

A Simulation Approach to Investigate the Influence of Human Resource Management Practices on Organizational Performance

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Abstract

This study investigates the effects of human resource management (HRM) practices on enterprise performance in the Ivorian context. There were 500 organizations selected for this study, but only 320 participated in the research representing about a 64% response rate of the collection of data that we found important for a developing economy like Ivory Coast. An empirical design and a factor analysis of diverse HRM practices were utilized. To corroborate the results, a simulation approach (Monte Carlo Method) was used. Our results indicate that investing in HRM practices leads to enterprise performance.

Keywords: Human Resource Development; Pay/Organization; Feedback Systems; HRM—Strategy Alignment; Simulation; Organizational Performance

Introduction

Organizational performance has always been the concern of many inquiries. The way an enterprise performs its mission and accomplishes its goals of human resource management (HRM) is an important concern. Researches have indicated a positive correlation between HRM practices, like information sharing (Kleiner and Bouillon, 1998); employment security (Delery and Doty, 1996); training (Bartel, 1994; Huselid; 1995; Pfeffer, 1998); career management programs (Doyle, 1997); performance-based compensation (Wagner, 1994; Hansen, 2000); strategic HRM (Pettigrew, 1985) and the performance of organizations. This paper uses sample data from 320 firms to investigate the influence of HRM practices on the performance of enterprises operating in Abidjan, Ivory Coast.

We utilized factor analysis to extract the bundles of HRM practices then applied correlation and regression analyses to model the influence of HRM practices on organizational performance. To corroborate the results of the findings, a simulation approach (Monte Carlo Method) was used.

Literature Review and Hypotheses

The human resource management (HRM) literature offers a myriad of views to explain HRM. HRM deals with the management of people within the employee-employer relation to meet the legal requirements of the workplace, while contributing to an organization's strategy (Stone, 1998). The investment in technical and non-technical training can positively influence the performance of organizations. There is a considerable relationship between the training issue and the performance of enterprises (Delaney and Huselid, 1996). In terms of employment security, organizations that are compassionate and honest with employees are difficult to leave. Enterprises that are able to provide their employees with job security will favor employees' congruence. Correspondence has been found between employment security and organizational performance (Delaney and Huselid, 1996). The effectiveness and efficiency of career planning systems is advantageous because workers who know that their working place has a good and meaningful career program system, are motivated to dedicate themselves to the enterprises' attainment goals and objectives. A well laid out promotion scheme as well as provisions for adequate distribution of opportunities, serves to motivate employees. Enterprises with such arrangements or schemes do attract highly qualified potential applicants.

Training and development appear to be essential tools for the management and development of human resources (HRs). The commitment to investments in development-oriented HRM practices is likely to improve an enterprise's ability to retain key HR and enhances promotions from within the enterprise. This practice helps with continual upgrade in the quality of HR and hence the overall potential of the enterprise. This is a big challenge for enterprises in the Ivory Coast. Career development and management through training and developmental programs should be an issue of concern for enterprises in Abidjan for a competitive edge. Given the fact that the economy of the country is impacted by high levels of unemployment, it is also likely that non-managerial workers put significant value on job security. HRM practices that contribute to the development of managers and other employees in the country can be expected to impact positively on enterprise performance. The researcher then theorizes that (H₁) there is a noteworthy link between how enterprises in Abidjan, Ivory Coast value their managerial human resources and enterprise performance; that (H₂): there is a noteworthy link between how enterprises in Abidjan, Ivory Coast value their non-managerial human resources and enterprise performance.

Team-based organizations give employees, confidence to pool their ideas to come up with creative solutions to problems. When there is a way for HRs to exchange, it enhances communication that is important for enterprises. Effect Communication is difficult to take place in a power-distance enterprise. Enterprises that favor and support the sharing of information through a decentralized decision making process will be apt to achieve performance. Performance-based compensation (PBCS) has been identified as the strongest predictor of firm improvement (Becker and Huselid, 1996). Empirical studies (see for instance Jones and Wright, 1992; Snell, 1991; Eisenhardt, 1998; Delery and Doty, 1996) have discovered an affirmative association between performance-related pay and firm performance. If organizations provide rewards that are desired by an employee, this employee is more inclined to perform in a way that will bring him/her the

reward. Not many enterprises established and operating in Abidjan use pay as a way of improving or enhancing employee performance. Experience has shown that firms that use some kind of PBCS, most typically with bonus systems, had a positive impact on performance. Managers in Abidjan tend to attach low value to workers participating in decision-making. Ivory Coast is a power-distance country. This power-distance issue brings about a status gap between managerial workers and non-managerial workers. There is a tendency for the managerial workers to be powerful and infrequently request participation from their non-managerial workers in making decision about the work of the enterprise. Enterprises that manage to overcome this tendency towards a top-down work organization may have a helpful competitive advantage in Abidjan. The peer-based control that goes with a bundle of HRM practices built around PBCS tied to group/company performance, appraisals, teamwork, decentralization and horizontal communication may also fit well with the collective orientation of HRM practices in Abidjan. While teamwork has not been empirically tested, it has been suggested to be a high performance HRM practices in Abidjan as well. As a result of the discussion above, we propose that (H₃) there is a considerable bond between managerial HRM practices influencing the design of work and a resultant compensation system, and enterprise performance in Abidjan; that (H₄) there is a considerable bond between non-managerial HRM practices influencing the design of work and a resultant compensation system, and enterprise performance in Abidjan (Ivory Coast).

An enterprise that makes real a shared culture that is in actual fact unbreakable through information flow will be a competitive one. The complaint resolution system in enterprises can help handle situations of conflicts that can distort work and negatively impact productivity, commitment, satisfaction and performance of enterprises. Organizations that provide pleasant work environments that are challenging and supportive are likely to motivate employees to be more creative, energized and productive (Forster, 2004). Attitude survey can help managerial HRs be aware of the likes and dislikes of the HRs. Enterprise survey is a means for enterprises to assess employee levels of job satisfaction as a measure of executive and enterprise performance.

Managerial workers in Ivory Coast prefer manipulating and have control over their subordinates. This brings about subordinates' mistrust towards their supervisors. By sharing information with the employees, top management may give a competitive advantage to alleviate the feeling of mistrust and suspicion between employees in Abidjan. Consequently, HRM practices that easy employee feedback and organization information sharing may help enterprises in Abidjan, Ivory Coast. Consistent with the above arguments, we hypothesize that (H₅) there is a significant connection between managerial HRM practices that sustain feedback and enterprise performance in Abidjan, Ivory Coast; that (H₆) there is a considerable connection between non-managerial HRM practices that sustain feedback and the performance of enterprise in Abidjan, Ivory Coast.

HRM-strategy alignment with mission accomplishment increases human resource's ability to anticipate its customers' needs; it also increases the organization's ability to implement strategic business goals and provides decision-makers with critical resource allocation information. Researches have shown that a good fit between HRM strategies and the corporate strategy of the enterprise tends to lead to advanced conclusions (Delery and Dotey, 1996) about the alignment of HRM-strategy to business strategy. Firms that have a fit between business strategy, structure and HRM policy and

practice will have superior performance (Guest, 1997). The strategic alignment of HRM brings about productivity and performance of organizations. In aligning HRM with corporate strategy, the researcher expects good outcomes of HRM-strategy alignment for organizational performance in Abidjan, Ivory Coast. This will bring us to test the proposition (H₇), that the alignment of HRM practices with organizational strategy will lead enterprise to perform well in Abidjan, Ivory Coast.

Methods

Sampling and Measurement

We identified a sample of 500 enterprises from the “Repertoire des Entreprises Commerciales Industrielles et de Service de Côte d’Ivoire: Annuaire: Chambre de Commerce et d’Industrie de Côte d’Ivoire, 2007”. 320 out of this number participated in the research. This represents a 64% response. There were 117 managerial workers and 203 non-managerial workers. This research inquiry simultaneously puts these two categories of employees together in the same inquiry to appreciate the way diverse bundles of HRM practices can influence enterprise performance. Furthermore, there were 105 enterprises having between 20 and 399 employees, 195 having between 400 and 599 employees, 12 having between 600 and 900 employees, and 8 having over 900 employees. This paper extends empirical research on bundles of HRM practices in three ways. First, we drew on factor analysis of identified bundles of HRM practices. Second, the researcher conducted a correlation and regression analysis to assess the relationship between a variety of HRM practices and enterprise performance. Third, to corroborate the results of the findings, a simulation approach (Monte Carlo Methods) was used.

Measures

1. The dependent variables

The market share, quality of products or services (not taking into account their diversity and non-homogeneity), profitability, and sales growth were utilized to measure performance. We asked the respondents to tell us the way their enterprises were behaving with reference to the 5 point scale as the evaluation for the questions about administrative employees required. The participants were invited to use the following scale by picking between 1 and 5, where 1 means “Poor” and 5 means “Excellent”. The questions about the dependent variables were done on subjective basis. Perceptual data can bring about limitations right through better measurement error. This can favor general unfairness technique. The measurement of performance is subjective; studies done by (Youndt & Scott, 1996) evidently emphasized the utilization of perceptual measures of performance. Subjective organization performance unquestionably shows a relation with the objective assessments of the performance of organizations (Powell, 1992).

2. The independent variables

The understanding of the ways organizations in Abidjan, Ivory Coast value their HRM practices with their business strategy; the configuration of the HRM to organizations’ strategy was made possible in previous works (See Becker and Huselid, 1998). The strategic alignment of the HRM practices with organizations’ strategy was focused on biased assessment to look into the degree to which organizations incorporate the strategic alignment of the HRM practices to organizations’ operations. The participants were instructed to use a scale of one (1) to five (5); one being of the lowest

importance and five being the greatest importance. This is similar to the likert scale used by researchers (See Fey & Bjookman, 2000; Becker and Huselid, 1996).

3. The control variables

The size of the employees in the organizations was important as significant organizations in terms of size utilize formal human resource (HR) practices than those who have small number of workforce. The age of the organizations was important. The operation of the enterprises in the Ivorian context might have a positive correspondence between their years' of business operations and use of good HRM practices.

4. Research procedure

A research approach was utilized to achieve the objective of this current study. To obtain data for analysis, questionnaires were designed and distributed within enterprises selected for the study; the purpose of the study was thoroughly explained.

5. Statistical Analysis

We utilized a principal component factor analysis with varimax rotation on the identified HRM practices (See Table 1). The researcher identified a couple of propositions to be tested so as to assess the different hypotheses revealed by this study. It was imperative to utilize correlation (Table 2), regression analyses on the performance of enterprises (Table 3 and Table 4) in Abidjan, Ivory Coast. Correspondingly, to validate our diverse propositions, the results were simulated using Monte Carlo Methods (See Table 5).

Findings and Discussions

Our research inquiry was to know to what extent HRM dimensions were related to employee development, pay/organization, and feedback systems and how enterprises operating in Abidjan, Ivory Coast performed with regards to market share, sales growth, profitability and quality of products or services (not taking into account their non-homogeneity). The researcher conducted a principal component factor analysis with varimax rotation on the HRM practices (See Table 1). We put those HRM practices into three different categories, namely: Development factor; Feedback factor; and Pay/organization factor. The Table 1 highlights the conclusion drawn.

Table 1: Results of Principal Component Factor Analysis with Varimax Rotation

Variables	Development Factor	Feedback Factor	Pay/organization Factor
Technical training	0.856	0.634	0.303
Non-technical training	0.902	0.582	0.582
Non-entry jobs filled from within enterprises	0.896	0.399	0.592
Assisting in career planning	0.929	0.626	0.303
Job security	0.437	-0.517	0.435
Information sharing programs	-0.302	0.931	0.525
Complaint resolution system	0.531	0.916	0.297
Attitude survey	0.475	0.851	0.042
Performance appraisals	0.547	0.411	0.826
Group/company performance in pay	0.301	-0.304	0.767
Teamwork	0.630	0.659	0.860
Decentralized decision making	0.569	0.492	0.751
Interdepartmental communication	0.444	0.649	0.911
Eigen Value	2.825	2.515	2.445
Variance Explained (%)	19.735	17.375	16.795
Cronbach Alpha	0.732	0.672	0.713

Table 1 presents a matrix about the three identified factors for this research inquiry. The HRM practices identified as development factor is composed of trainings (technical training and non-technical training); non-entry jobs filled from within enterprises; assisting in career planning; and job security. The feedback factor consists of sharing programs, complaint resolution systems and attitude surveys. The third factor ticketed “pay/organization”, is comprised of the following: performance appraisals; group/company performance in pay, teamwork, decentralized decision making and inter-departmental communication. The variables used in our specification have different values according to a given factor. It was also interesting to use of a separate factor analysis. The separate factor analysis for HRM practices for non-managerial human resources revealed the same items. The separate factor analysis for HRM practices for non-managerial human resources is conducive to the same bundles of HRM practices. Previous studies (See for instance Nunnally, 1999; Price and Mueller, 1986; Becker and Huselid, 1996) have stated a consistency level of 0.70 in similar studies about the influence of HRM practices on perceptions of firm performance. Therefore, the results of this paper are comparable and within acceptable limits as the different Cronbach’s Alphas for the development factor (0.732); the feedback factor (0.672); and the pay/organization factor (0.713) are in line with the reliability level of 0.70 indicated by Nunnally (1999); Becker and Huselid (1996); Fey and Bjoekman (2000); and Price and Mueller (1986). Table 2 focuses on the results from the correlation analysis.

Table 2 : Results from the Correlation Analysis

Variables	1	2	3	4	5	6	7	8	9	10
1. PERFORMANCE	1									
2. Manager Development	0.422**	1								
3. Manager Pay/Organisation	0.947**	0.293**	1							
4. Manager Feedback	0.247**	0.905**	0.213**	1						
5. Employee Development	0.693**	0.955*	0.613**	0.208**	1					
6. Employee Pay/Organisation	0.972**	0.448**	0.239**	0.801**	0.093**	1				
7. Employee Feedback	0.615**	0.326**	0.492**	0.446**	0.056**	0.735**	1			
8. HRM-Strategy Fit	0.428*	0.485*	0.145*	0.983	0.450**	0.118**	0.875**	1		
9. #Years Enterprise in Côte d'Ivoire	0.431	0.300	0.636**	0.550**	0.897	0.585*	0.366*	0.628	1	
10. Log of # Employees	0.768**	0.762**	0.271**	0.145	0.269*	0.273**	0.778	-0.968	0.901	1

Note: N=320, *p<0.05; **p<0.01

The correlation matrix in Table 2, which is based on our findings, suggests that investments in HRM practices enhance organizational performance. People are the lifeblood of organizations. A company’s workforce represents one of its most potent and valuable resource, as a result, the extent to which a workforce is managed effectively is an important element in improving and sustaining enterprise performance (Gunnigle et al., 1997). We identified a couple of propositions to be tested. Testing them required that we utilize regression analysis (Table 3 and Table 4) on the performance of enterprise.

Table 3 : Regression Analysis on Enterprise Performance for Managerial Workers

Independent Variables	Model 1
Log of number of employees	0.231*
Age of enterprise in years	0.128
HRM – strategy fit	0.144*
Manager development	0.205*
Manager pay/organization	-0.075
Feedback to manager	0.252*
R ²	0.531
Adjusted R ²	0.487
F	10.56****
N	320

Note: a. Dependent Variable=Enterprise Performance,
 b. Standardized Regression Coefficients are shown, c.* p<0.05, **** p<0.01

Table 4: Regression Analysis on Enterprise Performance for Non-Managerial Workers

Independent variables	Model 2
Log of number of employees	0.134*
Age of enterprise in years	0.052
HRM – strategy fit	0.099
Employee development	0.351*
Employee pay/organization	0.123****
Feedback to employees	0.093
R ²	0.504
Adjusted R ²	0.395
F	12.912****
N	320

Note: a. Dependent Variable=Enterprise Performance,
 b. Standardized Regression Coefficients are shown; c.* p<0.05, **** p<0.01

Model 1 Table 3 and Model 2 Table 4 represent the outcomes of the findings about the regression analysis on the performance of enterprise for HRM practices for managerial and non-managerial workers respectively. Both models have the same dependent variable: enterprise performance. The explanatory variables are the log of number of employees within enterprises, the average age of enterprises in years, the HRM-strategy fit, employee development, employee pay/organization and feedback to managers. Those variables are the principal ones used in the regression analysis. HRM-strategy alignment was positively correlated with enterprise performance as p was inferior to 0.05.

Model 1 (Table 3) and Model 2 (Table 4) were important as we have R² of 0.531, Adjusted R² being 0.487 (model 1) and R² of 0.504 and Adjusted R² being 0.395 (model 2). In Table 3, the model 1 is about the bundles of HRM practices for managerial employees. The subsequent variables, log of number of employees (0.231*), age of enterprises in years (0.128), HRM-strategy fit (0.144*), manager development (0.205*), manager pay/organization (-0.075) and feedback to managers (0.252*) showed significant correlations with enterprise performance as standardized regression coefficients are observed. From model 1, the researcher noticed that the above mentioned variables statistically correlated with the dependent variable (enterprise performance). The HRM-strategy alignment (0.144*) was also significant for its influence the

performance of enterprise. From the results, we can affirm that the variables “management development” and “manager feedback” confirm the ensuing propositions “H₁”; “H₅”; and “H₇”. The size of the enterprises (0.231*) as a control variable was significantly correlated with enterprise performance. We observed that the variable “employee pay/organization” did not highlight important connection with enterprise performance. Therefore, the hypothesis “H₃” is not confirmed.

In the model 2 (Table 4), the log of number of employees (0.134*), that is, the size of the enterprise as a control variable was significantly correlated with the performance of enterprises. This corroborated the preceding conclusions (model 1, table 3) that enterprises with significant number of employees surpass those enterprises with a small workforce. From the findings of model 2, table 4, the researcher observed that the variables “employee development (0.351*)” and “employee pay/organization (0.123****)” have an appreciable influence on the performance of enterprise as well. The researcher can state that the proposition “H₂” (non-managerial workers), and the hypothesis “H₄” (non-managerial workers) highlighted a correspondence with the performance of those enterprises. In the model 2, table 4 the “HRM-strategy alignment (0.099)” has partial support for its link with enterprise performance. The findings from this model 2 also highlighted the ensuing hypotheses “H₃” (managerial workers) and “H₆” (non-managerial workers) respectively about “employee pay/organization” and “feedback to employees” as compared with the other variables in our sample did not draw attention to any significant issue in terms of their relationship with enterprise performance in the Ivorian context. To confirm the findings of our different hypotheses, the results were simulated (Table 5) to corroborate the findings of this current investigation about the factor analyses, the correlation and the regression results on enterprise performance. The researcher found it significant to use Monte Carlo Method (MCM) for the simulation issue as simulation is increasingly being recognized as a useful and practical technique, especially in giving a realistic view of the systems under study.

Table 5: Simulations Results from Monte Carlo Methods

Independent Variables	Monte Carlo Methods	
	Standard-Error	Coefficient of Sensibility
Log of number of employees	2.543	2.21.10 ⁻²
Age of enterprise in years	1.518	-3.31.10 ⁻¹
HRM – strategy fit	1.690	3.17.10 ⁻²
Employee development	2.014	2.45.10 ⁻²
Employee pay/organization	1.776	1.06.10 ⁻¹
Feedback to employees	2.312	2.39.10 ⁻¹
Manager development	3.675	3.65.10 ⁻¹
Manager pay/organization	1.641	2.11.10 ⁻²
Feedback to manager	2.128	2.72.10 ⁻¹
N	320	

The results from Monte Carlo Method shown in Table 5 are presented in three columns. The first, second and third columns represents the independent variables of the model, the standard error (SE) and the coefficient of sensibility (CS) respectively. The independent variables allow us to verify and confirm our various hypotheses, the dependent variable is “performance” whilst the standard error values which are similar to the Standard Deviation (SD) and to the one of the CS shows the impact of a variation on the explanatory variables about the performance of enterprise in the Ivorian context. The CS looks at the nature of the simulations of the explanatory variables about the performance of enterprises in Abidjan, Ivory Coast.

The results presented in Table 5 indicate that the SE implies that there is no very important deviation between the explanatory variables; that the distribution principles are therefore normal and stable. Thus, as a control variable, the log of number of employees with 2.543 SE, and $2.21 \cdot 10^{-2}$ CS shows their significant correlation with enterprise performance confirming that enterprises that have a great number of workers slightly outperform those with a small number of workers. The variable “manager development” with 3.657 SE and $3.65 \cdot 10^{-1}$ CS has the most noteworthy variation confirming the hypothesis “H₁”. The subsequent variables “employee development” with 2.014 SE and $2.45 \cdot 10^{-2}$ CS; and “employee pay/organization” with a SE of 1.776 and a CS of $1.06 \cdot 10^{-1}$ were statistically significant revealing their influence on enterprise performance. As the result of this, we hold that the hypotheses “H₂” and “H₄” are verified too. The “HRM-strategy fit” with 1.690 SE and $3.17 \cdot 10^{-2}$ CS confirmed the hypothesis “H₇”. The findings of this research inquiry indicate that aligning HRM practices with business strategy brings about enterprise performance. “Feedback to manager” with a SE of 2.128 and $2.72 \cdot 10^{-1}$ CS, we state that those variables have a link with enterprise performance as their influence on the performance of enterprise is obvious from the results, which confirms the hypothesis “H₅”. Actually, from a manager to another, the experience at work can vary according to the age and the level of education. Similarly, the number of employees notably varies from one enterprise to another. We observed that all the explanatory variables positively and significantly influence the performance of enterprises in the Ivorian setting, except the variable about the age of enterprises.

Conclusion and Future Research Directions

The different results indicate that there is a couple of significant interconnectedness between the practices of HRM and the performance of enterprise. Other researchers (Snell, 1991; Becker & Gerhardt, 1996; Wright et al., 1999) have highlighted the existing link between HRM practices and firm performance. The results of this research are undoubtedly consistent with the ones obtained by the researchers (Snell, 1991; Wright et al., 1999) on HRM practices and firm performance. The findings highlight the important correlation between the variables tested and explained. With reference to the development factor, the variables “technical training (0.856)”, “non-technical training (0.902)”, “non-entry jobs filled from within enterprises (0.896)”, “assisting in career planning (0.929)” and “job security (0.437)” all have a significant correlation with enterprise performance. When we change the reference factor by considering the feedback factor, the correlation becomes much more significant between that factor and the following variables: “information sharing programs (0.931)”, “complaint resolution

system (0.916), and “attitude survey (0.851). All these affirm the role that information flow plays in organizations.

The pay/organization factor is composed of the following: “performance appraisals” (0.826); “group/performance in pay (0.767)”; “teamwork (0.860)”; “decentralized decision making (0.751)”; and “interdepartmental communication (0.911)”. We observed a remarkable correlation between that factor and those variables. There was noteworthy connection between both “management development” and “employee development”, and enterprise performance. A “decentralized decision making” and “team-based organization” with related pay systems was correlated with enterprise performance for non-managerial workers. The opposite result was observed for the relationship between “feedback” and enterprise performance. Concisely, we state that there was significant support for propositions “H₁” (management development), “H₂” (employee development), “H₄” (pay/organization for non-managerial workers), and “H₅” (feedback to managerial workers). There was partial conclusion for the importance of alignment of HRM with strategy. The propositions “H₃”, and “H₆” were not proved to impact enterprise performance in our study. The results of this research inquiry are relatively in line with the reality of noticeable relationships between HRM practices and enterprise performance in Abidjan, Ivory Coast. These results are largely consistent with results obtained in researches of HRM and enterprise performance. This research suggests that, in the Ivorian perspective, enterprises should focus on different bundles of HRM practices for managerial human resources and non-managerial human resources. Investments in employee training may also be important for enterprises operating and striving to achieve a competitive advantage through high-quality products and services. Enterprises with extensive flows of information between top management and managerial workers may thus have a competitive advantage in Abidjan. Although this study makes a number of important contributions to the field of HRM and enterprise performance, there are obvious limitations to the research, which can be improved upon by the future research. Further research using quantitative methodologies might offer a comprehensive explanation on the quantitative patterns observed.

Data collection was restricted to Abidjan, the political capital of the Ivory Coast. This was due to the political instability in the Northern and Southern regions in the year 2002 when the collection was done. The researcher therefore cannot generalize the findings to include these regions. The researcher is however of the opinion that, the situation in those regions will not differ significantly therefore, it is recommend that in addition to the questionnaire method employed in the current research, group and forum discussions as well as interviews be used in further research on this topic. An expanded research covering other geographical areas in the Ivory Coast should be conducted in order to obtain adequate data from which a constructive conclusion can be drawn on the connection between HRM practices and performance of enterprises in the Ivory Coast.

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