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DOES HUMAN RESOURCES MANAGEMENT BASED ON CREATIVITY ENHANCE THE INNOVATION CAPABILITY? - AN EXPLORATORY STUDY OF FRENCH FIRMS

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ABSTRACT
Nowadays, the competitive advantage of firms is mainly based on innovation. Rough competition and market globalization stimulate firms to conceive and offer a high added value in products and services. Performance of organizations depends more and more on their capability of innovation. The capability of innovation can be defined as the ability of the firm to combine knowledge and management practices in a dynamic way in order to create new products, services, and processes and to respond to the changing environments.
Amongst all the resources of the firms, only human resources can innovate. Some specific characteristics of formal and informal structure, communication, culture, management and human resources management practices are able to create an environment that facilitate new ideas' generation and innovation from all employees. Our paper aims to investigate the relationship between human resources management practices and innovation performance.
We realized an exploratory study with 37 French companies based on the innovation capability model of M. Terziovski. Using non-metric tests we were able to suggest some promising links between human resources management based on creativity and innovation performance measured by criteria such as: new products' turnover, number of innovations, and time of innovation adoption.
Key words: Innovation, Human Resources Management, creativity

1. PRELIMINARIES

The rising competition, globalization, technological change and frequent crisis incite firm to innovate. Innovations allow companies to benefit of pioneer advantage and to develop core competences in order to cope with change and uncertainty. Even imitation and low cost strategies need innovation and absorption capacity. How to enhance company's innovation performance is a major concern for many professional and scholars.

The Booz Allen Hamilton consulting group defines innovation as "the ability to define and create new products and services and quickly bring them to market" (www.boozallen.com). Amongst all firm's resources only human resources can innovate. Thus, the Human Resources Management (HRM) is likely to be a critical function for increasing the firm innovation performance. It embraces measures (strategies, politics, procedures, etc) and activities which concern human resources and aim the efficiency and the optimal performance of employees and organizations (Sekiou and al., 2001). Our research tries to identify some of these Human Resources activities and strategies that enhance employees' creativity and in turn innovation performance.

In this paper we briefly summarize some recent works that show the importance of Human Resources Management for innovation performance. Afterwards we will describe our research instrument and the mobilized statistical methods. Later we expose and discuss our findings. Finally we conclude on the future research agenda suggested by this study.

2. THEORY AND METHODOLOGY

2.1. Relationship between Human Resources Practices Based on Creativity and Innovation Performance

Verona (1999) adopts the resource based view and suggests that in order to develop new products, firms must dispose with internal and external integrative capabilities, technological and marketing ones. Espousing the same theoretical stand, Lawson and Samson (2001) develop the concept of innovation capability that represents the firm capacity to integrate multiple competencies in a dynamic way. Innovation capability is defined as "*the ability to continuously transform knowledge*

and ideas into new products, processes and systems for the benefit of the firm and its stakeholders" (Lawson and Samson, 2001). The innovation capability integrates the following strategic capabilities: Leadership, vision and strategy; Human capital management; Creativity management; Culture; Organizational intelligence, Structure and systems; Marketing; and Management of technology (Metz et al. 2005).

In this work we focus primary on innovation capabilities that are related to Human Resources Management. Verona (1999) argues the firm's internal integrative capabilities include managerial process (internal communication, political and financial support, subtle control, and integrative strategies), managerial systems (job training, collective brainstorming, and incentives), integrative structure (process integration and organizational reengineering,) and culture and values for internal integration. In the same vein, Vision and strategy, Human capital management, Creativity management, Culture, Structure and systems are likely to represent the major internal integrative capabilities identified by Lawson and Samson (2001).

Reviewing some of the existing literature on the impact of HRM on innovation perforce, we distinguish two major topics of research: the first one focuses on the relationship between HRM and firms' innovativeness and the second one is primarily concerned by the management of creative employees.

Leede and Looise (2005) suggest eight HRM components that are able to influence innovation: organizational structure, staffing, HR development and carriers, performance and reward, communication and participation, team working and leadership, key roles of individuals and creative culture. Shipton and al. (2006) identify six HRM practices that develop knowledge and skills: exploratory learning, socialization, appraisal, training, contingent reward and team working. Induction aims to help new employee to "fit" with organizational goals and values. Appraisal guides workforce to better understand organizational purposes and keep them motivated. Exploratory learning and extensive training intend to raise the existing organizational and individual knowledge. Contingent rewards are able to foster extrinsic motivation. Moreover they can be perceived by employees as recognition of their effort and competencies. Finally, team working allows recruits to share tacit knowledge and represents a support for individuals.

Shipton and al. (2006) show that HRM is an important predictor of innovation. Their empirical study of UK companies shows that all HRM practices (exploratory learning, socialization, appraisal, training, and team working) have a significant positive effect on product and process innovation except contingent pay. Chen and Huang (2009) study of Taiwanese firms demonstrates that staffing and participation have positive and significant impact on technical and administrative innovation. Performance appraisal has a significant positive effect on administrative innovation, while compensation has strong positive impact on technical innovation. Camelo-Ordaz and al. (2008) observe that both the top management vision and compensations practices based on performance influence the firm's innovation performance. Chen and Huang (2009) also record that recruitment policies and participation in decision making have a significant positive effect on knowledge acquisition, sharing and application. Training favors knowledge acquisition and application. Compensation practices are able to stimulate knowledge sharing and application. The authors also observe that knowledge management capacity plays a moderating role on the relationship between HRM practices and innovation performance.

Chanal et al. (2005) focus on innovative people management and identify four organizational mechanisms that can be used for this purpose: Leadership; Organizational structure; Culture; and Diversity management. The authors argue that more participative and supportive leadership within an 'organic' organizational structure are necessary for management of creative employees. Culture and diversity management by encouraging risk taking and multiplying points of view facilitate the implication of innovative employees. McMeekin and Coombs (1999) show the importance of organizational structure and result-driven culture, teams, product champions, appraisal system, carrier management, and communication for innovation. They also point out that technical professionals are motivated mainly by interesting work. Chang and Chiang (2008) observe that knowledge sharing, international view, team work, exhibitions visits, and diversified work experiences are the best practices for enhancing creativity in Taiwanese design organizations.

With this study we explore the impact of the internal integrative capabilities related to HRM on innovation performance within French firms.

2.2. Research Methodology

Our study is based on the questionnaire developed by M. Terziovski that aims to measure innovation capabilities (see Metz and al, 2005; Terziovski and Samson, 2006). From this questionnaire, we selected three organizational capabilities that are related to HRM practices based on creativity: Leadership and strategy; Human resource and creativity management; and Organizational

culture (see appendix). They represent our independent variables. Leadership and strategy scale integrates items such as: top management implication and vision, strategic coherence, clear strategic objectives, top management encouraging, change, innovation and entrepreneurship, decision making process and trans-functional teams. Human resources and creativity management scales include items that measure: recruitment, training and development, compensation and communication process, creativity stimulation by knowledge sharing and management, suggestion schemes, interesting work, job rotation, and individual benefits from intellectual property. Finally, culture scale integrates items that evaluate the 'fit' between individual and organizational values, the importance of learning organization and total quality management, the decision making' habits and performance oriented culture. All independent variables are 5 point Lickert scales.

Our dependant variable is innovation performance. This concept is represented in the Terziovski innovation capability' questionnaire by five innovations' success closely related measures (see appendix): revenue from new product development (in %), number of innovations, time of innovation adoption (in years), time to market (in years), and research and development as percentage of total sales (in %). Innovation performance is completed by three more broadly related measures: customers' and employees' satisfactions and ecological efficiency. The last three measurements are also 5 point Lickert scales.

At this stage of our study we contacted 120 French companies that have relationship with the University of Versailles. 37 firms responded to our mailed questionnaire. Using descriptive statistics we analyze our data in order to observe its distribution. The responses of the majority of our scales were distributed quasi normally. In this case we can use metric statistical methods for analyzing them (see Howell, 1998). Although, we preferred non metric methods because, for small samples they are more powerful than metrics ones. The non metric statistical tests use median parameter and not the average (Siegel, 1956). For the purposes of this work we mobilized two statistical methods: correlation and one way ANOVA.

Our data is ordinal and thus we can look for correlations and not only for associations between variables. We can use mainly two non metric tests for the study of the non metric correlation: ρ of Spearman and τ of Kendal (Malhotra, 2004). Howell (1998) suggests that in general, the test τ of Kendal is more useful than the ρ of Spearman. Malhotra (2004) points out that the τ of Kendal is to be preferred to the ρ of Spearman when the responses categories are limited (5 in our case). Moreover, the two tests are equally powerful (Siegel, 1956). For all these raisons we use the τ of Kendal for the study of the correlations between our different variables. This test transforms the data of each analyzed pair of variables in ranked one. After that it measures the correlation based on the number of inverse ranks of the two variables. When this number is low, the correlation is high.

Non-metric methods allow us to study the influence of one independent variable to one dependent one. The more popular test is Kruskal-Wallis (KW) test for k independent groups that is the non metric counterpart of one way ANOVA. The null hypotheses of the KW test supposes that the medians of the dependant variable' distributions for each degree (category) of the independent variable are equal. Despite the fact that median test is more useful when the dependant variable' categories are not numerous (5 in our case) than the KW test (Siegel, 1956), we mobilize the last one because for small samples the first one is not applicable.

3. FINDINGS AND DISCUSSION

In this section we present our analysis of innovation' performance variables, and the influence of Leadership and strategy, Human resources management based on creativity and Culture variables on firms Innovation performance.

3.1. Innovation performance

First we looked for the correlations between innovation' performance variables. We observed that the revenue from new product development, the number of innovations and the research and development as percentage of total sales are all correlated (respectively, correlation 0,587, signif. 0,000; correlation 0,454, signif. 0,004; and correlation 0,411, signif. 0,006). These results suppose that the high revenue from new product development is mainly based on the high number of innovations. So multiplying innovations is likely to raise the fraction of turnover from new product, and thus even incremental innovations are expected to enhance firm performance.

Research and development as percentage of total sales is probably more innovation's input than innovation's output. In this case, the correlation between means (research and development resources) and outcome (revenue from new product and number of innovations) is quite natural. But the inverse relationship is also possible: the more the firm is innovative the more it invests in research and

development. The time of innovation adoption and the time to market are also positively associated (correlation 0,459, signif. 0,003). It seems that when innovations are quickly adopted their time to market is also limited.

Our data shows that customer' satisfaction is positively correlated with the number of innovations and the employees' moral (respectively, correlation 0,377, signif. 0,008 and correlation 0,451, signif. 0,003). Customer satisfaction increasing with the number of innovation is an expected finding. When innovation is market driven and responds to the client needs it will be welcomed. The more surprising result is this of the correlation between customer and employees satisfactions. This effect is more relevant for services' sector. Nowadays when, firms sell not just a product but a 'global offer' (product, guaranties, services...), the correlation between client and employees' satisfaction seems to concern the industrial sector also. We can conclude that employees' moral is an important factor for firm performance.

Employees' satisfaction is also positively associated with firm's ecological efficiency (correlation 0,458, 0,007). Still, it is difficult to say if employees' moral is an input or an output for ecological efficiency. It is likely that the work force is more motivated and identifies itself easily to the firms that are socially responsible. Although, it is possible that employees' satisfaction and implication enhance firm's ecological performance.

3.2. Influence of Leadership and strategy characteristics on innovation performance

A mission statement that includes the word 'innovation' is positively correlated with the revenue from new product developed and with the number of innovations (respectively, correlation 0,356, signif. 0,021; correlation 0,340, signif. 0,018). Our findings show that the innovation must be a part of the strategic vision of the top managers. Thus, clear communication about the importance of the innovation and high top management implication are able to raise the innovation performance.

An operations' strategy aligned with the strategy of innovation is positively associated with the percentage of turnover from new product developed, with the number of innovations and with the research and development as a proportion of total sales (respectively, correlation 0,372, signif. 0,014; correlation 0,395, signif. 0,006; correlation 449, signif. 0,004). Moreover the impact of strategic consistency on number of innovations and research and development as fraction of total turnover is confirmed by the KW test (respectively 10,250, signif. 0,010 and 10,383, signif. 0,016). We observe that strategic and operational coherences are important factors for innovation performance. They indicate clearly to employees what the company's expectations are and how to perform them. Our results show also that when innovation is a strategic and operational priority, it is likely that the firm invest more in research and development. There is coherence between strategic objectives and inputs.

The 'top down' strategy is negatively correlated with the employees' moral (correlation -0,422, signif. 0,006). This result is not surprising. More directive management that does not take into account employees suggestions and demands may be able to deteriorate the workforce' satisfaction.

The KW test reveals that there is an inverse U relationship between the emergent 'bottom up' strategy and customer satisfaction (7,861, signif. 0,049). It is likely that the emergent strategy improve the quality of the client' relationship but when there is not top management strategic vision, this approach might deteriorate the client satisfaction.

3.3. Influence of Human resources management practices on innovation performance

A recruitment strategy that focuses on attraction of creative people is positively correlated with the research and development as a percentage of total sales (correlation 0,534, signif. 0,001). This influence is confirmed by the KW test (10,308, signif. 0,016). Our data analysis points out that high financial means dedicated to innovation are coherent with Human resources strategy that aims to enhance employees' creativity. Moreover, it is likely that when firms recruit and dispose with many creative people they try to provide them sufficient funds for innovation.

Freely shared knowledge is positively correlated with the employees' satisfaction (correlation 0,534, signif. 0,037). Indeed shared knowledge is based on better communication between employees and is able to continuously improve the workforce competencies. In turn this can be a reason for high employees' moral.

Employees' satisfaction measured regularly is positively correlated with research and development as percentage of total sales. This result is also established by the KW test (10,356, signif. 0,016) and is difficult to explain. It is possible that the top management of firms that invest hardly in research and development believes that innovation has always human origin and that the human resources are a critical factor for increasing innovation' performance. Thus, paying close attention to employees moral is an important practice willing to assure employees implication and consequently more suggestions leading to innovations.

The use of change 'champions' is positively correlated with customer and employees' satisfaction (respectively correlation 0,307, signif. 0,045; correlation 0,328, signif. 0,035). The change 'champions' are likely to facilitate new management practices, change and innovation adoption. This may result in better product and services for customers and also in more support for employees.

The case of employees rewarded for the adoption of the continuous improvement philosophy is positively correlated with the number of innovations (correlation 0,302, signif. 0,040). This compensation strategy clearly indicates to the workforce what are the company objectives and tray to align organizational and individual goals. Our results confirm that the effective adoption of continuous improvement philosophy is likely to increase the number of innovations. KW test shows that rewards that take into account the continuous improvement philosophy may be able to raise the employees' moral (9,782, signif. 0,021). Indeed these compensation practices can also be seen as organizational recognition of the workforce effort to continuously improve firm's performance.

The company suggestions schemes are positively correlated with the number of innovations (correlation 0,293, signif. 0,044) but negatively associated with time to market (correlation -0,344, signif. 0,031). The first finding is easy to explain. The suggestions schemes are likely to incite and stimulate the creativity of the whole staff based on its recognition and implication. Thus suggestions schemes might enhance the number of proposed and adopted innovations. Though, it is difficult to explain the second negative correlation. It is possible that the high number of suggestions and the high formalism of the selection process delays the time to market.

Interesting work is positively correlated with employees' satisfaction and research and development as percentage of total sales (respectively correlation 0,408, signif. 0,007; correlation 0,364, signif. 0,021). Interesting work is able to increase the internal employees' motivation and their moral. This result is quite natural. The second correlation is more surprising. It is likely that interesting work is perceived as having a link with innovation and funds that employees dispose. It is possible that the more innovation resources, the more work is supposed to be interesting and vice-versa.

Encourage the job rotation is positively correlated with the percentage of turnover from new product developed, with the number of innovations, and the research and development as percentage of total sales (respectively, correlation 0,406, signif. 0,012; correlation 0,411, signif. 0,005; correlation 0,437, signif. 0,008). Indeed, post rotation is likely to stimulate employees creativity, individual and organizational learning and to improve communication process. So, it is comprehensible that job rotation is correlated to all three innovation performance measures. Although, the KW test suggests that the relationship between post rotation and the three innovation performance variables is likely to be inverse U curve (respectively 12,881 signif. 0,012; 13,960, signif. 0,007; and 10,998, signif. 0,027). There is strong positive relationship between job rotation and these three variables for the first four degree of the scale, but it is possible that very extensive post rotation impedes employees to capitalize their new knowledge and reduce the firm innovation performance.

Sending employees to conferences is positively correlated with employees' satisfaction and research and development as part of total sales (respectively correlation 0,326, signif. 0,032; correlation 0,351, signif. 0,026). In general, innovations are based on accumulated knowledge. Indeed, the conference participation permits to employees to update their knowledge and competences and become more innovative and employable. So, it is likely that conference assistance is linked to employees' moral. Still, to be active in scientific network, highly specialized workers need some financial resources. That why, it is possible that strategic priority focusing on innovation (as research and development as percentage of total sales) is linked to conference participation and vice-versa. According to the results of KW test, the impact of sending employees to conferences on research and development as percentage of total sales has also inverse U shape (9,574, signif. 0,048). There is strong positive relationship between these two variables for the first four degree of the scale, but the very extensive conference's use is not necessary associated with high percentage of total sales dedicated to research and development. This result is unexpected. Sector, size or culture variables are likely to play a moderating effect on the relationship between conference participation and research and development inputs.

Finally, the case of employees that benefit of intellectual property right is negatively correlated with time to market (correlation – 381, signif. 0,018). At this stage of our study, we are not able to explain this effect. Larger sample will allow as to better understand this relationship.

3.4. Influence of Organizational culture on innovation performance

Strategic decisions based on quantitative data and on intuition from experience are negatively correlated with employee' moral (respectively correlation -0,338, signif. 0,028; correlation -0,382, signif. 0,014). The last relationship is also confirmed by the KW test (8,541, 0,036). Employee' moral is also negatively impacted by the strategic decisions based on industry experience (KW 8,030, signfi.

0,045). It is possible that the quantitative data does not always integrate all aspects of work and employees may feel lack of recognition. It is difficult to explain why intuition form experience is likely to reduce employees' satisfaction. One justification can be found in the fact that experience-based intuition can favor senior employees. Younger and less experienced personnel may be less involved in decision making and thus less satisfied with their work. This relationship must be better explored when our sample becomes larger. It is also difficult to justify the negative link between decisions based on industry experience and workforce moral. Nowadays, some companies imitate the best industry practices and their most performing competitor without always taking into account the company's own core competencies. Although, employees moral and work identification need clear and unique strategic vision that differentiate the firm from its homologues.

Promoting employees in accordance with their merits influences employees' satisfaction in U shape (KW 9,390, signfi. 0,025). This result is difficult to explain and may be specific to the industry and culture.

Organizational culture encouraging risk taking and employees rewards based on individual performance are positively correlated with research and development as percentage of total sales (respectively correlation 0,443, signif. 0,004; correlation 0, 439, signif. 0,007). These two impacts are also validated by the KW test (respectively 10,527, signif. 0,015; 9,421, signif. 0,024). Indeed innovation oriented organizational culture and reward system that align firm innovation objectives and individual ones are likely to be established in companies that have an effective innovation strategy and that provide the necessary resources.

Finally, Total quality management (TQM) embedded in organizational culture is positively correlated with ecological efficiency (correlation 0,338, signif. 0,041). It is possible that the TQM which advocates zero default, continuously reducing energy and other resources' consumption, and focused on the whole value chain may be an approach that favors ecological efficiency. However the 'learning organization' exerts a U shape impact on ecological efficiency (KW 7,880, signif. 0,049). It is probable that industry or other variables play a moderating effect between learning organization and ecological performance.

4. CONCLUSIONS

Our study confirms the importance of clearly communicated mission and strategy that focus on innovation. We also observe that a directive style of management is likely to deteriorate the employees' satisfaction. However, our data does not validate the importance of multi-functional teams, of internal entrepreneurship, and of top management encouraging change for innovation performance.

Our research shows that many HRM practices based on creativity are able to affect positively some aspects of innovation performance: recruitment policy, shared knowledge, employees' satisfaction measurement, use of change 'champions', employees rewarded for the adoption of the philosophy of continuous improvement, suggestions schemes, interesting work, job rotation, and conferences' participation. We do not find support for the influence of some other HRM practices such as: training and personnel development, multi-skilling, communication processes, assigning responsibility for knowledge management. Moreover, we observe that offering workers the benefit from intellectual property they create is likely to postpone the time to market.

Innovation and performance oriented organizational culture is able to increase innovation performance. Total quality management embedded in the company's culture may have a positive impact on ecological efficiency. However, some of our results are difficult to explain such as: strategic decision making, 'learning organization', and individual performance rewarding that have an unexpected impact on employees' moral and ecological efficiency. It is surprising that the items related to cultural 'fit', carrier management, appraisal and team rewarding and decision's formalism do not affect significantly innovation performance.

Our results must be used with many precautions. Indeed, we are still at explorative stage of our research. The limited sample does not allow us to generalize our findings and to assert their soundness. Yet, we are not able to take into account some control variables (firm size, industry, and respondent's functional and hierarchical position ...). We mobilize non metric statistic tests that do not use the whole data like metric ones. Unfortunately for the time being, we are not able to complete our quantitative data with more qualitative one.

Actually we continue our study and when the sample is sufficient we will be able to confirm some of our results and explore all unexpected relationships between Human resources management practices based on creativity and innovation performance. We would like to analyze the effect of some control variables (industry, size, strategy, and respondent functional and hierarchical position...). We hope that our findings will promote some new promising research topics.

Appendix

LEADERSHIP AND STRATEGY

1. *Please circle the number which accurately reflects your organisation's PRESENT position, where:1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree*

a)	The word 'innovation' appears in our mission statement	1	2	3	4	5
b)	Our operations strategy is aligned with our innovation strategy	1	2	3	4	5
c)	Senior Managers actively encourage change	1	2	3	4	5
d)	Senior Managers implement a culture of innovation	1	2	3	4	5
e)	There is a high degree of unity of purpose throughout our organisation	1	2	3	4	5
f)	We have eliminated barriers between departments	1	2	3	4	5
g)	Senior Managers show a sense of urgency relating to opportunities for innovation	1	2	3	4	5
h)	We adopt a deliberate (top down) strategy	1	2	3	4	5
i)	We adopt an emergent (bottom-up) strategy	1	2	3	4	5
j)	Entrepreneurship is widely supported at middle management level	1	2	3	4	5

HUMAN RESOURCES MANAGEMENT

2. The following statements are designed to find out the extent to which various human resource management practices and policies apply throughout <u>your</u> organisation. *Please circle the number which accurately reflects your site's PRESENT position, where:* 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree

a)	Our human resource plan is clearly focused on the recruitment of creative people.	1	2	3	4	5
b)	Knowledge is freely shared in our organisation	1	2	3	4	5
c)	We have an organisation-wide people development process	1	2	3	4	5
d)	We have effective "top-down" & "bottom up" communication processes.	1	2	3	4	5
e)	Employee satisfaction is measured regularly	1	2	3	4	5
f)	Multi-skilling is actively used to build innovation capability.	1	2	3	4	5
g)	Respect is a critical organisational value	1	2	3	4	5

3. *Please circle one number against the following statements using the following scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree5 = Strongly Agree*

a)	"Champion(s) of change" are effectively used at this site.	1	2	3	4	5
b)	We reward our employees to adopt a continuous improvement philosophy	1	2	3	4	5
c)	Within our organisation, individuals and work teams are assigned responsibility for knowledge management	1	2	3	4	5
d)	All employees are involved in learning programs	1	2	3	4	5
e)	We have a suggestion/idea scheme in place	1	2	3	4	5

4. What measures do you take to explicitly manage and improve the contribution to innovation capability of knowledge workers? Do you…

		None at All				Extensive
a)	Ensure that they have interesting work	1	2	3	4	5
b)	Ensure they develop their skills	1	2	3	4	5
c)	Provide secondments for professional development	1	2	3	4	5
d)	Send them to conferences	1	2	3	4	5
e)	Offer workers legal rights in IP they create	1	2	3	4	5

CULTURE AND CLIMATE

5. Each statement below can be considered an innovation capability. Some capabilities may be more important for some organisations than others. *Please circle ONE number against the following statements using the scale below:*

		Not at All				Extensively
a)	Our organisation has aligned employee behaviours with stated organisational values.	1	2	3	4	5
b)	Our strategic decisions are based on quantitative analysis of data.	1	2	3	4	5
c)	Our major operating decisions are detailed in formal written reports.	1	2	3	4	5
d)	We rely principally on experienced-based intuition when making major operating and strategic decisions.	1	2	3	4	5
e)	Our major operating and strategic decisions are much more affected by industry experience	1	2	3	4	5
f)	Our culture sees 'failure' as an opportunity to learn	1	2	3	4	5
g)	TQM is embedded in our culture	1	2	3	4	5
h)	The 'learning organisation' concept is practised in our organisation.	1	2	3	4	5

6. Our organisation:

a)	uses hiring procedures that focus on who will best 'fit in' with the organisation's culture	1	2	3	4	5
b)	promotes employees based on merit	1	2	3	4	5
c)	regularly conducts formal performance appraisal of employees	1	2	3	4	5
d)	rewards employees based on how well they perform their job	1	2	3	4	5
e)	rewards employees based on how well their work group or team performs	1	2	3	4	5

INNOVATION PERFORMANCE

Revenue from new products developed in the Last three 1-3 years	1.0%-4.9%	5.0%-9.9%	10.0% - 14.9%	15.0 – 30 %	More than 30%
Innovativeness ➢ Number of innovation adoptions ➢ The time of innovation adoption	Very Low < 1year	Low 1 year	Satisfactory 2 years	High 3 years	Very High > 3 years
Time to market (TTM)	1 year	2 years	3 years	4 years	5 years
Customer Satisfaction	Sometimes meets expectations	Generally meet expectations	Consistently meet expectations	Always meet expectations	Expectations exceeded delighted customers
Employee Morale	Very Low	Low	Satisfactory	High	Very High
Research & Development as a percentage of Total Sales	Less than 0.5%	0.5% - 0.99%	1.0% - 1.99%	2.0% - 5.0%	More than 5.0%
Ecological efficiency degree of recycling	Very Low	Low	Satisfactory	High	Very High

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