* as a distinct dimension beyond the three existing ones. Empirical support for the flexibility inducing HR practices as a distinct dimension of HR flexibility is considered as a significant advancement in the HR flexibility literature as it identifies the system and processes that the firms could use to constantly renew and rejuvenate their human resources. In particular, they provide the dynamic capability of reconfiguring human resources within the firm that bestows it competitive advantage in a turbulent environment (Chan *et al.*, 2004).

**Environmental Dynamism and Firm Performance: Mediating role of HR Flexibility**

The contingency theory, contingent resource based view, and organisations and natural environment literatures have all shown that managerial perceptions of the exogenous business environment influence firm strategy which in turn has influence on firm performance (Aragón-Correa & Sharma, 2003; Nadkarni & Narayanan, 2007; Verdu-Jover, Llorens-Montes, & Garcia-Morales, 2006). Managerial perception of the environmental uncertainties is an important antecedent of managerial choices that determine how firms actually develop and use their resources and capabilities to deploy their espoused strategies that eventually influence firm performance. This perception-action sequence is to be viewed as an unfolding dynamic process through which managers constantly renew, reconfigure, and redeploy the firm resources, including orchestration of complementary and co-specialised assets, in order to achieve sustainable superior firm performance in the face of environmental uncertainties (Chan *et al.*, 2004; Helfat *et al.*, 2007; Teece, 2007). By its very nature, this process unfolds over time and takes place in a manner that is socially complex and causally ambiguous - particularly in relation to intangible assets like human resources - thereby acting as a potential source of sustainable competitive advantage for the firm.

By the above logic, as managers perceive environmental uncertainties emanating from changes in technology, competitor behaviour, consumer preferences, etc., they tend to create options for alternate deployment of their human resources in future, by promoting flexibilities in employee skills and behaviours as well as in HR practices (Bhattacharya & Wright, 2005). Utilising the ambidextrous characteristic of the *flexibility inducing HR practices*, they undertake progressive transformation of the employee skills and behaviours that meet the demands of both current and emerging strategies. These practices empower the employees with skills as well as behavioural routines that are required to serve not only the existing customers and product markets using the existing processes but also the new customer and product market segments that may need use of new processes. *Flexible HR practices*, on the other hand, help resynthesis, reallocation, rebundling, and redeployment of the progressively transforming human assets, including orchestration of co-specialised resources. For example, developmental employee training and performance management systems may induce acquiring of new competencies and use of discretionary behaviour that are needed to address the divergent needs of the existing and the new customers. But to institutionalise such changes, the firms need to possess coordination flexibility which, for example, may be achieved by having flexible HR practices like MBO-based performance appraisal and group-based incentive schemes that value and reward discretionary employee behaviour using newly acquired competences.

Thus, measures adopted by the managers to achieve desired levels of HR flexibility *mediate* the effect of environmental dynamism on firm performance.

**Dimensions of Firm Performance**

Guest (1997) recommends study of HRM and firm performance linkages within a broad view of
performance that reflect the concept of the Balanced Scorecard [BSC] (Kaplan & Norton, 1996) which states that the causal chain of value creation by the firm starts with skilled, motivated, and empowered employees running the business processes that create and deliver customer value, which, in turn, enables the firm to appropriate ultimate stakeholder value by selling its products and services. Logically, therefore, firm HR system should have its direct impact on HR outcomes which are the most proximal, and its effect should get progressively attenuated on increasingly more distal operational and financial outcomes (Dyer & Reeves, 1995; Wright et al., 2003).

**A causal model.** Based on the preceding discussions, a hypothesised mediated causal model linking the environmental dynamism components of HR flexibility with the human, operational, and financial outcomes at firm-level is presented in Figure 1.

The corresponding sub-hypotheses may be stated as follows:

_Hypothesis 1(a):_ Employee Skill Flexibility actually possessed by the firm will mediate the relationship between Environmental Dynamism, as represented by the Need for Skill Flexibility, and the Employee Performance.

_Hypothesis 1(b):_ Employee Behavioural Flexibility actually possessed by the firm will mediate the relationship between Environmental Dynamism, as represented by the Need for Behavioural Flexibility, and the Employee Performance.

_Hypothesis 1(c):_ HR Practice Flexibility actually possessed by the firm will mediate the relationship between Environmental Dynamism, as represented by the Need for HR Practice Flexibility, and the Employee Performance.

_Hypothesis 1(d):_ Overall HR Flexibility actually possessed by the firm will mediate the relationship between Environmental Dynamism, as represented by the overall Need for HR Flexibility, and the Employee Performance.

_Hypothesis 1(e):_ Employee Performance will mediate the effect of HR Flexibility on firm Operational Performance.

_Hypothesis 1(f):_ Firm Operational Performance will mediate the effect of Employee Performance on firm Financial Performance.

**METHOD**

**Sample and Survey**

A questionnaire based survey was conducted. About 1100 firms were initially targeted based on the industry classification used by the Centre for Monitoring Indian Economy (CMIE). Only firms with at least 100 full-time employees were included in the sample; about half of the targeted firms were in manufacturing and the other half were from service industries. To cover as many different types of industries as possible, a single respondent design was adopted. Middle/senior level managers working in line or staff functions (other than HR) with minimum 5 years of working experience were chosen as respondents.

Out of 1100 questionnaires administered, 211 (19%) usable questionnaires were returned. After testing for outliers, a final sample of 201 (98 manufacturing and 103 service) firms was used for further analysis.

**Measure of environmental dynamism.** Environmental dynamism has been studied in the extant literature in terms of both objective and perceptual measures. In process-oriented studies like the present one, firm environment has often been examined through the perceptual lens of the managers because of certain inherent advantages (Aragón-Correa & Sharma, 2003).

A multi-item 7-point Likert-type scale was developed following the standard scale development protocol. Since each firm was expected to build only the ‘required flexibility’ as perceived by the
managers of the firm (Volberda, 1998), scale items were developed, following the rationale used by Verdu-Jover et al. (2006), by directly asking the respondent managers to indicate the perceived need for HR flexibility in their respective firms.

The final scale had a total of 15 items: skill flexibility (7 items), behavioural flexibility (4 items), HR practice flexibility (4 items).

**HR flexibility measures.** The 53-item HR flexibility scale (skill flexibility: 9 items; behavioural flexibility: 16 items; HR practice flexibility: 7 items; and flexibility inducing HR practices: 21 items) developed by Ketkar and Sett (In press) was used to measure the various dimensions of HR flexibility prevalent in a firm (see Appendix B).

**Firm performance measures.** Quasi-perceptual measures developed by Ketkar and Sett (In press) were used to capture firm performance at three levels: employee performance, operating performance, and financial and market performance. The scale on employee performance had 10 items and included dimensions such as customer orientation and quality consciousness. The scale on operating performance had 10 items relating to cost, quality, and cycle time of operations, and the scale on financial performance had 5 items covering revenue growth, profitability, operating cost efficiency, market share growth and overall financial performance.

The respondents were asked to indicate the perceived performance on the relevant parameters averaged over the past 5 years (3 years for financial performance).

**Control Variables.** Four control variables used were: firm size (log of number of employees), firm age (log), degree of unionisation, and industry type (manufacturing/service).

**Analyses**

Given the exploratory nature of the study, the causal linkages between the degree of environmental dynamism, the various dimensions of HR flexibility and the different levels of firm performance were studied in two stages. First, the six sub-hypotheses (Hypotheses 1a to 1f) were individually tested through hierarchical multiple regression. Then, the hypothesised full structural equations model (Figure 1) with latent variables was tested using AMOS 7.0, with the covariance/correlation matrix as input. In order to verify whether the hypothesised model is the best representation of the data, it was compared with nested models that were theoretically justifiable (Kelloway, 1998). Three variants of the hypothesised base model were tested by employing 1) HR practice flexibility (HRPF); 2) flexibility inducing HR practice flexibility (FIHRP); and 3) both HRPF and FIHRP as exogenous variable(s), respectively.

**RESULTS**

**Environmental Dynamism Scale**

Exploratory factor analysis followed by confirmatory factor analysis (CFA) supported the three-factor model of the need for HR flexibility construct. The scale exhibited sufficient reliability; all values of Cronbach’s alpha were above 0.7, and the composite reliability indices were above 0.6.

**Descriptive Statistics** (not reported due to lack of space)

Bivariate correlations among the variables showed that need for skill flexibility was significantly correlated with the need for behavioural flexibility. However, correlations of both these measures with the need for HR practice flexibility were non-significant.

As expected, the dimensions of HR flexibility were significantly correlated with each other and also with the three dimensions of firm performance - except for the correlation between skill flexibility and profitability which was not significant. The direction of all the correlations was positive as expected.
As theorised, the magnitude of correlation between the individual dimensions of HR flexibility and firm performance was the highest for employee performance and it was progressively less for operating- and financial- performance.

HR Flexibility - Firm Performance Linkage

Tests for mediated sub-models [Sub-Hypotheses 1(a) to 1(f)]. Results supported all the six sub-hypotheses (results not reported due to lack of space).

Analysis of full causal model with HRPF as the exogenous variable. The hypothesised model showed good fit with data ($\chi^2 = 3791.31$, df = 2377, $p < .001$; $\chi^2$/df = 1.59; RMSEA = .05; CFI = .87; PCFI = .81) in spite of significant chi-square test (Kelloway, 1998). Only CFI was marginally below the cut off value for good fit ($\geq .90$). Next, the hypothesised model was compared with the nested models (Table 1) using the change in chi-square test (Thompson, 2004). The first comparison with the control-variables-only model showed that none of the path coefficients with employee performance was significant and hence the alternate model was considered non-viable. The second comparison was between the hypothesised model and the partially mediated model 1 (PMM 1) which had an additional direct path from the exogenous variable (HRPF) to the employee performance over and above the hypothesised linkages. The change in chi-square test showed that PMM 1 had significantly better fit with data than the hypothesised model ($\Delta \chi^2 = -15.92$, $\Delta$df = 1, $p < .001$). Therefore, PMM 1 was retained as the best-fitting model and was then compared with the partially mediated model 2 (PMM 2) which had a direct path from the exogenous variable to operating performance in addition to all the linkages in PMM 1. Difference in chi-square ($\Delta \chi^2 = -6.15$, $\Delta$df = 1, $p < .001$) was significant. Hence, PMM 2 was compared with the partially mediated model 3 (PMM 3) which had all the linkages of PMM 2 and an additional direct path from HRPF to financial performance. The change in chi-square was non-significant.

Though the difference in chi-square tended to suggest that PMM 2 is the best-fitting model, PMM 1 was still retained as the best-fitting model because the fit indices (CFI and PCFI) did not improve with the addition of paths. All the path coefficients in this model (PMM 1) were significant (Figure 2). Therefore, both measurement model and structural model relating to PMM 1 were supported (Meyers, Gamst, & Guarino, 2006). The effect sizes on the variables of interest were all very strong: behavioural flexibility (79%), employee performance (38%), operating performance (49%), and financial performance (28%). The results suggested that the HR system of the firm had a stronger influence on operating performance compared to financial performance of the firm which was expected from theory.

With FIHRP as the exogenous variable. The data supported good fit for the hypothesised model ($\chi^2 = 5559.38$, df = 3424, $p < .001$; $\chi^2$/df = 1.62; RMSEA = .06; CFI = .84; PCFI = .78); only CFI was marginally below the cut off value for good fit. Similar comparisons with the nested models were done as in the previous case. Though the change in chi-square test indicated that PMM 2 is the best-fitting model, still PMM 1 (Figure 3) was retained as such based on consideration of parsimony and because values of the three fit indexes were identical for the two variants. All the path coefficients in this model (PMM 1) were significant, indicating support for the structural model also. There were strong effect sizes: behavioural flexibility (81%), employee performance (45%), operating performance (61%), and financial performance (38%). The effect size of FIHRP on employee performance was 7% higher compared to the effect size of HRPF.
**With both HRPF and FIHRP as exogenous variables.** The hypothesised model showed reasonably good fit ($\chi^2 = 6824.65$, df = 4027, $p < .001$; $\chi^2$/df = 1.69; RMSEA = .06; CFI = .82; PCFI = .77) with only the value of CFI falling marginally below the cut off value for good fit. However, two path coefficients: HRPF to skill flexibility (.01), and HRPF to behavioural flexibility (.07) were found to be non-significant and weak, indicating lack of adequate support for the structural model (Figure 4). Accordingly, further comparisons with nested models were not undertaken. The effect sizes in the hypothesised model, however, were strong: behavioural flexibility (79%), employee performance (44%), operating performance (60%), and financial performance (37%).

**Test for common method variance using Harman's Test.** A post-hoc test was conducted using to test the hypothesis that a single factor (common method) can account for all of the variance in the data. All items of both the independent and the dependent variables were included in a single factor and the fit indices were examined. The single factor model showed poor fit with the data ($\chi^2 = 9513.26$, df = 2849, $p < .001$; $\chi^2$/df = 3.34; RMSEA = .11; CFI = .49; PCFI = .48). While this test does not eliminate the possibility of method bias, it provides evidence that inter-item correlations are not driven purely by method bias (Podsakoff, MacKenzie, & Podsakoff, 2003).

**DISCUSSION AND CONCLUSION**

The single most important empirical contribution of this study is in illuminating the 'black box', that is, the process through which flexibility of HR system mediates the effects of environmental dynamism on the business performance of firms operating in a dynamic environment. First, a scale for measuring environmental dynamism as appropriate in the context of HR flexibility development was developed and validated. Thereafter, the hypothesised roles of the constituent dimensions of HR flexibility construct in mediating the effects of environmental dynamism on firm-level human-, operational-, and financial- performance outcomes were studied through multiple regression analyses followed by testing of a multi-level full causal model through structural equation modelling. Generalizability of the results across both manufacturing and service sector firms belonging to different types of industries, which has been identified as an important issue in strategic HRM research (Guest, Michie, J., Conway, N., & Sheehan-Quinn, 2003), was ensured by appropriate sample selection of respondent firms and by controlling for the industry effect at the analysis stage.

**Mediating Role of HR Flexibility**

Test results supported all the hypothesised mediated linkages. The evidences are consistent with both the conceptualisation of HR flexibility as a multi-dimensional construct (Ketkar & Sett [In press]; Wright & Snell, 1998) and the hypothesised mediating role of HR flexibility in attenuating the adverse impact of environmental turbulence on firm performance. Support for the full causal model (Figure 4) suggests that superior firm performance ensues when managers build flexible HR systems that not only help in inducing required variety in skills and behaviour amongst the firm employees but also enables the firm to redeploy such reconfigured resources in tune with the demands of the changing environment.

Results of the study also indicate existence of a significant direct effect of HR practices on firm-level employee performance (Figures 2 to 4), over and above their indirect effect (mediated through behavioural flexibility). They suggest that in attenuating the influence of environmental dynamism on firm performance, the HR practices of the firm taken together also act as a **structural mechanism** that shapes the process of development of employee skills and behaviour in a manner that fulfils the strategic objectives of the firm.
Multi-Level Linkages to Firm Performance

The findings provide empirical support to the arguments put forward by several scholars (Dyer & Reeves, 1995; Guest et al., 2003; Wright et al., 2003) that the HR system of a firm is expected to directly impact the most proximal firm-level HR outcomes, compared to more distal operational and financial outcomes. Goodness-of-fit of all the three variants of the best-fit full causal models that showed this cascading influence of the HR system across the HR value chain were good and the corresponding structural models showed strong and significant path coefficients for the relevant linkages.

Implications for Future Research

The present study establishes the general proposition that in a dynamic environment superior firm performance results when the flexibility of HR actually possessed by the firm matches the demands of the environment for such flexibilities as perceived by the managers of the firm. Data collected from both manufacturing and service firms belonging to a wide array of industries and facing different degrees of environmental turbulence supported this broad proposition.

Future research may benefit from investigating beyond this general proposition to examine whether different types of environmental change (continuous vs discontinuous), or different types of strategies adopted by the firms to encounter such change, require different types of HR flexibilities.

Nature of the environmental changes also has important implications for the type of flexibilities (Atkinson, 1984) needed by a firm to achieve optimum performance levels. If the changes involve only the levels of product market demand (e.g., higher demands for existing products generated by an expanding base of existing customers) then the firms would need to possess numerical flexibility. In contrast, when the environmental changes involve, for example, demand for new products or product features calling for application of new production/service processes, the firms need to exhibit functional flexibility, and when the product markets are highly competitive, the firms may always need to possess financial flexibility that entails ability to make the employment cost market based by linking the employee remuneration to the output.

To engage in a more fine-grained analysis of the linkages, the future researchers would need to exercise corresponding degree of discrimination in formulation of context specific hypotheses and in selection of variables of interest relevant to that context; only then they can expect to find meaningful linkages between these variables.

Implications for Practice

The present study has two major implications for managerial practices. Firstly, the development of a measurement scale for environmental dynamism would help the managers to ask right questions to make an accurate assessment of the need for HR flexibility in the context of likely changes in both macro- and micro- environments in which the firm is operating. Secondly, the HR value chain deciphered by this study inform the managers that financial performance of the firm can be impacted by the HR system of the firm only through the prior achievement of relevant HR outcomes (e.g., customer orientation of employees), followed by causally related operational outcomes (e.g., customer satisfaction level). Thus, the managers should be aware that to achieve superior financial performance they have to work up through this causal chain and there is likely to be some inevitable delay between adoption of some HR initiatives before they show up as improvements in firm-level operational and financial outcomes. Also, overall improvements in firm-level performance are quite often the result of not one but a bundle of interdependent HR practices which reinforce one another to produce synergistic effects.

Limitations of the Study
Given the fact that the primary objective of the study was to decipher the process through which HR flexibility attenuates the impact of environmental dynamism on firm performance, the cross-sectional design of the study is an important limitation.

A single-respondent research design was consciously chosen for the present study to cover as many different types of firms as possible so as to be able to establish the generalizability of the broad proposition of the study. Obviously, this was at the expense of reliability of the data which could have been higher with multiple-respondent design.

Though the results of the SEM modelling were quite satisfactory, given the complexity of the causal models tested, the sample to scale items ratio obtaining in the study is considered to be low.

References


### APPENDIX A

**Flexibility Inducing HR Practices**

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<tr>
<th>Flexibility Inducing HR Practice</th>
<th>Supporting Literature</th>
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<tr>
<td>1. Employee selection emphasizing cognitive skills and learning abilities</td>
<td>Stevens &amp; Campion, 1999; Youndt, Snell, Dean, &amp; Lepak, 1996</td>
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<tr>
<td>2. Strategically planned job rotation and career movements</td>
<td>Allwood &amp; Lee, 2004; Collins &amp; Smith, 2006; Ichnioswki, Shaw, &amp; Prennushi, 1997; MacDuffie, 1995; and Collins &amp; Smith, 2006; Guthrie, 2001</td>
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<td>3. Comprehensive training emphasizing new skills and learning abilities</td>
<td>Collins &amp; Clark, 2003; Collins &amp; Smith, 2006; Gurhrie, 2001; Youndt et al., 1996</td>
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<td>5. Skill-based pay and organisation/group-based incentives</td>
<td>Delaney &amp; Huselid, 1996; Guthrie, 2001; Murray &amp; Gerhart, 1998; Shaw, Gupta, &amp; Delery, 2001; and Arthur &amp; Jeff, 1999; Delaney &amp; Huselid, 1996</td>
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<td>6. Reward schemes based on multiple parameters like problem solving abilities, responsiveness to situational demands, and team work</td>
<td>Foss &amp; Laursen, 2005</td>
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<td>7. Open communication system and participatory work practices</td>
<td>Chan et al., 2004; Jansen, Bosch, &amp; Volberda, 2005; Rindova &amp; Kotha, 2001</td>
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<td>8. Employee empowerment in a participative work-culture</td>
<td>MacDuffie, 1995</td>
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### APPENDIX B
**HR Flexibility Scale Items**

Likert-type 7-point scale used (7 = strongly agree, 6 = agree, 5 = somewhat agree, 4 = undecided, 3 = somewhat disagree, 2 = disagree, 1 = strongly disagree) with the following items.

1. **Skill Flexibility**
   1. Our employees are capable of performing a broad range of jobs available in our firm
   2. Our firm can shift employees to different jobs when needed
   3. Team based working help us to manage fluctuations in demand, or varying demands for different skills
   4. Our employees can become productive in their new jobs quickly
   5. We have enough diversity of skills among our employees to meet changing market demands

2. **Behavioural Flexibility**
   10. The flexibility of our employees’ work habits helps us to change according to market demands
   11. People in our firm change their work habits in response to changes in the competitive environment
   12. Our employees respond to changing situations fast
   13. People in my firm readily change their work habits as demanded by changes in the working environment
   14. Most of our employees are flexible enough to adjust to dynamic work requirements
   15. Our employees adjust to changing work requirements within a short period.
   16. Our employees’ response to changing nature of their jobs help us remain competitive in the market
   17. People in our firm show flexibility in their behavior in order to meet customer requirements

3. **Flexibility of HR system**
   26. Flexibility of our HR practices helps us to adjust to changing demands of the environment
   27. Our firm modifies its HR system to keep pace with the changing competitive environment
   28. Our HR practice parameters are designed so that they quickly adjust to changes in business conditions.
   29. We make frequently changes in our HR practices to align the HR system, with changing work requirements.
   30. Changes in our HR practices enable us to remain competitive in the market
   31. Our HR practices adjust meaningfully to changed business scenarios
   32. Our HR practices, as a whole, are flexible
4. Flexibility inducing HR system

33 We recruit people based on their learning abilities rather than pure technical skills
34 We use selection methods that help us to detect employee flexibility and adaptability
35 We provide adequate facilities to our employees for skill upgradation and learning new skills
36 Our training modules give adequate emphasis on improving learning skills of our employees
37 Our performance appraisal system closely tracks employee skill development keeping in view our future needs
38 We use multiple channels of communication to create employee awareness about the importance of continuous skill development
39 We train people in multiple skills keeping in view our possible future needs
40 Our firm offers monetary incentives for skill upgradation or acquiring new skills
41 Our salary structure has a skill based pay component
42 Our promotion policy gives preference to employees with a superior skill set
43 Team based working helps our employees to pick up a wider range of skills

We regularly involve our employees in decision making on job related matters
We have a vibrant employee suggestion scheme and we get a significant number of useful suggestions
Our company policy requires managers/team leaders to hold regular meetings with our employees to discuss the problems faced or consider suggestions for improvement
We use multiple channels of communication with our employees to make them aware of our company performance, future directions, and how they could contribute
We set clear performance goals and our Performance Appraisal system gives timely feedback to our employees
Our firm has a good performance linked reward scheme
Good performance is always recognised and rewarded in our firm
Our Performance Appraisal system is flexible enough to accommodate adjustments to performance parameters as may be required due to changing business priorities
We have a formal employee counselling system that helps employees to continuously improve their performance
Extent of job rotation in our firm.

Note: Respondents were asked to answer the questions keeping in view only the core group(s) of employees that was central to the business of the firm.

TABLE 1
Nested Model Comparisons with HRPF as Exogenous Variable

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$ (df)</th>
<th>$\chi^2$/df</th>
<th>$\Delta\chi^2$, $\Delta$df</th>
<th>RMSEA</th>
<th>CFI</th>
<th>PCFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis Model</td>
<td>3791.31*** (2377)</td>
<td>1.59</td>
<td>-</td>
<td>.05</td>
<td>.87</td>
<td>.81</td>
</tr>
<tr>
<td>PMM1</td>
<td>3775.40*** (2376)</td>
<td>1.59</td>
<td>- 15.92***, 1 [compared to the hypothesised model]</td>
<td>.05</td>
<td>.88</td>
<td>.81</td>
</tr>
<tr>
<td>PMM2</td>
<td>3769.24*** (2375)</td>
<td>1.59</td>
<td>- 6.15**, 1 [compared to PMM1]</td>
<td>.05</td>
<td>.88</td>
<td>.81</td>
</tr>
<tr>
<td>PMM3</td>
<td>3768.04*** (2374)</td>
<td>1.59</td>
<td>- 1.20, 1 [compared to PMM2]</td>
<td>.05</td>
<td>.88</td>
<td>.81</td>
</tr>
</tbody>
</table>

N = 201; †p < .10; *p < .05; **p < .01; ***p < .001 one-tailed test

FIGURE 1
Environmental Dynamism, HR Flexibility and Firm Performance: A Causal Model

FIGURE 2
The Best-Fit Model (with only HRPF in the Model)

N = 201; †p < .10; * p < .05; ** p < .01; *** p < .001 one-tailed test

Note: Values in bold letters denote the standardised beta coefficients and values on the top right corner of each variable denote squared multiple correlations.

FIGURE 3
The Best-Fit Model (with only FIHRP in the Model)
Note: Values in bold letters denote the standardised beta coefficients and values on the top right corner of each variable denote squared multiple correlations.

FIGURE 4
The Best-Fit Model (with both HRPF and FIHRP in the Model)