

New Work Practices in Italy. Adoption and Performance Effects^S

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Abstract

We use a data set constructed from a survey of Italian manufacturing firms to analyse the effects of new work practices on firm performance. We confirm the major results of studies carried out in other countries, namely that practices appear in clusters and have positive effects on productivity. Good industrial relations appear to be a condition for innovative practices to be implemented and have positive effects. The various practices constituting the innovative cluster that is broadly identified in the empirical literature (job rotation, teamwork, incentive compensation, selective hiring, training, consultation and involvement), have a significant and positive effect on firm performance in our sample if adopted together with good industrial relations, flat organisation, or both. It appears that incentive compensation and autonomous team work are typical features of large firms whereas good industrial relation is a feature which improves the firm performance across different sizes.

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1. Introduction

In two recent studies, Pfeffer (1994, 1998) argues that: (i) a particular set of job re-design and employee involvement practices (teamwork; information sharing; suggestion system for lower levels of firms' hierarchy; project groups; reduction of hierarchical levels; job rotation; development of cognitive, social and relational skills through training programmes; incentive-based retribution systems, etc.) can positively influence firm performance; (ii) the positive impact of such practices on performance is higher when they are implemented in bundles, and (iii) the results are valid independently of the industrial context and sectors in which firms operate. Patterson-West-Nickell (1997), on the basis of a longitudinal study on 67 British firms (mostly with one location and one product), show that 17% of the variation of firms' profitability is due to human resources management (HRM) practices and organisational innovations, while only 8% is due to R&D expenditure, 2% to strategies and 1% to technology and quality. Black-Lynch (2000) find that out of the 4.7% average annual 1993-96 output growth of U.S. manufacturing firms, 1.6 percentage points are explained by productivity growth, of which 1.4 p.p. (i.e. 89% of productivity or 30% of output growth) are due to workplace reengineering processes and to the new HRM practices mentioned above. Moreover, various empirical works (Askenazy (2000), on US data; Greenan (1996) on French data and Caroli-Van Reenen (2001) on both French and UK data) show that workplace reorganisation and adoption of new practices favours and are favoured by high skill levels of the workforce.

Less attention is given to the question of the relative distribution of benefits between firms and workers. The few studies which address this issue find mixed results: Black-Lynch (2000) find evidence of both higher performance and wages in the firms which adopt new practices, while Freeman-Kleiner (2000) and Freeman-Kleiner-Ostroff (2000) find that the effect on productivity per capita are weak and that the effects on workers (measured by workers' well-being) are strong and positive. The latter results are also supported by Gardell et al. (1991) in a study of Scandinavia. However, ambiguity of results still prevail because, for example, Askenazy (2001) on US data finds a positive correlation between the adoption of new HRM practices and injuries and illness. This would provide evidence in favour of the hypothesis of a new emerging management style that has positive effects on performance, and possibly remuneration (Black-Lynch, 2000), but negative effects on security and health.

The empirical evidence briefly recalled above is based on new data usually resulting from surveys to firms and/or to employee representatives; in some cases the samples are nationally-representative like NES I and II in the USA (for instance, see Black-Lynch, 1999), WIRS and WERS in the UK (Millward et al., 2000), REPOSE (Coutrot, 1996), *Changements Organisationnels et Informatisation* (COI: Greenan, 1996; Greenan-Mairesse, 1999), in France; NUTEK in Sweden. Other countries have carried out surveys covering only part of the economy: the Japanese Ministry of Labour and Ministry of International Trade and Industry have jointly developed and administered an enterprise survey of organisational change and technological innovation, covering private sector firms in mining, construction, manufacturing and tertiary industries; in Germany, the ISI (1996) has conducted a survey of the adoption of a number of new practices (related to internal and external organisation but not to incentive systems) in the machine tool sector (Coriat, 1999). Statistics Canada has, for the moment, performed a pilot survey but plans to carry out a national survey in the future.

In Italy the evidence is scarce and limited either to case studies or to particular practices. For instance, Colombo - Delmastro (2000) build and analyse a sample of 438 firms in the metalworking sector, focusing on hierarchical levels, span of control and degree of decision decentralisation. On the basis of a duration model they find that the probability of organisational change is determined by the adoption of new technologies related to flexible automation, by the costs of employees' resistance to change (higher in more traditional fordist organisations), and by influence activity by

employees. Other studies (Biagioli – Curatolo, 1997, Biagioli, 1999, Prosperetti et al., 1996, Del Boca et al., 1999, Cainelli et al., 1999, 2001) are centred on the new compensation schemes which follows the 1993 agreement (so-called “Accordo di Luglio”) between employers and trade unions; the latter favours the adoption, at company level, of agreements that relate part of workers’ wages to company performance. Cainelli et al. (1999) carried out a detailed survey of the Emilia-Romagna region and found evidence of some organisational changes accompanying changes in compensation schemes. In particular, industrial relations aiming at increasing worker involvement in decision-making are found to be associated with compensation schemes with larger participation content. However, no particular innovative flexibility model appear to have been adopted. Another study conducted within the framework of the third TSER programme of the European Commission confronts Lombardy with other main European regions (IRES 2000). The study analyses “the possible role for social partners and local-level institutions in regulating new forms of employment and work” and shows that at company or local levels information sharing is present but mostly informal; likewise multi-skilling is widespread but not associated with formal teamwork which, again, suggests that organisation is informal and that employees can do different tasks when needed, without it being called job rotation.

This informal way of sharing information and organising jobs is likely to be related to the prominent role that SMEs play in the Italian industrial structure¹; indeed it is widely recognised that firm size matters in the decision of adoption:² in smaller firms information on the opportunities for change are not systematically collected and the cost of change may be relatively higher than for large firms (training costs, resistance to change, cost of adequate management resources).

The newly data set that we use in the following analysis combines a detailed cross-section on firm internal organisation with longitudinal data on firms’ performance. The cross-section, based on a questionnaire posted to 346 industrial firms located in the province of Bergamo provides information on all main workplace practices; relative to the existing empirical works for Italy this allows to draw a more general picture of the extent and diffusion of new workplace practices and test the existence and effects of bundles of practices.

As far as the representativeness of the sample is concerned, we believe that results should be valid beyond the local industrial context investigated since the productive structure of the province is generally considered well representative of large areas of North and Central Italy..

The paper is organised as follows: the next section describes the data used and provides some descriptive information on the sampled firms; section three defines the set of practices and discusses measurement problems; in the same section the process of adoption is analysed in terms of extent and sequence. Section 4 describes results of the principal component analysis; section 5 presents the econometric models and the estimated effects of practices adoption on value added. Section 6 concludes.

2. The data

The analysis uses two types of information. One is based on a survey conducted in June 1999 among all firms belonging to the Bergamo Province Industrial Employers Confederation; the other is a longitudinal balance sheet data-set, from 1990 to 1999, relative to the same sample of firms. The survey data are based on a questionnaire jointly designed with the Bergamo personnel managers association (DIPER) whose collaboration has been essential both because it helped formulating the questions in a management comprehensible language and because it promoted the research among the firms by advocating the relevance of the issues involved. The questionnaire, reported in appendix B, comprises various sections covering organisational design (hierarchical

¹ The success of industrial districts has been widely discussed (Becattini, 1979, 1989, 1990; Brusco, 1982).

² See for example the literature review by Leoni et al. (2000).

levels, teamwork, industrial relations, procedures of hiring and selection, extent and quality of training, consultation and information sharing, incentive pay systems).

The questionnaire was sent³ to 349 firms and the response rate has been of 28 percent. The final sample contains 100 firms, representing 22 percent of the firm population with more than 50 employees recorded in the last industry Census conducted in 1996 (see Table A1 in appendix). In line with the population distribution by sector, almost half of the respondents belongs to the metal and machinery sector, a fifth operates in the chemical sector and another fifth in the textile industry. As far as the size distribution is concerned, the sample under-represents firms between 50 and 99 employees⁴; although this group represents over 50% of the whole firm population, its relevance in terms of employees is much lower (20%); moreover, we expect the adoption of new workplace to be relatively limited in small firms.

The second data set are acquired from the Central Balance Sheet of Turin. The main summary statistics are presented in Table A2 in the appendix. The average firms in the sample is of medium-large size (350-400 employees); apart from the period 1992-1993, firms have been expanding activity over the last decade and productivity has been growing.

3. New workplace practices

It is not easy to find a precise definition of what in the literature is broadly referred to as 'high performance workplace practices' or, more impartially, 'new workplace practices' (NWP); the problems one encounters are of three types:

1. The consensus on the definition of the various practices normally ends at a broad level of aggregation: although the management systems associated to these practices have found a global diffusion, still their interpretation and implementation differ among countries at least because they are mediated by different institutions (Greenan - Mairesse, 1999).

2. Even within a country, the definition of workplace practices is not unique simply because each survey or case study is normally based on a specific questionnaire; hence the way a practice is defined depends on how the questions are posed and answered.

3. There is no unique model of management behind these practices, rather there are diverse management approaches which evolve and intersect through time, each of which emphasises a particular set of practices (OECD, 1999).

Whereas the first two problems call for clear definitions and advocate caution in comparisons, the last one suggests that the way practices are actually combined may differ among firms. In particular, whereas the literature agrees on the existence of a positive externality spurred by the adoption of a bundle of practices, the questions on the existence of a 'best performing' bundle as well as on its being country or institutions specific are still open (OECD, 1999, Leoni-Cristini-Labory, 2000).

In order to pin down a list of widely accepted NWP we start from four generic sets of practices (see for example OECD 1999):

- Reduced hierarchical levels
- Job design involving multi-skilling or multi-tasking (in some cases this may imply a more cognitive content of competencies in any role or work position, more problem solving and more decision making).
- Extensive use of team working (which may go beyond the percentage of employees organised in teams and concerns the degree of autonomy of the team).
- Delegation of responsibility to individuals and teams

³ Together with a letter explaining the motivations of the survey jointly signed by the organisers and by the director of the province employers industrial confederation (Unione Industriali).

⁴ We have tried to obtain additional response by making numerous and random phone calls, but the contacted firms did not show interest; we account for sample selection in the empirical analysis.

These basic groupings are extended to encompass other areas of the firm management that are likely to be involved in the changing of the work organisation (Osterman, 1994, Ichniowski et al., 1997, 1999, Black-Lynch, 1997, 1999):

- Extensive training (in terms of number of employees involved and sometimes in terms of cognitive content)
- Selective hiring (which attempts to screen relational and cognitive-analytical competencies in addition to technical capabilities)

Finally, we consider two further aspects that favour the adoption of NWP and that are usually associated to them:

- Compensation schemes based on some form of profit/gain sharing (executives versus non-executives bonus and team rewards).
- Good industrial relation and attention to the work environment

3.1 The measurement of practices

The questionnaire from which the data on the practices are obtained covers all the above identified sets and counts a total of 225 variables. The large number of variables collected, which is a typical feature of these surveys, can portray a detailed picture of the firm organisation and normally allows to grasp various facets of a single practice. The problem of exploiting what is essentially a large qualitative information in an empirically tractable way has not a straightforward solution and the definition of the variables to be analysed is likely to involve a certain degree of arbitrariness (Addison, Belfield, 2000); for this reason, and given the richness of the information collected by the survey, we will try to confront different measures of the phenomenon under study.

Since most of the variables are dummies and some are categorical, our first step is to obtain all categorical 1-3 variables⁵ either by aggregating single dummy variables or by aggregating categories of a single variables: we end up with 36 variables seizing an equal number of practices (Cristini, Gaj, Leoni, Labory, 2001) which can be further combined in ten broad groups: top-down **information sharing**, **consultation** of employee from the management, degree of **employee involvement** in firm decisions, job design in terms of **team working** and **hierarchical levels**, content and incidence of **training**, **selective hiring**, degree of **incentive-based compensation**, quality of **industrial relations** and **work climate**. Table 1 summarises the sets of practices used, the number of variables in each set and gives a brief description of each variable.

3.2 The extent of adoption

There are two important themes regarding NWP; one of these is the effect of the practices on the firm performance, which we will discuss in the next section, the other is the pattern of the practice adoption in terms both of its extent at a certain point in time and of its progression along time.

We start by looking at the extent of the adoption. At the date of survey, none of the firms adopts all the 36 practices that we have identified; the maximum number of practices adopted is 31 by a lone firm; on average 19 practices are adopted, which is similar to the median number (20). The frequency is concentrated in the central values: 80% of the firms adopts between 15 and 25 practices, only 8% declares more than 25 practices and 13% less than 15 (see Figure 1). The upward jump in the frequency in going from 12 to 16 practices could suggest that a 'minimum' set of practices is necessary for the adoption to have some effects; likewise the drop in the frequency

⁵ This step is necessary to perform principal component analysis; see for example Boeri, Nicoletti, Scarpetta (2000) who construct indicators starting from binary variables and then applying principal component analysis.

beyond 25 could imply that it is costly to overcome a certain threshold or that after a certain point there are decreasing returns to adoption⁶. Even the central part of the distribution shows peaks and valleys suggesting that particular groups of practices may be associated with each peak; to see if and how the mix of practices changes in moving from one peak to the next we proceed as follows: first, for each practice, we average the corresponding adoption dummy⁷ over each group of firms pertaining to a peak; next, to facilitate the interpretation, we average over the practices belonging to the same set where the sets are those described in Table 1; we end up with a measure of the adoption of each set of practices in each group of firms; since full adoption, in terms of practices within a set and of firms within a group, corresponds to 1, the measure obtained, reported in Table 2, can be read as a percentage of adoption.

The first group, which identifies firms in which the degree of adoption is lowest, bases its organisation on good industrial relation and incentive-based compensation schemes, they also have a fair extent of team working, and information sharing and pay attention to work climate; on the other hand aspects regarding training, selective hiring, flat organisational structure and employee involvement are virtually ignored. The jump to 16 practices, which corresponds to the mode of the distribution, is strongly characterised by a flatter organisational design and by a rising importance of training; no change are made in terms of involvement, compensation and industrial relation whereas information sharing and work climate improve. The adoption of selective hiring characterises the next level in which there is also a consistent rise of compensation schemes; information sharing is almost complete at this stage. In the fourth group it is difficult to recognise the role of particular practices: almost all rise uniformly except for selective hiring. Finally, employee involvement is the practice which mostly distinguishes the group on the frontier.

The last column gives a measure of the overall degree of adoption by broad groups of practices: the rarest practices are employee involvement and selective hiring while the most diffused is information sharing followed by incentive-based compensation.

3.3 The sequence of adoption

Although the clustering of practices is a feature that finds empirical (for instance, Ichniowski et al., 1997, 1999; MacDuffie, 1995) and theoretical support (Milgrom - Roberts, 1995; Kandel - Lazear, 1992), whether such clusters reflect systems of practices specifically chosen or are simply steps along a unique sequential process of adoption is yet an open question. On the one hand the existence of different initial conditions and different constraints could induce each firm to start the process in a particular way by adopting practices different from other firms so that the bundles one identifies at a point in time differ between firms or group of firms; on the other hand, one may imagine that the path along which adoption starts and gets completed is unique but each firm, for various reasons, for example because the crises that favours a radical change is not occurring simultaneously, starts the adoption process at different times; the cross-sectional picture that emerges would be observationally equivalent to the previous one but would in fact reflect a different adoption process. Unfortunately the analysis of the temporal dimension of the NWP typically suffers from poor data since only a few studies have information on more than one point in time. Freeman, Kleiner, Ostroff (2000), which have the number of years a practice has been in use, find that the more diffused practices are those that have been in used for a longer periods suggesting that a sequential ordering of the practices may exist so that some practices form the basis to others leading to the most advanced practices.

⁶ One could imagine the marginal cost of adoption to be concave and then convex after a threshold; likewise the efficiency of adoption function may be first convex and then concave implying increasing returns up to a threshold and decreasing returns afterwards.

⁷ Since practices are all categorical 1-3 variables, the adoption dummy is 0 for the categorical variable equals 1, and 1 otherwise. The information conveyed by the different categories is analysed below in the text in terms of intensity of adoption.

Using cross-section data some information on the ‘sequential ordering’ of the practices may be obtained by recording the inter-correlation among practices. Let **a**, **b** and **c** be three practices in decreasing order of frequency and count, among firms that have adopted practice **a**, those that have adopted practice **b** and those that have adopted practice **c**; by repeating the count for all practices a matrix of data is obtained (Freeman, Kleiner, Ostroff, 2000). If the order of frequency reflects the (unobserved) order of adoption, and if this is unique, then we expect that all firms that have adopted practice **b** have already adopted practice **a** whereas a lesser percentage has already adopted practice **c**; if this happens exactly, all numbers above the diagonal should be 100 and those below should be less than 100 and decreasing (Freeman, Kleiner, Ostroff, 2000). If we compute this matrix for the 36 practices, we find that the average number above the diagonal is, in each column, larger than the average number below the diagonal; moreover, the average of the numbers above the diagonal is 77 and the average of the numbers below is 39 suggesting that, on the whole, the sequence of adoption is partly reflected in the frequency of adoption. The number of firms that follow the sequence defined by the frequency is reported in Table 3; the number gets smaller as the number of conditions increases and we can observe firms only up to a certain point.

One interpretation is that there appear to be a very similar path up to a certain point which brings to the adoption of basic practices, a sort of pre-requisite to introduce further changes; from there on the routes chosen by firms may diverge and different bundles may emerge.

4. Practice indicators: principal component analysis versus single practices

The use of practices as explicative variables in cross-section regressions requires, given the limited number of firms in the sample, the use of some aggregated practice indicators or the choice of some group of practices to be alternatively included and possibly interacted. Again, the way practices are aggregated, interacted or individually included is to some extent arbitrary; for this reason we employ both the information from the process of adoption described in the previous section and from principal component analysis.

From the process of adoption we are inclined to test, in firm performance regressions, the following practice-related regressors:

- 1) the extent of adoption in terms of number of practices since it appeared to be informative of the level attained in terms of new workplace practice organisation;
- 2) the bundle of practices corresponding to each peak of frequency since they could hide different costs/gains of adoption.

The principal component analysis is performed within each set of practices defined in Table 1; on the whole we obtain 14 components described in Table 4⁸. In some cases a single set is described by more than one component which identify quite precisely different aspects of the practice. The components are used as regressors in the production function.

5. The effect of NWP on the firm performance

One relevant problem in testing the effects of workplace practices on the firm’s performance is to provide suitable and sufficient controls for unobservable firm characteristics which are likely to be correlated with other regressors, for example with the input variables in the usual production function estimates, and with the practice indicators. Obviously, this problem could find an easy

⁸ The number of components to extract is quite arbitrary. We choose to extract those components whose eigenvalue is greater than one.

solution if a proper panel data set would be available¹⁰ but no data sets can yet provide sufficient panel information on practices even if they are complete on others more traditional aspects of the firm. Our data set is no exception: we have a cross-section information on practice adoption and a panel information on balance sheet data. The empirical literature (see for example, Black and Lynch, 1997; Cappelli and Neumark, 1999; Freeman, Kleiner, Ostroff, 2000) has followed two routes in this case:

- a) estimate a simple cross-section;
- b) use the panel information to obtain estimates of the fixed effects and use the latter in a second stage cross-section (Black and Lynch, 1997).

The first route suffers from potential bias due to insufficient controls of unobservable time invariant variables; moreover there is the well-known problem of reverse causality between the firm performance and the practice adoption.

Using panel information in the first step, coupled with a proper estimation technique, allows to control of the unobservable firm characteristics and cope with some of the endogeneity and with potential measurement errors.

We present both “two-step” estimates and cross-section estimates.

5.1 Panel two-step estimates

In the first step we estimate the following log-linear production function

$$(1) \ y_{it} = \mathbf{a}_{1i} + \mathbf{a}_{2jt} + \mathbf{b}_0 l_{it} + \mathbf{b}_1 k_{it} + \mathbf{g} z_i + \mathbf{1}m_{it} + \mathbf{h}_i + \mathbf{n}_{it}$$

where y is log of added value¹¹, l is log of employment, k is log of capital, z are workplace practises, m is the inverted Mill's ratio from the sample selection¹², α_{1i} are time invariant firm specific variables, α_{2jt} are year-industry (j) dummies; η_i and v_{it} are respectively the time invariant and the idiosyncratic error components. Since capital is obtained by the perpetual inventory methods, which allows to account for depreciation and inflation, a measurement error may be present which is likely to exert a downward bias on β_1 and also bias the coefficients of the other regressors in unknown directions. To take care of this problem and of the simultaneity between capital, employment and output, instrumental variables are used. From this step we compute the following predicted residuals:

$$(2) \ y_{it} - \hat{\mathbf{a}}_{1i} - \hat{\mathbf{a}}_{2jt} - \hat{\mathbf{b}}_0 l_{it} - \hat{\mathbf{b}}_1 k_{it} - \hat{\mathbf{1}}m_{it} = \mathbf{g} z_i + \mathbf{h}_i + \mathbf{n}_{it}$$

By averaging these residuals over time an estimate of the firm fixed effects is obtained:

$$(3) \ \frac{\sum_{t=1}^T \mathbf{g} z_i + \mathbf{h}_i + \mathbf{n}_{it}}{T} = \mathbf{g} z_i + \mathbf{h}_i = \mathbf{r}_i$$

where ρ_i is the dependent variables of the second step cross-section.

¹⁰ In particular, given the intrinsic high degree of inertia of workplace practices, ‘proper’ means that the temporal length of the sample should be sufficient to allow some variability in the practice adoption.

¹¹ An alternative output variable, typically used in this type of empirical literature are sales; however the latter should be used only if intermediate materials are included with capital and labour in the right hand of the production function; since materials are not available in our sample we use value added as dependent variables; attempts to use sales, not reported in the text, normally provides less satisfactory results.

¹² In the sample selection the probability of responding is regressed on capital stock, employment, accumulation rate, leverage, share of exported sales, profits, size and industry dummies.

Table 5 reports the production function estimated coefficients using fixed effects with IV (first column) and, as a comparison, OLS. The IV estimates appear to correct the measurement downward bias in the capital coefficient which rises from 0.2 to 0.3.

Table 6 reports the results of the second step; here we include controls for industry-size, firm market share¹³, firm skill structure¹⁴ and number of practices adopted¹⁵. The estimates we present use the principal components as practice indicators¹⁶; the number of observations forced us to include the practices components either one at a time or interacted but not all together¹⁷. The first three columns show the results when no interactions are included; there are three practices that have a significant effects on production: incentive compensation, degree of autonomy of the team and good industrial relations¹⁸; all have a positive coefficient. The controls are always significant, in particular the effect on the Added Value is positive the larger the number of practices adopted, the larger the firm market share and the more skilled the workforce. These initial results confirm the relevance of practices which have already been emphasised in the literature; moreover they substantiate the hypothesis that the more advanced the process of adoption, proxied by the number of practices adopted, the higher the impact on production.

Columns 4 to 6 report the significant interactions between couples of practices; notice that, as before, the interactions are separately included and only for facilitating reading and comparison results appear in the same column. Significant interactions are found between good industrial relations and almost all other practices; likewise significant interactions emerge between reduced hierarchical level and almost all other practices; finally autonomous teams and incentive compensation also positively interact with each other. These findings further corroborate the relevance of the quality of industrial relations which, if good, determine a positive production effect originated by practices which otherwise would be ineffective, like information sharing, training, hiring, involvement. At the same time, however, the coefficients of incentive compensation and degree of autonomy of the team decrease in value though they gain in significance level. An analogous effect is generated by the hierarchical structure: if the firm context is characterised by a flat organisation, positive effects are spurred from adoption of other practices. In order to test if the contemporaneous presence of both good industrial relations and a flat structure determines a further improvement in production we interact each practice with the 'bundle' good industrial relation & flat hierarchy. Results are presented in column 7. Consultation and the component which captures the number of employees involved in team work are now significant, suggesting that for the process of consultation (number of mixed commissions, time dedicated to collaborators in commissions) to be effective both internal organisation and union support must be present; likewise for team work to involve a large percentage of employees and produce output results, flat hierarchy must be combined with good industrial relation.

Columns 8 to 13 report the results obtained by performing the same regressions whose results have been reported in columns 1 to 7, using robust weighted least squares instead of simple robust estimates; the weight are inversely proportional to the firm size defined as number of employees. Weighted least squares should correct for different probability of adoptions between small and large

¹³ This is a categorical variable distinguishing between high, middle and low market share.

¹⁴ The skill structure is captured by three dummies defined in accordance with the distribution of employees by position (blue collars, clerical and marketing staff, top executive and professionals) see data appendix.

¹⁵ In order to test if the inertia to adopt new practises rises with the tenure of the management (Ichniowski, Shaw, Prennushi., 1997), we investigated on controlling for the number of years the respondent (which is either the human resource manager or the administrator) has been in the firm but the control was never significant.

¹⁶ Attempts to use single practices or associations of practices according to the adoption analysis were less successful and are not reported

¹⁷ This is the correct procedure on the assumption that practices follow an order of adoption; including all practices together would allow to test if, on the assumption of only one practice adopted, this differs by firms. Such an hypothesis has little interest for our survey, given the small number of firms.

¹⁸ This component essentially captures the following two aspects of the industrial relations: the firm does not prefer to deal directly with the employees and informs the reps on various items.

firms, extensively emphasised in the literature. When practices are not interacted, only industrial relations continue to matter: it appears that incentive compensation and autonomous team works are typical features of large firms whereas good industrial relation is a feature, which improves the firm performance across different sizes. If interactions are introduced, however, the results confirm, on the whole, the previous findings except for hiring, which loose statistical significance and is only marginally significant if both flat organisation and good industrial relations are present. On the whole the weighted estimates are more parsimonious implying that the significant impact of some practices on output may be determined by the average size of the sample. The estimates support what suggested by the analysis of the adoption process: good industrial relations appear the stepping stone from which changes towards NWP can be to undertaken; the next stone is an internal re-organisation favouring the horizontal dimension. Once these two foundations are established, a more general adoption process can start and other practices become effective.

5.2 Cross-section estimates

In the cross-section we estimate the following log-linear production function:

$$(1) y_i = \alpha_i + \beta_0 l_i + \beta_1 k_i + \beta_2 z_i + \epsilon_i$$

where subscript i identifies the firm, α_i are the same controls of those included in the second step of the previous procedure: industry-size dummy, degree of competition, degree of skill of the workforce, number of practices adopted. Results are reported in Tables 8 (robust estimates) and 9 (robust weighted estimates). There are some important differences between the cross-section results and the previous ones: when no interactions are present (first column in Table 8 and 9) the reduced hierarchical level practice is significant but with an unexpected negative sign. When interactions are included some of the previous findings are confirmed as the role of a flat internal structure positively interacts with most practices. Industrial relations, however, appear to play no role like the workforce skill structure and the number of practices.

The potential biases introduced by using a simple cross-section estimate, that is the scarce control over time invariant fixed effects, the endogeneity of labour and capital and the difficulty in detecting potential output effects in one year alone, raise doubts on the validity of the cross section estimates. Moreover both the quality of the industrial relations and the internal hierarchical structure are attainments which need time to be achieved and which surely started to be present before the survey year; consequently we believe that their effects, to be correctly detected, should be verified over more than one year²⁰.

6. Conclusions

This analysis on Italian data confirms the two major results found in empirical analysis. First, practices appear in clusters, which are supported by theoretical literature on complementarity (Milgrom - Roberts, 1995, Kandel - Lazear, 1992). Second, the effect of adoption on productivity is generally found to be positive (Leoni-Cristini-Labory, 2000). Mainly, positive production effects are determined by good industrial relations and flat hierarchical structure. In fact, practices which otherwise would be ineffective, like information sharing, training, hiring and involvement, interacted separately with industrial relations and flat organisation generate positive and significant results. The contemporaneous presence of both good industrial relations and flat structure determines a further improvement as well. Indeed, this is essential for the process of consultation to

²⁰ The same is true for the number of practices adopted

be effective and likewise for teamwork to involve a large number of employees and produce relevant output effects.

Taking account of the firm size is also very important. The use of weighted least squares helps to correct for different probability of adoptions between small and large firms. Incentive compensation and autonomous teamwork are typical features of large firms whereas good industrial relations generally improve firm performance across different sizes. On the whole this results confirm previous findings being more parsimonious.

Data on employees' perceptions of the organisation and its potential changes would be useful to examine this issue in more details, namely the possible resistance to change from employees. A survey, which captures not only the managerial behaviour, but also employees or their representative perception, would be ideal. Such a survey would allow not only to examine the above-mentioned issue, but also to find more robust results on the adoption of practices and its effects on performance, as well as organisational changes. Future research also includes the analysis of the effects of adoption on other performance parameters, such as profitability.

References

- Addison J, Belfield C. (2000), "The Impact of Financial Participation and Employee Involvement on Financial Performance: a Re-Estimation Using the 1998 WERS", *Scottish Journal of Political Economy*, n.5.
- Addison, J. and Belfield, C. (2000), "The impact of financial participation and employee involvement on financial performance: a re-estimation using the 1998 WERS", *Scottish Journal of Political Economy*, 47(5):571-583.
- Arthur J. (1992), "The Link between Business Strategy and Industrial Relations Systems in American Steel Minimills", *Industrial and Labour Relations Review*, 45(3), 488-506.
- Arthur J. (1994), "Effects of Human Resources Systems on Manufacturing Performance and Turnover", *Academy of Management Journal*, 37, 670-87.
- Askenazy P. (2000), "Innovations and employment: evidence from American manufacturing", in Vivarelli M.-Pianta N. (eds), *The employment impact of innovation. Evidence and Policy*, Routledge, Londra.
- Askenazy P. (2001), "Innovative Workplace Practices and Occupational Injuries and Illnesses in the United States", *Economic and Industrial Democracy* (forthcoming).
- Becattini G. (1987) ed., *Mercato e Forze Locali: il Distretto Industriale*, Il Mulino, Bologna.
- Becattini G. (1989), "Sectors and Districts: some remarks on the conceptual foundations of industrial economics", in *Small Firms and Industrial Districts in Italy*, E. Goodman and Bamford eds., Routledge, London, 123-35.
- Becattini G. (1990), "The Marshallian industrial district as a socio-economic notion", in *Industrial Districts and Inter-Firm Co-operation in Italy*, Pyke F., Becattini G. and Sengenberger W., eds., International Institute for Labour Studies, Geneva, 37-51.
- Biagioli M. – Curatolo S. (1997), "La partecipazione dei lavoratori ai risultati economici dell'impresa. Una indagine econometrica su un panel di aziende metalmeccaniche di dimensione medio-grandi", in Biagioli (a cura di), *Analisi economica delle relazioni industriali*, 1, 87-133.
- Biagioli M. (1999), "Partecipazione dei lavoratori ai risultati economici delle imprese. Una rassegna della letteratura empirica e un'indagine nella provincia di Reggio-Emilia", *Lavoro e Relazioni Industriali*, 1, 87-133.
- Black S. - Lynch L. (1995), "Beyond the Incidence of Training: Evidence from a National Employers Survey", *NBER Working Paper Series*, n. 5231.
- Black S. - Lynch L. (1997), "How to Compete: the Impact of Workplace Practices and Information Technology on Productivity", *NBER Working Paper Series*, n. 6120.
- Black S. - Lynch L. (1999), "What's driving the New Economy: The Benefits of Workplace Innovation", *NBER Working Paper Series*, n. 7479.
- Black S. and Lynch L., 2000, "What's driving the New Economy: The Benefits of Workplace Innovation", *NBER Working Paper Series*, n. 7479, January.
- Boeri T., Nicoletti G. and Scarpetta S. (2000), "Regulation and Labour Market Performance", in *Regulatory Reform and Competitiveness in Europe*, Galli G. and Pelkmans J., eds., Edward Elgar, 2000.
- Brusco S. (1982), "The Emilian Model: productive decentralisation and social integration", *Cambridge Journal of Economics*, 6, 167-84.
- Cainelli G., - Fabbri R. – Pini P. (1999), "Premio di Risultato o Premio di Partecipazione? Modalità Contrattuali e Determinanti nelle Imprese dell'Emilia-Romagna", *Lavoro e Relazioni Industriali*, 2, 55-113.
- Cainelli G., - Fabbri R. – Pini P. eds., (2001), *Partecipazione all'impresa e flessibilità retributive in sistemi locali. Teorie, metodologie, risultati*, Milano, Franco Angeli.
- Cappelli P. - Neumark D. (1999), "Do 'High Performance' Work Practices Improve Establishment-Level Outcomes?", *NBER Working Paper* n.7374.

- Caroli E. - Van Reenen J. (1999), "Skills and organisational change: evidence from British and French establishment in the 1980s and 1990s", *Working Paper*, Institute for Fiscal Studies, London.
- Caroli E. and Van Reenen J. (2001), "Skill biased organizational change? Evidence from a panel of British and French establishments", *The Quarterly Journal of Economics* (forthcoming).
- Colombo M. – Delmastro M. (2000), "Le Determinanti dell'inerzia Strutturale della Gerarchia Manageriale: Fattori Tecnologici ed Organizzativi", *Economia e Politica Industriale*, 107, 59-72.
- Coriat B. (1999), "Organisational Innovation in European Firms: A Critical Review of the Survey Evidence", paper for DYNACOM TSER programme.
- Coutrot T. - Malan A. (1996), "L'Enquête 'Relations Professionnelles et Négociations d'Entreprise' (REPONSE). Bilan critique s'une opération nouvelle", *Travail et Emploi*, 66, 7-17.
- Coutrot T. (1996), "Relations Sociales et Performance Economique: une première analyse empirique du cas français", *Travail et Emploi*, 66, 39-58.
- Cristini A., Gaj A., Labory S., Leoni R., "Management Styles, New Human Resources Practices and Firm Performance. An Empirical Investigation on a sample of Firms", forthcoming in Leoni R., editor, Milano, Franco Angeli.
- Cully M. - Woodland S. - O'Reilly A. (1999), *Britain at Work, As depicted by the 1998 Workplace Employee Relations Survey*, London, Routledge.
- Del Boca A., Cupaiolo E. (1998), "Why do firms introduce financial participation? Evidence from a sample a small and medium Italian manufacturing companies", *Economic Analysis*, 1(3), 221-37.
- DISKO (1996), *Organisational Innovation in the Danish Private Sector*, Allan Naes Gjerding, DRUID working paper n. 96-16.
- Dosi G., Nelson R., Winter S. (eds) (2000), *The Nature and Dynamics of Organisational Capabilities*, Oxford University Press.
- Freeman R., Kleiner M. (2000), "Who Benefits Most from Employee Involvement: Firms or Workers", *American Economic Review*, n.2, May.
- Freeman R., Kleiner M., Ostroff C. (2000), "The Anatomy of Employee Involvement and its Effects of Firms and Workers", NBER working paper, n.8050.
- Gardell B., Johnson J e Johansson (eds) (1991), *The psychosocial work environment: work organisation, democratization and health. Essays in memory of Bertil Gardell*, Baywood, Amityville.
- Greenan N. - Mairesse J. (1999), "Organisational Change in French Manufacturing: what do we learn from firm representatives and from their employees?", *NBER Working Paper n. 7287*.
- Greenan N. (1996), "Progrès Techniques et Changements Organisationnels: leur Impact sur l'Emploi et les Qualifications", *Economie et Statistique*, n. 298.
- Greenan N. (1996a), "Innovation Technologique, Changements Organisationnels e Evolution des Compétences: une étude empirique sur l'industrie manufacturière", *Economie et Statistique*, 8(298), 15-33.
- Greenan N. (1996b), "Progrès Technique et Changements Organisationnels: leur impact sur les qualifications et l'emploi", *Economie et Statistique*, 8(298), 35-44.
- Ichino A. (1989), "Incentivazione della produttività o suddivisione del rischio", *Politica Economica*, n.3.
- Ichniowski C. - Shaw K. - Prenzushi G., 1997, "The Effects of HRM Systems on Productivity: A Study of Steel Finishing Lines", *American Economic Review*, 87, 291-313.
- Ichniowski C. - Shaw K., 1999, "The Effects of HRM Systems on Economic Performance: An International Comparison of U.S. and Japan", *Management Science*, 45(5), 704-21.
- industriali. Modelli teorici e studi empirici sull'esperienza italiana*, Napoli, ESI, 179-220.
- IRES (2000), *Dealing with New Forms of Employment and Work. A Survey of the Use and Regulation at Local Level of Non Standard Forms of Employment in Five European Regions*, Report to DG V of the European Commission.

- Kandel E. - Lazear E. (1992), "Peer Pressure and Partnership", *Journal of Political Economy*, 100, 801-17.
- Leoni R. - Cristini A. - Labory S. (2000), "Sistemi di Gestione delle Risorse Umane (GRU) e Performance d'Impresa: una rassegna critica della letteratura", Quaderni di lavoro, Dipartimento di Scienze Economiche, Università di Bergamo, n.11.
- Leoni R. - Cristini A. - Mazzoni N. - Labory S. (2000), "Stili di Management e Performance d'Impresa. Primi risultati di un'indagine campionaria sulle imprese industriali della provincia di Bergamo", Monografia del Dipartimento di Scienze Economiche, Università di Bergamo, n.1/2000.
- Leoni R. (eds) (2001), *Disegni organizzativi, stili di management e performance d'impresa*, Franco Angeli, Milano.
- Leoni R., Cristini A., Labory S. (2000), "Sistemi di gestione delle risorse umane (GRU) e performance d'impresa. Una rassegna critica della letteratura", Quaderno del Dipartimento di Scienze Economiche, Università degli Studi di Bergamo, n.14 (forthcoming in Leoni R., 2001).
- Leoni R., Cristini A., Mazzoni N., Labory S. (2000), "Disegni Organizzativi, Stili di Management e Performance d'Impresa. Risultati di un'indagine in un campione di imprese industriali", Monografie e Rapporti di ricerca", Dipartimento di Scienze Economiche, Università degli Studi di Bergamo, n.1 (forthcoming in Leoni R., 2001).
- Leoni R., Valietti G., Tiraboschi (1999), "Contrattazione a livello di impresa: partecipazione allo sviluppo delle competenze *versus* partecipazione ai risultati finanziari", *Lavoro e Relazioni Industriali*, n.2.
- MacDuffie J.P., 1995, "Human Resources Bundles and Manufacturing Performance: Organisational Logic and Flexible Production Systems in the World Automobile Industry", *Industrial and Labour Relations Review*, 48(2), 197-221.
- Michie J. - Sheehan M. (1999), "HRM Practices, R&D Expenditure and Innovative Investment: Evidence from the UK's 1990 Workplace Industrial Relations Survey", *Industrial and Corporate Change*, 8(2), 211-33.
- Milgrom P. - Roberts J. (1995), "Complementarities and Firms: Strategy, Structure and Organisational Change in Manufacturing", *Journal of Accounting and Economics*, 19, 179-208.
- Millward, N., A. Bryson and J. Forth, 2000, *All Change at Work?* London: Routledge.
- Ministry of Labour (1994), *Yearbook of Labour Statistics*, Tokyo.
- NUTEK (1996), *Towards Flexible Organisation*, report prepared for the OECD project on Technological and Organisational Change and Labour demand / flexible organisations: human resources implications, Stockholm.
- OECD (1999), "New Enterprise Work Practices and Their Labour Market Implications", Chapter 4, OECD Employment Outlook.
- Osterman P. (1994), "How common is workplace transformation and who adopts it?", *Industrial and Labor review*, 47(2), 173-88.
- Patterson M., West M., Nickell S., 1997, *The Impact of People Management Practices on Business Performance*, Institute of Personnel and Development, London.
- Pfeffer J. (1998), *The Human Equation: Building Profits by Putting People First*, Harvard Business School Press, Boston MA.
- Pfeffer J., (1994), *Competitive Advantage through People*, Harvard Business School Press, Boston MA.
- Pini P. (2000), "Partecipazione all'impresa e retribuzioni flessibili", *Economia Politica*, Anno XVII, 3, 351-374.
- Prosperetti L. - Ravanelli R. - Caironi S. (1996), "Determinanti e Risultati degli accordi di partecipazione economica: un'analisi econometrica", *Lavoro e Relazioni Industriali*, 2, 37-56.

Tables and Figures

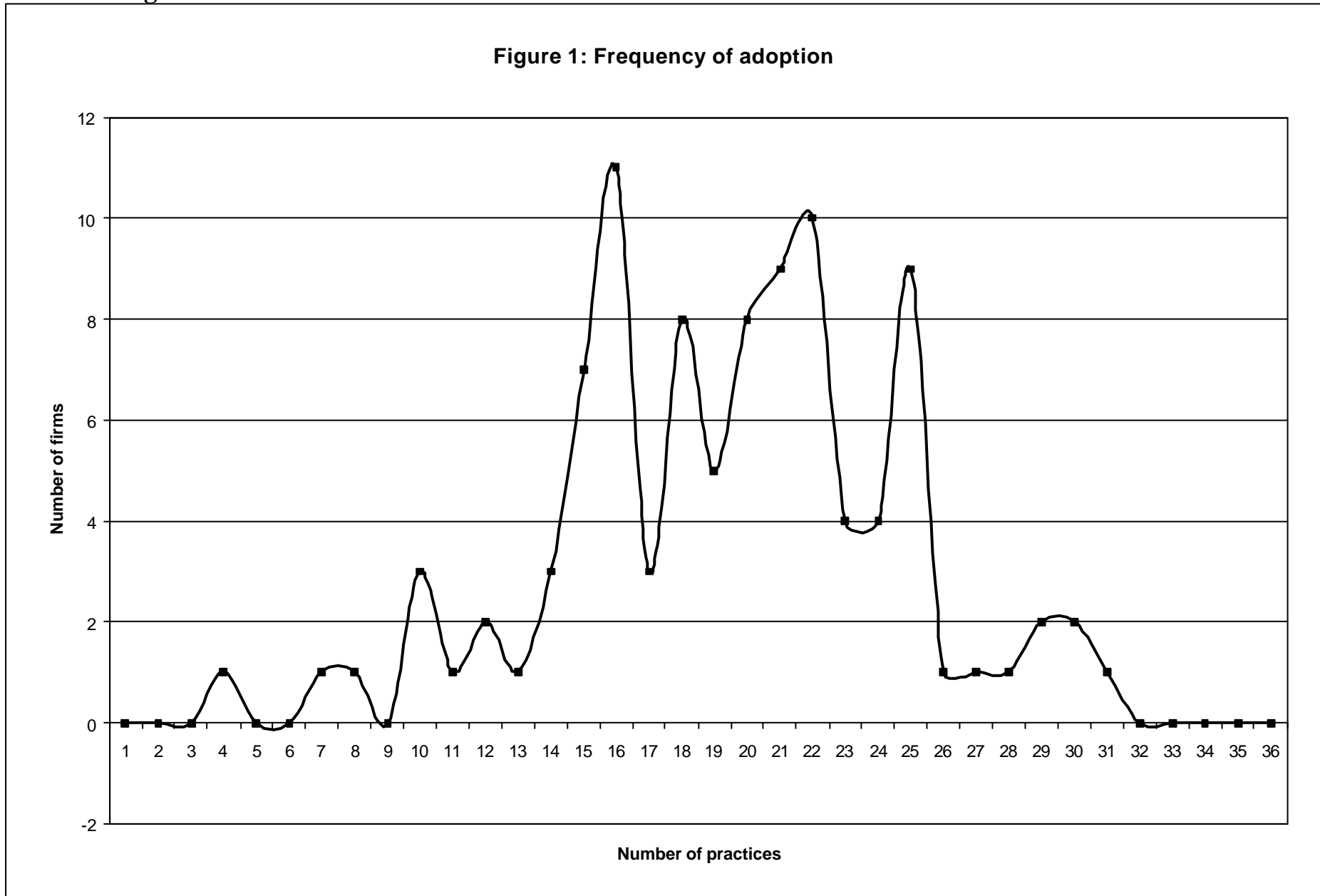


Table 1 Practices definition

Broad sets of practices	Variables in each set	Description of the variables
Information sharing	Info1 Info2 Info3	Internal communication; Information on: investment programs'; Information on various topics in written form; Information on firm performance, employee performance, firm targets;
Employee consultation	Consult1 Consult2 Consult3	Decisions taken without consulting employees; Time dedicated to collaborators; Number of commissions.
Employee involvement	Invol1 Invol2 Invol3 Invol4 Invol5	Discuss changes with employees; Various topics discussed in commissions: remuneration, work organisation Various topics discussed in commissions: production quality, security; Various topics discussed in commissions: employment, training; Financial aspects, planning, remuneration;
Team working	Team1 Team2 Team3 Team4	Percentage of group working; Group nominates leader; group decides working procedures; Group nominates leader; group is responsible for specific products; Group decides working procedures; group is responsible for specific products;
Reduced hierarchical levels	Flat1 Flat2	Number of employees over hierarchical levels; Number of employees over number of coordinators (heads)
Training	Train1 Train2 Train3 Train4 Train5	Training off the job; Relational training Technical training Cognitive training Training for new recruits;
Selective hiring	Hire1 Hire2 Hire3	Use of psycho-behavioural tests during hiring process for managers and professionals Use of psycho-behavioural tests during hiring process for marketing and secretarial positions Use of psycho-behavioural tests during hiring process for skilled and unskilled workers
Incentive-based compensation	Compe1 Compe2 Compe3	Collective agreement on bonus for performance; bonuses for managers; Bonus to non managerial positions; bonus to team groups; Rewards for suggestions; discussion on wage increases, eventual training or promotion opportunities
Industrial relations	Indrel1 Indrel2 Indrel3 Indrel4 Indrel5	Employee representatives help to find solutions; Managers prefer to consult employees rather than their representatives; Managers simply inform representatives on various topics; Managers simply consult representatives on various topics; Managers simply negotiate representatives on various topics;
Work climate	Clima1 Clima2 Clima3	Satisfaction surveys; communication of satisfaction surveys; Employees share firm values; Themes discussed by the boss with her/his collaborators

Table 2 Practices adopted by frequency of adoption

Sets of practices	Number of practices adopted					Average on all distribution
	<i>up to 12</i>	<i>16</i>	<i>22</i>	<i>25</i>	<i>29-30</i>	
Information sharing	0.33	0.67	0.90	0.96	1.00	0.77
Employee consultation	0.27	0.39	0.50	0.67	0.83	0.52
Employee involvement	0.12	0.15	0.26	0.42	0.80	0.28
Team working	0.40	0.57	0.73	0.69	0.69	0.47
Reduced hierarchical levels	0.20	0.64	0.55	0.67	0.63	0.63
Training	0.06	0.53	0.72	0.89	0.90	0.58
Selective hiring	0.10	0.09	0.57	0.37	0.83	0.32
Incentive-based compensation	0.43	0.45	0.83	0.89	0.83	0.69
Industrial relations	0.46	0.49	0.50	0.62	0.75	0.56
Work climate	0.37	0.61	0.73	0.85	0.92	0.66
Average	0.27	0.46	0.63	0.70	0.82	0.55

Table 3 Number of firm adopting a successive sequence of practices

At least <i>internal communication</i> or <i>information on firm targets</i>	At least <i>bonus for managers</i> or <i>bonus for non managers</i>	Themes discussed by the boss with her/his collaborators	Technical training	Changes are discussed with employees
89	82	76	69	60

Employees share firm values	In formation on at least <i>investment programmes</i> or <i>firm performance</i>	Time in meetings dedicated to collaborators	Consultation with representatives over various topics	At least <i>bonus to non managerial positions</i> or <i>bonus to team groups</i>
52	45	36	30	22

Employee representatives help to find solutions	At least <i>internal communication</i> or <i>written information on various topics</i>	Inform representatives over various topics	Number of employees over number of leaders	Number of employees over hierarchical levels
14	8	7	7	6

At least <i>group nominates leader</i> or <i>group decides working procedures</i>	Training to recently hired employees
4	4

Table 4 Principal Components

Name of the principal components	Formula	Essential description of the component
COMPE	$0.69*compe1+0.919*compe2+0.806*compe3$	Incentive compensation (profit sharing and executive bonus not ex bonus and team reward, team reward, hints reward)
CLIMA	$0.49*clima1+0.649*clima2+0.732*clima3$	Specific survey of internal climate, participation to the firm's Values, themes discussed with the boss once a year
HIRE	$0.76*hire1+0.921*hire2+0.662*hire3$	Selective hiring by top-down positions
INDRE1	$0.186*indrel1-0.73*indrel2+0.794*indrel3+0.325*indrel4+0.532*indrel5$	Do not prefer consulting directly the employee (indrel2) and inform reps (indrel3)
INDRE2	$0.908*indrel1-0.092*indrel2+0.11*indrel3-0.221*indrel4-0.421*indrel5$	Reps help finding best performance (indrel1)
INDRE3	$0.098*indrel1+0.174*indrel2-0.02*indrel3-0.811*indrel4+0.601*indrel5$	No consultation but negotiation on various items
INFO	$0.631*info1+0.874*info2+0.897*info3$	Various types of info sharing (newsletter, info on plans and objectives, info on various aspects)
CONS	$-0.59*consult1+0.564*consult2+0.716*consult3$	Decisions not taken without consulting employees, time dedicated to assistants in meetings, number of mixed commissions
INVOL1	$-0.002*INVOL1+0.769*INVOL2+0.815*invol3+0.837*invol4+0.731*invol5$	Themes discussed in mixed commissions (invol2 to 5)
INVOL2	$0.994*invol1+-0.004*invol2+-0.105*invol3+0.133*invol4-0.015*invol5$	Changes are previously discussed with employees (invol1)
TEAM1	$0.029*team1+0.907*team2+0.916*team3+0.924*team4$	Degree of autonomy of the team
TEAM2	$0.994*team1+-0.139*team2+0.174*team3+0.056*team4$	Percentage of employees organised in teams
FLAT	$0.766*flat1+0.766*flat2$	N/Hierarchical levels; N/number of leaders
TRAIN	$0.395*train1+0.796*train2+0.712*train3+0.765*train4+0.662*train5$	Types of training: relational, cognitive, technical and new hired; percentage of employees trained off the job.

Table 5 Production function

Ln Added Value (Dep. Var)	Fixed Effects IV	Fixed Effects
Ln N	.396003 (0.005)	.5082623 (0.000)
Ln K	.3052135 (0.029)	.196081 (0.000)
Mill's Ratio	-.0298626 (0.813)	-.1574016 (0.172)
constant	1.651163 (0.070)	5.366971 (0.000)
Controls (Industry*Year)	Yes	Yes
	sigma_u = .81022062 sigma_e = .17052837 rho = .95758083	sigma_u = .5646802 sigma_e = .39381553 rho = .67277301
	Number of obs = 346 Number of groups = 71	Number of obs = 734 Number of groups = 95
	R-sq: within = 0.4021 between = 0.6824 overall = 0.6654	R-sq: within = 0.3606 between = 0.8153 overall = 0.7925
	Obs per group: min = 1 4.9 avg = max = 6	Obs per group: min = 1 avg = 7.7 max = 10
	F(100,246) = 5.08 Prob > F = 0.0000	F(52,587) = 6.37 Prob > F = 0.0000
	F test that all u_i=0: F(70,246) = 53.92	F test that all u_i=0: F(94, 587) = 6.13

Note: Instruments are: mill1 i1a94 i1a95 i1a96 i1a97 i1a98 i1a99 i6a94 i6a95 i6a96 i6a97 i6a98 i6a99 i3a94 i3a95 i3a96 i3a97 i3a98 i3a99 i4a94 i4a95 i4a96 i4a97 i4a98 i4a99 i5a94 i5a95 i5a96 i5a97 i5a98 i5a99 L.lnn L2.lnn L3.lnn L4.lnn L.lnk L2.lnk L3.lnk L4.lnk L.insales L2.insales L3.insales L4.insales
In parenthesis are p-values

Table 6 Second step Cross section regressions (Robust estimates and weighted robust estimates)

	(1)	(2)	(3)	FLAT (4)	INDRE1 (5)	FLAT*INDRE1 (6)	(7)	FLAT (8)	INDRE1 (9)	FLAT*INDRE1 (10)
Reduced hierarchical levels (FLAT)										
Incentive compensation (COMPE)	.132 (.014)			0.027 (0.002)	0.018 (0.048)	0.01 (0.003)		0.016 (0.066)	0.019 (0.036)	0.008 (0.023)
Degree of autonomy of the team (TEAM1)		.062 (.065)		0.025 (0)	0.021 (0.017)	0.007 (0)		0.016 (0.025)	0.018 (0.109)	0.006 (0.024)
Per cent of employees in teams (TEAM2)						0.01 (0.087)				
Selective hiring (HIRE)				0.029 (0.016)	0.02 (0.098)	0.009 (0.011)				0.007 (0.091)
Do not prefer to consult directly the employee and inform reps (INDRE1)			0.103 (0.043)	0.041 (0.003)			0.092 (0.068)	0.033 (0.022)		
Reps help finding best performance (INDRE2)										
Do not consult but negotiate with reps (INDRE3)										
Consultation (CONS)						0.008 (0.029)				0.005 (0.106)
Good work climate (CLIMA)				0.033 (0.002)	0.022 (0.063)	0.008 (0.005)		0.025 (0.032)	0.024 (0.056)	0.008 (0.013)
Themes discussed with employees (INVOL1)				0.028 (0.022)		0.008 (0.011)		0.023 (0.008)	0.02 (0.055)	0.008 (0.02)
Changes are not introduced without being previously discussed with employees (INVOL2)				0.035 (0.076)	0.035 (0.094)	0.014 (0.013)		0.025 (0.114)	0.031 (0.113)	0.012 (0.038)
Types of training (TRAIN)				0.024 (0)	0.015 (0.025)	0.005 (0.001)		0.015 (0.033)	0.015 (0.029)	0.005 (0.008)
Information sharing (INFO)				0.027 (0.001)	0.015 (0.068)	0.006 (0.003)		0.015 (0.114)	0.015 (0.108)	0.006 (0.03)
Controls										
Number of practices adopted	.026 (.036)	0.03 (0.014)	0.03 (0.019)	Yes	Yes	Yes	0.02 (0.064)	Yes	Yes	Yes
Mechanical sector* Size>=200	.556 (.000)	0.471 (0)	0.52 (0)	Yes	Yes	Yes	0.307 (0.005)	Yes	Yes	Yes
High skill dummy	.375 (.014)	0.406 (0.006)	0.411 (0.006)	Yes	Yes	Yes	0.367 (0.022)	Yes	Yes	Yes
Market share	.082 (.331)	0.111 (0.207)	0.148 (0.08)	Yes	Yes	Yes	0.175 (0.059)	Yes	Yes	Yes

Note: P-values are in brackets.

Table 7 Statistical diagnostics relative to regressions in Table 6

		(1)	(2)	(3)	FLAT (4)	INDRE1 (5)	FLAT*INDRE1 (6)	(7)	FLAT (4)	INDRE1 (5)	FLAT*INDRE1 (6)
Reduced hierarchical levels (FLAT)	N. Obs.: R ² :										
Incentive compensation (COMPE)	N. Obs.: R ² :	89 .332			87 .362	88 .329	86 .367		87 .271	88 .284	86 .314
Degree of autonomy of the team (TEAM1)	N. Obs.: R ² :		93 .331		90 .396	92 .35	89 .386		90 .325	92 .312	89 .348
Per cent of employees in teams (TEAM2)	N. Obs.: R ² :										
Selective hiring (HIRE)	N. Obs.: R ² :				89 .361	92 .329	89 .365				89 .323
Do not prefer to consult directly the employee and inform reps (INDRE1)	N. Obs.: R ² :			92 .336			89 .333	92 .307		89 .34	
Reps help finding best performance (INDRE2)	N. Obs.: R ² :										
Do not consult but negotiate with reps (INDRE3)	N. Obs.: R ² :										
Consultation (CONS)	N. Obs.: R ² :						88 .346				88 .3
Good work climate (CLIMA)	N. Obs.: R ² :				90 .354	92 .332	89 .361		90 .318	92 .312	89 .345
Themes discussed with employees (INVOL1)	N. Obs.: R ² :				90 .351		89 .36		90 .317	92 .3	89 .328
Changes are not introduced without being previously discussed with employees (INVOL2)	N. Obs.: R ² :				90 .335	92 .331	89 .359		90 .299	92 .303	89 .334
Types of training (TRAIN)	N. Obs.: R ² :				88 .39	91 .347	88 .38		88 .335	91 .325	88 .357
Information sharing (INFO)	N. Obs.: R ² :				89 .368	91 .332	88 .37		89 .307	91 .305	88 .341

Table 8 Cross sectional production function (Robust estimates, p-values are in brackets).

Ln VA Dep. Var.		Ln VA Dep. Var.		Ln VA Dep. Var.		Ln VA Dep. Var.	
Ln N	0.759 (0)	Ln N	0.71 (0)	Ln N	0.753 (0)	Ln N	0.708 (0)
Ln K	0.274 (0)	Ln K	0.252 (0.001)	Ln K	0.247 (0.001)	Ln K	0.253 (0.002)
Reduced hierarchical levels (FLAT)	-0.093 (0.052)	Reduced hierarchical levels (FLAT)*Information sharing (INFO)	0.015 (0.034)	Reduced hierarchical levels (FLAT)*Changes are not introduced without being previously discussed with employees (INVOL2)	0.028 (0.014)	Reduced hierarchical levels (FLAT)*Incentive compensation (COMPE)	0.013 (0.036)
N. of practices adopt.	0.002 (0.808)	N. of practices adopt.	-0.003 (0.749)	N. of practices adopt.	0.001 (0.849)	N. of practices adopt.	0.003 (0.645)
Mechanical sector* Size>=200	0.107 (0.311)	Mechanical sector* Size>=200	0.043 (0.721)	Mechanical sector* Size>=200	0.082 (0.488)	Mechanical sector* Size>=200	0.121 (0.322)
High skill dummy	0.056 (0.577)	High skill dummy	0.032 (0.759)	High skill dummy	0.078 (0.443)	High skill dummy	0.052 (0.62)
Market share	0.165 (0.015)	Market share	0.173 (0.013)	Market share	0.165 (0.017)	Market share	0.154 (0.033)
Constant	3.05 (0)	Constant	3.102 (0)	Constant	2.879 (0)	Constant	3.037 (0)
Number of obs = 74		N. of obs = 70		N. of obs = 71		N. of obs = 69	
F(7, 66) = 92.78		F(7, 62) = 91.65		F(7, 63) = 112.57		F(7, 61) = 89.27	
R ² = 0.9144		R ² = 0.9162		R ² = 0.9159		R ² = 0.9143	
Root MSE = 0.3246		Root MSE = 0.32821		Root MSE = 0.32612		Root MSE = 0.3334	

Ln VA Dep. Var.		Ln VA Dep. Var.		Ln VA Dep. Var.		Ln VA Dep. Var.		Ln VA Dep. Var.	
Ln N	0.712 (0)	Ln N	0.706 (0)	Ln N	0.708 (0)	Ln N	0.716 (0)	Ln N	0.708 (0)
Ln K	0.245 (0.002)	Ln K	0.256 (0.001)	Ln K	0.266 (0.001)	Ln K	0.29 (0)	Ln K	0.286 (0)
Reduced hierarchical levels (FLAT)*Types of training (TRAIN)	0.012 (0.076)	Reduced hierarchical levels (FLAT)*Degree of autonomy of the team (TEAM1)	0.008 (0.082)	Reduced hierarchical levels (FLAT)*Selective hiring (HIRE)	0.011 (0.084)	Changes are not introduced without being previously discussed with employees (INVOL2)*Information sharing (INFO)	0.014 (0.056)	Changes are not introduced without being previously discussed with employees (INVOL2)*Types of training (TRAIN)	0.012 (0.042)
N. of practices adopt.	0 (0.956)	N. of practices adopt.	0.004 (0.546)	N. of practices adopt.	0.002 (0.795)	N. of practices adopt.	0.001 (0.945)	N. of practices adopt.	0.002 (0.771)
Mechanical sector* Size>=200	0.068 (0.59)	Mechanical sector* Size>=200	0.102 (0.388)	Mechanical sector* Size>=200	0.093 (0.459)	Mechanical sector* Size>=200	0.075 (0.513)	Mechanical sector* Size>=200	0.105 (0.371)
High skill dummy	0.038 (0.717)	High skill dummy	0.054 (0.606)	High skill dummy	0.095 (0.358)	High skill dummy	0.066 (0.506)	High skill dummy	0.067 (0.502)
Market share	0.18 (0.011)	Market share	0.165 (0.018)	Market share	0.167 (0.017)	Market share	0.148 (0.018)	Market share	0.163 (0.016)
Constant	3.091 (0)	Constant	3.05 (0)	Constant	2.987 (0)	Constant	2.751 (0)	Constant	2.766 (0)
N. of obs = 69		N. of obs = 71		N. of obs = 70		N. of obs = 73		N. of obs = 72	
F(7, 61) = 82		F(7, 63) = 91.40		F(7, 62) = 86.69		F(7, 65) = 125.25		F(7, 64) = 105.81	
R ² = 0.9149		R ² = 0.9115		R ² = 0.9111		R ² = 0.9124		R ² = 0.9113	
Root MSE = 0.33346		Root MSE = 0.3346		Root MSE = 0.33808		Root MSE = 0.33078		Root MSE = 0.33552	

Table 9 Cross sectional production function (Weighted robust estimates, p-values are in brackets).

Ln VA Dep. Var.		Ln VA Dep. Var.		Ln VA Dep. Var.		Ln VA Dep. Var.	
Ln N	0.785 (0)	Ln N	0.717 (0)	Ln N	0.737 (0)	Ln N	0.709 (0)
Ln K	0.248 (0.002)	Ln K	0.227 (0.007)	Ln K	0.209 (0.019)	Ln K	0.237 (0.006)
Reduced hierarchical levels (FLAT)	-0.1 (0.039)	Reduced hierarchical levels (FLAT)*Information sharing (INFO)	0.016 (0.032)	Reduced hierarchical levels (FLAT)*Incentive compensation (COMPE)	0.013 (0.055)	Reduced hierarchical levels (FLAT)*Degree of autonomy of the team (TEAM1)	0.009 (0.081)
N. of practices adopt.	0.002 (0.764)	N. of practices adopt.	-0.002 (0.83)	N. of practices adopt.	0.005 (0.507)	N. of practices adopt.	0.004 (0.617)
Mechanical sector* Size>=200	0.137 (0.19)	Mechanical sector* Size>=200	0.094 (0.399)	Mechanical sector* Size>=200	0.18 (0.128)	Mechanical sector* Size>=200	0.154 (0.183)
High skill dummy	-0.08 (0.471)	High skill dummy	-0.091 (0.432)	High skill dummy	-0.062 (0.577)	High skill dummy	-0.086 (0.46)
Market share	0.179 (0.009)	Market share	0.168 (0.021)	Market share	0.158 (0.035)	Market share	0.161 (0.023)
Constant	3.16 (0)	Constant	3.291 (0)	Constant	3.267 (0)	Constant	3.236 (0)
N. of obs = 74		N. of obs = 70		N. of obs = 69		N. of obs = 71	
F(7, 66) = 24.45		F(7, 62) = 21.10		F(7, 61) = 21.09		F(7, 63) = 20.00	
R ² = 0.8626		R ² = 0.8609		R ² = 0.86		R ² = 0.8555	
Root MSE = 0.33346		Root MSE = 0.33887		Root MSE = 0.3437		Root MSE = 0.34303	

Ln VA Dep. Var.		Ln VA Dep. Var.	
Ln N	0.747 (0)	Ln N	0.729 (0)
Ln K	0.234 (0.007)	Ln K	0.215 (0.011)
Reduced hierarchical levels (FLAT)*Themes discussed with employees (INVOL1)	0.019 (0.027)	Reduced hierarchical levels (FLAT)*Types of training (TRAIN)	0.011 (0.108)
N. of practices adopt.	0 (0.981)	N. of practices adopt.	0 (0.988)
Mechanical sector* Size>=200	0.119 (0.313)	Mechanical sector* Size>=200	0.115 (0.322)
High skill dummy	-0.063 (0.585)	High skill dummy	-0.088 (0.434)
Market share	0.187 (0.015)	Market share	0.185 (0.012)
Constant	3.033 (0)	Constant	3.321 (0)
N. of obs = 71		N. of obs = 69	
F(7, 63) = 22.77		F(7, 61) = 16.70	
R ² = 0.8625		R ² = 0.8564	
Root MSE = 0.33468		Root MSE = 0.34558	

Appendix A

Table A1 Size and sector distribution: 1996 Census (bold) versus sample of respondents percentages

Size (n. of employees)	50-99	100-199	200-499	≥ 500	Total
Sectors					
Metal and machinery	25 8	11,2 19	6 15	2 7	44,2 49
Food	1,6 2	1 2	0 0	0 0	2,6 4
Chemical	10 4	4,2 5	2,6 7	0,2 2	17 18
Construction materials	3,6 0	1,4 2	0,6 1	0,2 1	5,8 4
Textile	10,5 4	7,3 8	2,8 3	1,8 2	22,4 17
Other	4 3	3,2 2	0,6 1	0,4 2	8 8
Total	54 21	28 38	13,3 27	4,7 14	100 100

Table A2: Summary statistics on firm performance

	1991	1992	1993	1994	1995	1996	1997	1998	1999
Average number employees per firm	420	367	320	323	334	376	384	384	380
Added value/N	81.4	86.7	87.7	92.2	108.8	110.1	123.3	126.9	127.8
I/K	0.383	0.241	0.210	0.196	0.202	0.257	0.221	0.222	0.223
Total fin. debt/equity	4.035%	3.533%	3.989%	4.243%	5.178%	8.253%	9.933%	9.900%	8.044%
Growth of VA/N	1.347%	1.457%	1.801%	2.091%	2.634%	2.464%	2.602%	2.573%	2.311%
Growth of N	0.213%	0.196%	0.075%	0.079%	0.081%	0.093%	0.096%	0.096%	0.094%
Growth real sales	3.67%	4.10%	3.77%	4.09%	9.21%	10.16%	11.38%	12.84%	12.70%

Appendix B

ECONOMICS DEPARTMENT
University of Bergamo

DIPER
Bergamo Group of Personnel Managers

QUESTIONNAIRE ON 'MANAGEMENT STYLES'

The questions below refer to the whole firm and not to single establishments or local units

A. Information on the status and the structure of the company

1. Company status: _____

2. Address: _____

3. Sector of main activity:

a) Metal and mechanical engineering

c) Chemicals/plastic materials

e) Textile

b) Food

d) Wooden products, cement, bricks,...

f) Other

4. No of employees (on 30/6/99): _____

5. Sales revenue for 1998 (in billion lira): _____

6. The main market in which the company operates is:

a) Local

b) Regional

c) National

d) International

7. The market share of the company is:

a) Low

b) Medium

c) High

8. What is the percentage of sales revenue derived from:

- the most important customer:

a) <5%

d) 26-50%

b) 5-10%

e) >50%

c) 11-25%

- the five most important customers:

a) <5%

d) 26-50%

b) 5-10%

e) >50%

c) 11-25%

9. The seasonal fluctuations of the market are:

a) Low

b) Medium

c) High

General information on the interviewee

The interviewee is:

- a) CEO
- b) Manager
- c) Human resources and organisation manager

1. How long has the interviewee been working in this company?

- a) Less than 1 year
- b) Between 1 and 2 years
- c) Between 2 and 5 years
- c) Between 5 and 10 years
- c) More than 10 years

If the interviewee is responsible for human resources

2. How many years of experience in the management of personnel or of relations with employees do you have?
 Number of years _____

3. What is the highest school or university diploma you obtained?

Indicate: _____

Please, indicate also possible specialisation: _____

Interviewee’s Global vision on some aspects of the relation management-employees

4. Please, indicate your opinion, using the proposed categories, on the following statements (categories are: Agree a lot (MA), Agree (A), Neither agree nor disagree (N), Disagree (D), disagree a lot (MD))

	MA	A	N	D	MD
Employees are frequently requested to carry out tasks different from their official duty					
Employees sometimes try to take advantage over management with improper behaviour					
Employee representatives help to find the best ways to improve company performance					
We prefer to consult workers directly rather than through workers’ representatives					
We do not introduce changes before having discussed the implications with employees					
Employees feel involved in the company’s values					
Most decisions are taken without consulting employees					

5. Which of the following themes are discussed at least once a year by the head with each of his collaborators? *(multiple answers allowed)*

- a) Aims of the collaboration
- b) Ways of completing work
- c) Promotion prospects
- d) Need for updating/training
- e) Remuneration
- f) Other

Hiring/Selection and training

6. During the selection process, for which professional groups do you routinely use (you or the consultants you contract) psycho-behavioural tests or methods to identify organisational behaviour: *(multiple answers allowed)*:

- a) Managerial positions
- b) professional positions (technicians-specialists)
- c) Positions in the marketing and commercial area
- d) secretarial and administrative positions
- e) qualified and specialised workers
- f) common workers

7. Is there an introduction and training programme for new recruits?

- a) Managerial positions
- b) professional positions (technicians-specialists)
- c) Positions in the marketing and commercial area
- d) secretarial and administrative positions
- e) qualified and specialised workers
- f) common workers

8. In the last 12 months which percentage of workers employed has received a FORMAL training/apprenticeship period OFF-the-job? (i.e. organised courses within or out of the company)

- a) All (100%)
- b) Almost all (80-90%)
- c) Most (60-79%)
- d) About half (40-59%)
- e) Some (20-39%)
- f) Few (1-19%)
- g) None (0%)

9. The apprenticeship/training concerned some of the following themes? *(multiple answers allowed)*

- a) Computer literacy
- b) team work
- c) Interpersonal relationships and communication
- d) Operative use of new machines
- e) Customer service
- f) Security
- g) Problem-solving methods
- h) Personnel evaluation and management systems
- i) time management
- j) Economic competencies
- k) Quality
- l) Management of change
- m) Other

10. Through which of the following methods are employees made responsible for their role? *(multiple answers allowed)*

- a) Analysis and description of allocated tasks
- b) Standard operative procedures
- c) Initial apprenticeship/training
- d) Company manuals/publications
- e) hierarchical relations
- f) Definition of individual objectives and check of results
- g) Definition of group objectives and check of results
- h) other (please, specify: _____)

Consultation and communication

11. Is there an internal communication system (company journal, newsletter, intranet, etc.)?

Yes
 No

12. If yes, communication concerns:

- a) Single organisational units
- b) heads and managers
- c) the whole company

13. During meetings of heads with their collaborators, what proportion of time is dedicated to questions raised or suggestions made by collaborators?

- a) None
- b) a small part
- c) up to 25%
- d) More than 25%

14. Are there any consultation committees made of heads and employees? (not concerned with negotiation!)

Yes
 No

15. If yes,

How many are such Committees? N: _____
 What themes are discussed?

- a) Production/quality
- b) Employment
- c) financial aspects (financial performance, balance sheet...)
- d) Planning and initiatives regarding future developments
- e) Remuneration/monitoring
- f) Services for employees (children care, car park, refectory, leisure,...)
- g) Work organisation and flexibility
- h) Security and health
- i) Equal opportunity
- j) Training

16. The top management **regularly provides** information to employees on:

- a) Investment Programmes
- b) Economic performance of the company

Yes		No	
Yes		No	

17. Have climate or motivational surveys been conducted within the company in the last three years?

Yes
 No

18. If a survey has been conducted, have results been made available in written form to all employees?

Yes
 No

19. After the 1993 Agreement on collective bargaining, is the propensity of management to negotiate with trade unions on questions regarding the life of the company higher, or is it the same?

a) Higher
 b) Lower
 c) Unchanged

For each of the following themes, we would like to know whether the management **Negotiates**, **Consults** or **Informs worker representatives**, or does **not** involve them at all.

	NEG	CON	INF	NO
Wage and employment				
Hiring and selection				
Training				
Incentive systems				
Company discipline				
Planning of the workforce				
Equal opportunity				
Health and security at work				
Re-organisation / restructuring processes				
Company results				

21. Information is provided in written form to **all employees** on which of the following aspects?

a) Working hours/extra time
 b) Conflicts
 c) Training
 d) Wage levels (average ones)
 e) Internal mobility
 f) Absenteeism
 g) Quality of the product/service
 h) Security/incidents
 i) company general performance
 j) Other

Pay Systems and wage determinants

22. For which of the following positions is a formal periodical (e.g. annual, quarterly, etc.) evaluation of performance planned?

a) Managerial Positions
 b) Professional positions (technicians-specialists)
 c) Positions in the marketing-commercial area
 d) Secretarial and administrative positions
 e) Qualified and specialised workers
 f) Common workers

23. What is the share of employees who are subject periodically to formal evaluation?

a) All (100%)
 b) Almost all (80-90%)

- c) Most (60-79%)
- d) About half (40-59%)
- e) Some (20-39%)
- f) Few (1-19%)
- g) None (0%)

24. What are the main objectives of evaluation? (*multiple answers allowed*)

- a) To evaluate the opportunity of promotion/transfer
- b) To provide employees with information on the results of the evaluation of their performance or expressed competencies
- c) To determine wage increases or premiums
- d) To determine the need for training and development
- e) Other objectives (please, specify _____)

25. Has a collective agreement been made on the “**premio di risultato**” (bonus for performance)?

Yes

No

26. Do individual incentives/ bonus exist ?

For managerial positions

Yes

No

For non managerial positions

Yes

No

Firm performance

27. Does your company set objectives on what follows? (*multiple answers allowed*)

- a) Sales revenue
- b) Costs
- c) Profits
- d) Labour costs
- e) Productivity
- f) Quality
- g) Turnover
- h) Absenteeism
- i) Training
- j) Other

28. Are some of these objectives determined consulting employees or their representatives?

Yes

No

29. If not, are employees or their representatives **informed** about objectives?

Yes

No

30. Has this company obtained ISO9000 certifications?

Yes
No

31. Apart from ISO9000 procedures, how is quality controlled?

- a) quality is controlled by the hierarchy
- b) quality is controlled by inspectors who belong to an independent unit
- c) quality is controlled individually by employees at the different levels
- d) Registration of defects/claims
- e) Customer satisfaction surveys
- f) In another way (please, specify: _____)
- g) quality is not systematically controlled

Work organisation

32. What were the percentage of employees in each of the following positions on **30.6.1999**:

- a) managerial positions
- b) Professional position (technicians-specialists)
- c) Positions in the marketing-commercial area
- d) Secretarial and administrative positions
- e) Qualified and specialised workers
- f) Common workers

33. How many hierarchical levels are there between the CEO and the head at the lowest level?
Number _____

34. How many hierarchical managers (of whatever level) are there in the company?
Number _____

35. Of these, how many received – in the last three years – specific training or updating on questions related to personnel management?

Number _____

36. In the last three years, has the number of hierarchical levels increased, decreased, or remained the same?

- a) increased
- b) decreased
- c) remained the same

37. What proportion of employees work in groups (working group, committees, teams, project teams, quality circles, continuous improvement teams, etc.) formally set up?

- a) All (100%)
- b) Almost all (80-90%)
- c) Most (60-79%)

- d) About half (40-59%)
- e) Some (20-39%)
- f) Few (1-19%)
- g) None (0%)

If teamwork exists

38. Which of the following statements reflect the way the team operates?

- The team members can nominate their head
- The team members decide together how to do the work
- Teams are responsible for specific products/services

YES	NO

39. How are the results of these teams rewarded?

- a) Economic reward
- b) Other: (please, specify: _____)
- c) No reward

If teamwork does not exist:

40. Has it existed in the last 3 years ?

Yes

No

41. Apart from the above mentioned teams, are there other channels through which employees can suggest improvements in working methods?

Yes

No

If yes, are the suggestions and proposals economically rewarded?

Yes

No

Changes in the company

42. Which of the following aspects have **changed** in the last 3 years and to what extent?

	INCREASED		SAME	DECREASED	
	A lot	little		A lot	Little
Responsibility of heads on questions about the relationships with collaborators					
Importance of questions about the relationships with collaborators in the determination of organisational objectives					
Work load of collaborators					
Flexibility of employees rotating tasks					
Influence of employees on the way they carry out their role					
Amount of information provided to employees on the company					
Share of remuneration related to individual performance measures					
Influence of employees on managerial decisions					

43. In the last 3 years, has management introduced or failed to introduce some of the following changes?

	YES	NO	FAILED
Changes in the remuneration systems			
Introduction of new technologies			
Changes in the working hours			
Changes in work organisation			
Changes in work techniques and modalities			
Introduction of employee involvement initiatives			
Introduction of new products/services			
Other (specify: _____)			

If changes have failed:

44. What are the reasons for the failure to introduce desired changes?

- a) Resistance from managers
- b) Resistance from worker representatives
- c) Shortage of qualified human resources
- d) Insufficient financial resources
- e) Other reasons (please, specify: _____)

45. Education levels:

- What is the diploma possessed on average by the below mentioned groups?

	Master (e post Master)	A Levels	Professional qualification (3 years)	Mandatory schooling	Other
Managerial positions					
Professional positions					
Marketing-commercial positions					
Secretarial and administrative positions					
Qualified and specialised workers					
Common workers					

- If there has been, in the last few years, an increase in the average education level required at selection, please indicate the motives:

	TECHNICAL MOTIVES (technological change, computer use, etc.)	MOTIVES RELATED TO ROLES (change in the typology and quantity of competencies requested for each role, etc.)
Managerial positions		
Professional positions		
Marketing-commercial positions		
Secretarial and administrative positions		
Qualified and specialised workers		
Common workers		

46. What is the number of employees which have been hired, and which left the firm in 1998 (from 1 January to 31 December 1998)?

	HIRED	LEFT (excluding retirement)
Managerial positions		
Professional positions		
Marketing-commercial positions		
Secretarial and administrative positions		
Qualified and specialised workers		
Common workers		
TOTAL		

- We thank you for your collaboration.

- We commit to the maximum discretion about the information you have kindly given us.
- The data will be treated from a statistical point of view, thereby ensuring maximum anonymity.

In the end of this research we will provide you with a copy of the report so that you could – if you wish - compare your answers with the average of the sample.

