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The Transfer of Competences to European-Based Japanese Affiliates

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Abstract:
This paper focuses on the ability of Japanese multinational companies to transfer their domestic business practices to their overseas manufacturing operations located in Britain and France. It draws on two sources of information: the results of a postal questionnaire sent to the managing directors of the entire population of Japanese affiliates with production sites in Britain and France; and information based on interviews conducted with managerial personnel on the sites of three affiliates located in the UK and six located in France. While Japanese multinational companies, in so far as they have tried, have not managed to transfer their employment model wholesale, they have managed to create local hybrid systems which serve to promote continuous improvement in productivity and product quality. These distinct local combinations differ from the original template primarily in terms of the factors which determine pay and promotion and how these elements of the human resources system are linked to the organisation of work. While some national specificity can be observed in the form the local combinations take, there remains considerable intra-country variety. In this sense one can say that there are national effects without, at least for the moment, there being clear national hybrid models.

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1. Introduction

This paper focuses on the ability of Japanese multinational companies to transfer their domestic business practices to their overseas manufacturing operations located in Britain and France. This question is not a new one. An originality of our study relative to most others focussing on the European operations of Japanese multinationals is that we address the issue of transfer in an explicitly comparative manner. The use of a common methodology for the two national case studies provides a reliable basis for identifying international variations in business practices, and it proves instructive in assessing the role of local context conditions in generating these differences.[1] Britain and France constitute an especially useful comparative test ground in this regard because of the pronounced differences that exist in their labour market and industrial relations institutions. These are the contextual factors which are most often cited as creating barriers to the transfer of Japanese business practices.

By business practices we are referring not only to the firm's organisational structure and work practices, but also to its human resources system, including the management of pay, promotion and internal careers, and training. Our view is that the Japanese employment system integrates these elements in a coherent manner serving to promote continuous improvement in productivity and product quality. On our account, it would be incorrect to judge the success of transfer solely on the basis of the extent to which some set of high-involvement work practices,

[1] One of the few studies adopting a comparative methodology is that of M. Sako (1994) focusing on the training and quality control practices of Japanese affiliates in the electronics sector in Britain and Germany. There is an ample literature on the organisation of Japanese affiliates located in Britain. Most of it is case study in nature. In addition to the study by Sako (1994), see Crowther and Garaham (1988); Pegge (1986); Trevor (1988); White and Trevor (1983); Wickens (1987) A notable exception is the survey by Oliver and Wilkinson (1992) based on postal questionnaires mailed in 1987 and 1991 to the entire population of Japanese affiliates listed in the Anglo-Japanese Economic Institute's Japanese company directory. Also see the survey of the operating practices of the Japanese affiliates located in Wales by Munday (1990). Comparatively little research has been conducted on the organisation of Japanese affiliates located in France. The principal study is that of I.da Costa and A. Garanto (1993) which focuses primarily on the industrial relations practices of affiliates located in France and Spain. The other French language studies of which we are aware, including Dourille-Feer (1992 and 1993) and Sachwald (1993), are based on a reading of the secondary literature.

such as quality circles combined with semi-autonomous teams and individual responsibility for quality control, are observed. Rather, one needs to examine the employment system as a whole so as to determine whether such elements as pay, job grading and promotion are integrated with work practices in the characteristic Japanese way.

It will be useful to anticipate the broad conclusions of the paper. While Japanese multinational companies, in so far as they have tried, have not managed to transfer their employment model wholesale, they have managed to create local hybrid systems which serve to promote continuous improvement in productivity and product quality. These distinct local combinations differ from the original template primarily in terms of the factors which determine pay and promotion and how these elements of the human resources system are linked to the organisation of work.[2] In some cases, the local hybrids have emerged through a process of learning and adaptation, generally involving the progressive replacement of Japanese line management by indigenous management. In other cases, Japanese management has recognised from the start the need to adapt their methods to local context conditions and they have relied more heavily on indigenous management in defining the original elements of the local employment system. While some national specificity can be observed in the form the local combinations take, there remains considerable intra-country variety. In this sense one can say that there are national effects without, at least for the moment, there being clear national hybrid models.

2. Data Sources

The study draws on two sources of information: the results of a postal questionnaire sent to the managing directors of the entire population of Japanese affiliates with production sites in Britain and France;[3] and information based on interviews conducted with managerial personnel on the sites of three affiliates located in the UK and six located in France. The postal questionnaire was administered between November 1998 and March 1999. The visits to the production sites took place between March and June 1999.

[2] See Doeringer et al. (1998) for a similar conclusion regarding the organisation of Japanese affiliates located in the US.
[3] Our sample excludes those Japanese companies operating vineyards in France.

The postal survey sample

According to JETRO's (Japanese External Trade Organisation) 13th Survey of European Operations of Japanese Companies in the Manufacturing Sector, in March of 1997 there were 114 affiliates operating production sites located in France and 223 operating such sites located in Britain. Sixty-three UK-based affiliates and 27 France-based affiliates responded to our postal questionnaire, giving response rates of 28 and 24 percent respectively. Of the affiliates that responded, 55 UK-based and 22-France-based ones provided complete responses to the questions concerning work and pay practices. The figures presented in the tables below concern strictly this subset of the population that responded to our questionnaire.

The questionnaire, in addition to requesting summary figures regarding the affiliates' size, growth, and the occupational structure of its employees, asked for four types of information. Firstly, it asked for information regarding the extent to which the affiliate involves its personnel in a set of work practices that are often described as constituting the core of the Japanese way of organising work. Secondly, it enquired about the extent to which the affiliate makes use of contingent pay systems. Thirdly, it sought to identify the divisions or departments of the affiliate in which Japanese nationals are employed and it asked about the kinds of training provided to local personnel by Japanese nationals. Fourthly, it asked for information concerning the means used to document and internally diffuse within the affiliate 'best-practice' methods. This paper draws mainly on the first two types of information.

Tables 1 through 3 provide summary information on the UK and France-based affiliates that responded to our questionnaire. The figures in these tables contrast the responses to our questionnaire with those of the arguably more representative JETRO survey referred to above. Table 1 indicates that the large majority of affiliates in each country fall within the SME category. According to results the of the JETRO survey, the British population is characterised by a relatively larger percentage of firms employing more than 500 employees. This difference between the British and French populations is not picked up in our survey results, which shows only a small difference in the percentages of the affiliates in each country employing more than 500 employees.

Table 1

Distribution of Affiliates by Size in Terms of Employment

	DYNACOM (percent)		JETRO (percent)	
Number of Employees:	FRANCE	UK	FRANCE	UK
1 – 49	23	16	24	18
50-99	13	24	26	16
100- 499	41	33	38	44
500 and over	23	27	12	22
No. of respondents:	*22*	*55*	*50*	*148*

The JETRO figures in this and the following two tables are derived from their 13th Survey conducted in the period September through December 1996.

Table 2 gives the breakdown of the sample by broad industrial sector. Based on our results, the main difference between the two national samples concerns the division between 'chemicals and pharmaceuticals' and the sectors categorised as 'other', with a larger fraction of the affiliates in France falling under the 'chemicals and pharmaceuticals' category.

Table 2

Distribution of Affiliates by Industrial Sector

	DYNACOM (percent)		JETRO (percent)	
Sector	FRANCE	UK	FRANCE	UK
Mechanical engineering and transport	36	29	21	31
Electronics and electrical equipment[1]	36	40	29	35
Chemicals and pharmaceutical	23	11	21	16
Other[2]	5	20	29	18
No. of respondents	*22*	*55*	*114*	*223*

1. Includes precision instruments
2. Other refers primarily to textiles, clothing, food and tobacco

A comparison with the figures from the JETRO survey indicates that our sample of British-based affiliates is slightly biased towards electronics and electrical equipment and away from chemicals and pharmaceuticals. In the case of our French-based sample of affiliates, there is a more substantial bias towards mechanical engineering and transport and away from the sectors categorised as 'other'.[4]

Table 3 shows that the UK-based affiliates in our sample match quite closely the JETRO sample in terms of the type of foreign investment. Our France-based sample, however, would appear to be biased towards acquisitions.

Table 3

Classification of Affiliates by Investment Category

Form of Investment	DYNACOM (percent)		JETRO (percent)	
	FRANCE	UK	FRANCE	UK
New Creations and Joint Ventures	59	80	77	78
Acquisitions	41	20	23	22
No. of respondents	*22*	*55*	*57*	*158*

Table 4 compares the growth rates of the two samples of affiliates for the period 1995-97. It indicates that a larger proportion of the affiliates in Britain are situated at the two extremes of the distribution, with a larger percentage having cut back the size of their operations during this period and a larger percentage experiencing growth rates of over 15 percent.

[4] The difference between the JETRO figures and ours for France are probably somewhat exaggerated since the JETRO population includes 7 vineyards while we excluded such enterprises from our survey.

Table 4

Distribution of Affiliates by Annual Rate of Growth of Turnover (average for 1995-97)[5]

	FRANCE (percent)	UK (percent)
< 0 percent	5	13
0 – 5 percent	35	25
6 – 15 percent	45	24
> 15 percent	15	38
No. of respondents:	*20*	*54*

Table 5 shows that the affiliates in each country are heavily oriented towards the export market. Figures from the 1997 JETRO survey indicate that over half of the affiliates in each country export outside the European Union, with North America, Central and Eastern Europe and to a lesser extent Japan being the principal countries of destination. (JETRO, 1997, p. 47).

Table 5

Distribution of Affiliates by Value of Exports as a Percent of Annual Turnover (average for 1995-97)

	FRANCE (percent)	UK (percent)
0 – 20 percent	23	19
21 – 50 percent	36	26
51 – 80 percent	32	34
> 80 percent	9	21
No. of respondents:	22	53

[5] Of the population of 55 UK-based and 22 France-based affiliates under examination, 1 UK-basd and 2 France-based affilaites did not respond to this question.

The case study companies

The six affiliates visited in France are evenly divided between the electronics and auto parts sectors. Of the three UK-based affiliates visited, two are in the electronics sector and the remaining firm produces ball bearings for the auto sector. Table 7 below provides summary information on the case study firms. Two electronics producers, BR_1 Electronics and FR_1 Electronics, belong to a single corporation and two auto suppliers, BR_1 Auto and FR_1 Auto, also belong to a single corporation. As the table indicates, all of the affiliates in the electronics sector produce a similar range of products. In addition to printers and copiers BR_1 Electronics and FR_1 Electronics produce toner. BR_2 Electronics is one of the few remaining European-based producers of typewriters.

A local top-manager was interviewed at each production site. The local managers were for the most part either in personnel administration or in production services. In certain cases, it proved possible to conduct additional interviews with engineers responsible for quality or for production engineering. The interviews were semi-structured, lasting between 2 hours and a full day. In addition to gaining more detailed information about work and human resource practices, a major objective was to gain knowledge about the affiliate's development subsequent to its creation, especially as regards the development of local managerial and production engineering capability.

Table 6

Summary of the Case Study Companies

Company	Date Established	Employment	Investment type	Main products
BR_1 Electronics	1984	635	New creation	Printers and copiers
BR_2 Electronics	1986	202	New creation	Printers and faxes
BR_1 Auto	1990	286	New creation	Ball bearings
FR_1 Electronics	1987	778	New creation	Printers and copiers
FR_2 Electronics	1983	700	New creation	Printers and copiers
FR_3 Electronics	1989	303	New creation	Printers and copiers
FR_1 Auto	1991	1124	Acquisition	Steering systems
FR_2 Auto	1990	42	New Creation	Spark plugs
FR_3 Auto	1984	880	Acquisition	Auto supplies

3. Work Organisation and Employee Involvement

This section compares the way work is organised in UK and France-based affiliates. A central concern is to identify what modifications Japanese multinationals are making to the work practices they use in Japan when operating in Europe, and to determine whether these modifications differ in a systematic way between Britain and France. The section begins with a presentation of the results of the postal questionnaire concerning the penetration rates a set of work practice which are commonly identified as being inspired by Japanese industrial practice. Information gleaned from the case studies is used in a complementary manner to draw certain conclusions concerning the impact of local workforce characteristics and labour market institutions on the organisation of work.

Tables 7 below reports the percentage of affiliates which make any use of the following work practices: job rotation, quality circles, self-managing teams, employee responsibility for quality control, project teams, and just-in-time production. Table 8 shows the percentage of affiliates which involve more than 33% of their operators in these practices.

Table 7

Organisational Practices of Affiliates: Production Operators

	Percentage of Affiliates Making any Use of the Practice	
Practice:	UK	FRANCE
Job Rotation	64	68
Quality Circles	55	55
Self-Managing Teams	49	41
Employee responsibility for quality control	85	73
Multi-disciplinary Project Teams	55**	27
Just in time production	55	36
Number of respondents	55	22

** = significantly different at the .05 level. The test of significance of difference used is Pearson's Chi-squared.

The first thing to note from the figures reported in Table 7 is that penetration rates are for the most part slightly higher in the UK than they are in France. However, a standard test of

significance of difference indicates that with the exception of the use of project teams the reported differences are not statistically significant. The observed difference in the penetration rates of project teams between the two national samples is no longer significant, however, when measured in terms of the percentage of affiliates that involve over 33 percent of their operators in the practice (see Table 8).

Table 8

Organisational Practices of Affiliates: Production Operators

	Percentage of Affiliates Implicating more than 33 % of their Operators in the Practice	
Practice:	UK	FRANCE
Job Rotation	35	41
Quality Circles	29	18
Self-Managing Teams	27	25
Employee responsibility for quality control	75	73
Multi-disciplinary Project Teams	20	14
Just in time production	45	27
Number of respondents:	55	22

1. Based on the Pearson's Chi-Squared test none of the differences in percentages reported above are statistically significant.

Some care needs to be taken in interpreting the difference in the use of project teams between the national samples reported in Table 7. The interview evidence suggests that French managers tend to attach a more technical connotation to the term *equipe projet* than their British counterparts attach to the term 'projet team'. This arguably relates to the development during the 1990s of a formal sub-specialisation in the area of 'gestion de projet' in French engineering schools, leading managers to associate the notion of *equipe projet* with such technical activities as new product development or the introduction of new production lines. Interviewees at BR_1 Electronics and BR_2 Electronics, on the other hand, used the term 'project team' to refer to activities that in France would more properly be referred to as the activities of quality circles or to what is commonly referred to the auto sector as the activities of *groupes de progrès* (see Gorgeu et. al. 1998, p. 39).

The above comments point to the need for caution in drawing hard conclusions concerning international differences from figures on penetration rates such as those presented above. While the figures provide support for the view that work practices inspired by Japanese business principles are diffusing to France and Britain, they do not preclude differences in what these practices amount to between the two countries. A related case in point is provided by the evidence from our on-site interviews suggesting that different meanings are attached to the notion of *kaizen*. FR_1 Auto and FR_3 Auto identify *kaizen* with the practice of compensating individuals for making suggestions for improvements. Interviewees at FR_1 Auto and FR_3 Auto produced performance figures for their suggestion systems and the interviewee at FR_3 Auto commented on these by referring to the average number of 'kaizen's' per employee per year.[6] The management personnel interviewed in the two British electronics affiliates, however, interpreted the notion of *kaizen* to refer either to a general philosophy of continuous improvement or to the use of a total quality management methods.

On the face of it, the percentage figures reported in Tables 7 and 8 show that Japanese multinationals have been quite successful in transferring their business practices to European soil. Despite the often-high rates of penetration reported, our interview evidence speaks quite conclusively in support of the view that the transfer remains partial. The principal differences identified through our interviews concerns the development of technical problem-solving skills by operators, in the sense of being to diagnose and propose solutions to faults with products and equipment. The comparatively limited development of these skills in the UK and France-based affiliates restricts the ability of operators to actively participate in continuous improvement activities, whether it be via quality circles, compensation for suggestions or through the formation of project teams and the like.

The comparatively low problem-solving skill level of operators can be linked in the first instance to a much less systematic usen, than is the common in Japan, of job rotation as an integral part of on-the-job training for operators. The only affiliate which claims to have generalised the use of job rotation among its operators is FR_1 Auto. In the other case study affiliates, job rotation is either confined to the fraction of the workforce organised in cells (*ilôts de production*) or is confined to specialised flexible (*polyvalent*) employees who are on a higher job grade. Workers are recruited for the cells in a voluntary manner and a number of our respondents in the electronics sector in both countries asserted that a large percentage of the

[6] For the generalisation of compensation for suggestions in the French auto sector, see Gorgeu et al. 1998, pp. 37-40)

operators are not interested in taking on the challenge of learning multiple tasks, which is required for cell production. This is despite the higher level of compensation attached to such jobs.

Further, while operators in cell organisation are often responsible for routine maintenance tasks, they are not generally responsible for trouble-shooting work such as solving mechanical problems with their equipment.[7] Such trouble-shooting activity might, in the case of minor problems, be handled by a team leader or supervisor. In most cases, however, a rather classic division of labour pertains with specialised technicians or even senior engineers being called in to solve the problem.[8] The explanation for this difference relative to the parent plants would appear to do with the relatively limited amount of on-the-job training received by local operators.

In the UK a further factor is that most shop supervisors lack the necessary formal training to impart technical problem-solving skills to operators, or to group leaders who are promoted from their ranks. The most common formal qualification held by supervisors in the two electronics plants visited is the NEBSS[9], which is a mostly managerial rather than technical qualification. The quality engineer at BR_2 Electronics observed that it is extremely difficult to persuade personnel with formal technical qualifications to take on the responsibility for shopfloor production activities, as occurs commonly in Japan.[10]

The level of formal technical training for supervisors is generally higher in France, where it is common for supervisors, and even team leaders (*moniteurs*), to have the BTS.[11] However, it is not necessarily the case that such personnel are promoted up from the ranks of the manual workforce and they may lack the sort of on-the-job experience that would allow them to readily impart plant-specific trouble-shooting skills to. At FR_1 Auto, for example, school leavers with the BTS were recruited directly into positions of responsibility for team activities.

The generally low level of operators' problem-solving skills in the UK and France-based affiliates restricts their involvement in continuous improvement activity, be it in the form

[7] See Shibata (1999, p. 195-96) who makes the same observation concerning US operators in his comparison of team organisation in three Japanese and three US plants.
[8] The engineer in charge of quality at BR_2 Electronics, for example, observed than in certain cases he was the only person competent in the plant to solve mechanical or electronics failures.
[9] National Examination Board for Supervisory Studies.
[10] See Sako (1994) for more evidence in support of this observation based on her comparative study of Japanese affiliates in the electronics sector in Britain and Germany.
[11] *Brevet de technicien supérieur*.

of quality circles, *kaizen* activities organised through project teams, task forces or *groupes de progrès*. Both BR_1 Electronics and BR_2 Electronics abandoned, as unworkable in the UK, the practice originally promoted by Japanese management of making quality circles mandatory activity outside of working hours. Both firms have adopted a modified version of quality circles in the form of voluntary participation in periodic team meetings held during paid hours and confined to groups of operators who work together either in cells or on production lines. Voluntary participation in quality circles during paid hours exists for a minority of operators at F_1 Auto and FR_3 Auto. FR_2 Electronics has retained the Japanese practice of organising quality circles outside paid hours, however participation is voluntary and only a small fraction of the operators are concerned.

Difficulties experienced in introducing quality circles in the Japanese manner were also attributed in both countries to a widespread sentiment on the part of the manual workforce that such activity is properly the responsibility of management, who is compensated for undertaking it. This perhaps accounts for the quite general tendency observed in both countries to compensate operators for their involvement in such activity. This takes a number of forms. First of all quality circles and the kaizen activities of teams are, with the rare exception, either organised during regular work hours or during paid over-time hours. A popular incentive scheme is to compensate employees for making suggestions for improvements. As we noted above, two of the auto parts producers visited in France equated compensation for suggestions with the notion of *kaizen.* A third method is to pay bonuses to teams that perform well in terms of achieving certain quality or performance targets.

The perception that operators will only commit themselves to the goal of continuous improvement if they are paid directly for their participation accounts in large part for the widespread use of contingent pay systems in the affiliates. This tendency constitutes a significant modification of standard Japanese business practice, where participation in quality circles and quality improvement activities is treated as a normal part of an operator's job. We return to this issue in Section 4 below, which focuses on the compensation and promotion policies used in the case study affiliates.

Cluster Analysis

The descriptive statistics above have examined the extent to which a particular set of work practices are present in the two national samples of affiliates. While the comparative analysis

points to similar overall rates of diffusion of Japanese inspired work practices in the two countries, this need not preclude differences in the extent to which particular combinations of practice are displayed by each national sample. In order to test for this, we have clustered the entire population of affiliates according to the combination of practices they use. We then extend the analysis by looking for systematic relations between the clusters and the classification of the affiliates according to country of location, sector of activity, and the type of investment.

In order to cluster the affiliates, a data reduction technique, multiple correspondence analysis, is used to identify underlying 'factors' or 'axes'. The input for the analysis is response variables measuring the extent to which the affiliates use the six work practices listed in Table 8. These response variables are constructed from the original responses to the questionnaires by assigning the value labels 1, 2 and 3 to those affiliates characterised by penetration rates for the practice under consideration of 0 percent, between 0 and 33 percent and over 33 percent respectively. The acronyms and summary statistics for the response variables used in the factor analysis are presented below in Table 9.

The multiple correspondence analysis led to the identification of three factors accounting for approximately 85 percent of total variation in the original data matrix as measured by the chi-squared statistic.[12] Table 1 in Appendix provides three types of information useful for interpreting the results. The first type is the coordinate positions of the response variables along the three factors or axes. The second is the squared correlations of the variables with the factors, which correspond to 'factor loadings' in principal components analysis. They measure the contribution of the factors to the response variables. The third is the percentage contributions of the variables to the part of the total 'inertia' or chi-squared statistic accounted for by a factor. This shows which response variables contribute to the construction of the factors.

[12] The figure of 85 percent is an optimistic estimate of the amount of total variation explained by the first three fators. It is based on using the Burt matrix as the input for the correspondence analysis. The Burt matrix is a square symmetric matrix which groups all the two-way contingency tables for a set of *n* categorical variables. Along the diagonal of the matrix are 'blocks' composed of the cross tabulations of each categorical variable with itself. The off-diagonal blocks are formed by the cross tabulations of each variable with the others. The matrix is symmetric since each entry on one side of the main diagonal is identical to the entry on the other side. An equivalent method for performing the correspondence analysis is to use an indicator matrix or matrix of dummy variables as the input, where the rows correspond to individual cases and the columns correspond to different levels or categories of the categorical variables. This gives a more pessimistic estimate of the amount of the total variation explained Based on using the indicator matrix as input, the first three factors account for approximately 50 percent of the total variation as measured by the chi-squared statistic See Greenacre (1993, p. 142) and Lebart et al. (1995, p. 368).

Table 9

Variables Used in Cluster Analysis

Variable	Definition	Average Value
ROT	1 = job rotation is not used; 2 = between 0 and 33 % of operators are involved in the practice; 3 = over 33 % are involved.	2.01
QC	1 = quality circles are not used; 2 = between 0 and 33 % of operators are involved in the practice; 3 = over 33 % are involved.	1.81
TEAM	1 = self-managing teams are not used; 2 = between 0 and 33 % of operators are involved in the practice; 3 = over 33 % are involved.	1.73
CONTROL	1 = employee responsibility for quality control is not used; 2 = between 0 and 33 % of operators are involved in the practice; 3 = over 33 % are involved.	2.56
PROJECT	1 = project teams not used; 2 = between 0 and 33 % of operators are involved in the practice; 3 = over 33 % are involved.	1.74
JIT	1 = just-in-time production is not used; 2 = between 0 and 33 % of operators are involved in the practice; 3 = over 33 % are involved.	1.90

Inspection of these results shows that the first factor (**Factor 1**) separates those firms which make no use of the various practices from those that use four of them in an intensive manner: self-managing teams, quality circles, employee responsibility for quality and just-in-time methods. This factor measures the degree to which an affiliate is highly innovative in work methods, or equivalently, the degree to which its approach to work organisation is traditional. The second factor (**Factor 2**) separates those firms making intensive use of project teams from those using job rotation, employee responsibility for quality and quality circles at a low level. The third factor (**Factor 3**) differentiates those firms using job rotation at a high level from those using just-in-time methods and self-managing teams at a low level.

A hierarchical classification analysis[13] has been performed using the 'factor scores' along the first three factors or axes as input. This led to the identification of four clusters of affiliates. The composition of the clusters is shown in Table 10, which gives the percentage of the firms within a cluster that are characterised by each of the response variable used in the multiple correspondence analysis.

[13] A single link hierarchical clustering methods known as the nearest neighbour method has been used. For a description of this technique, see Johnson (1998, pp. 323-26).

Table 10

Composition of Clusters on Work Practices
(percentage of firms in the clusters characterised by each variable)

Response Variables	Cluster 1	Cluster 2	Cluster 3	Cluster 4
ROT = 1	66.6	22.2	31.6	12.0
ROT = 2	16.7	77.8	26.3	24.0
ROT = 3	16.7	0.0	42.1	64.0
QC = 1	95.8	22.2	10.5	28.0
QC = 2	4.2	77.8	21.1	40.0
QC = 3	0.0	0.0	68.4	32.0
TEAM = 1	100.0	66.7	15.8	32.0
TEAM = 2	0.0	11.1	0.0	60.0
TEAM = 3	0.0	22.2	84.2	8.0
CONTROL = 1	54.2	0.0	0.0	4.0
CONTROL = 2	4.2	55.6	0.0	0.0
CONTROL = 3	41.7	44.4	100.0	96.0
PROJECT = 1	87.5	33.3	5.2	64.0
PROJECT = 2	0.0	66.7	47.4	28.0
PROJECT = 3	12.5	0.0	47.4	8.0
JIT = 1	91.7	66.7	10.5	36.0
JIT = 2	0.0	0.0	36.8	0.0
JIT = 3	8.3	33.3	52.6	64.0

For the definitions of the variables, see Table 9 above.

Inspection of the result shows that the dominant characteristic of the affiliates grouped in first cluster (**Cluster 1**) is their lack of use of various work practices, with the notable exception of individual responsibility for quality control. This cluster groups the ‘traditional firms’. The second cluster (**Cluster 2**) is dominated by firms which make low level use of quality circles, job rotation, project teams and individual responsibility for quality control combined with no use of just-in-time production methods and self-managing teams. This cluster groups the ‘experimenters’. The third and fourth clusters group the ‘innovators’. The

third cluster (**Cluster 3**) is distinguished from the fourth by the greater emphasis placed by the affiliates grouped in it on involving their employees in continuous improvement activities. Firm in the third cluster tend to combine high-level use of individual responsibility for quality control, self-managing teams and quality circles, with either low or high use of both project teams and just-in-time production methods. The fourth cluster (**Cluster 4**) is dominated by firms which place the emphasis on more technical solutions involving the combined use of job rotation, just-in-time production methods and individual responsibility for quality control. There is relatively little use of quality circles, project teams and self-managing teams amongst the firms in this cluster.

Tables 11, 12 and 13 present the cross-tabulations of the numbers of firms classified by cluster and the numbers classified by nation, type of investment (whether a new creation or an acquisition) and sector. Table 11 shows that there is no statistically significant relation between country of location and the clustering according to combination of work practices used.

Table 11

Crosstabs between Work Practice Clusters and Country of Location

Cluster Nation	1	2	3	4	Total
France	9 37.5	0 0.	5 26.3	8 32.0	22 28.6
Britain	15 62.5	9 100.0	14 73.7	17 68.0	55 71.4
Total	24 100.0	9 100.0	19 100.0	25 100.0	77 100.0

Pearson chi2(3) = 4.7289 Pr = 0.193

Table 12 indicates that there is no statistically significant relation between the type of investment and the clustering of affiliates by combination of work practices. This is consistent with results of the two interviews conducted at plants that had been acquired by Japanese multinationals, FR_1 Auto and Fr_3 Auto. These affiliates are both very aggressive adopters of Japanese style work practices. FR_1 Auto, for example, is the only affiliate visited to have systematically introduced job rotation for all it operators. The main differences between these firms and the others concerned the more traditional nature of their payment systems. For example, FR_3 Auto paid a series of bonuses (primes) dating to before its acquisition which

were linked to such factors as working conditions, participation in shift work and seniority. Nothing like this was observed in the new creations visited in France. Further, FR_3 Auto was the only transplant visited not to have instituted a system of annual evaluation linked to pay rises and promotion.

Table 12

Crosstabs between Work Practice Clusters and Type of Investment

Cluster Type	1	2	3	4	Total
Acquisition	8 33.3	2 22.2	5 26.3	5 20.0	20 26.0
Creation or joint venture	16 66.7	7 77.8	14 73.7	20 80.0	57 74.0
Total	24 100.0	9 100.0	19 100.0	25 100.0	77 100.0

Pearson chi2(3) = 1.2071 Pr = 0.751

Table 13 show that a statistically significant relation exists between the sector of activity and the classification of the affiliates according to combination of work practices.

Table 13

Crosstabs between Work Practice Clusters and Sector of Activity

Cluster Sector	1	2	3	4	Total
Mechanical Engineering and Transport	3 12.5	4 44.5	7 36.8	10 40.0	24 31.1
Electronics and Electrical Equipment	7 29.2	3 33.3	9 47.4	11 44.0	30 39.0
Chemicals and Pharmaceuticals	8 33.3	1 11.1	0 0.0	2 8.0	11 14.3
Other	6 25.0	1 11.1	3 15.8	2 8.0	12 15.6
Total	24 100.00	9 100.0	19 100.0	25 100.0	77 100.0

Pearson chi2(9) = 17.1545 Pr = 0.046

Inspection of the table shows that the principal difference concerns the low penetration rate of the work practices in firms operating in the chemical sector when compared with the rates for firms in the electronics and mechanical engineering sectors. This difference supports the hypothesis that assembly-based technologies constitute a more fertile ground for the development of characteristically Japanese methods than do process technologies (see Aoki, 1988).

4. Pay and Promotion

This section presents the results from the postal questionnaire survey concerning the use of various forms of pay for performance by the affiliates, such as pay for suggestions or team bonuses linked to performance targets. While these forms of contingent pay are not typical elements of Japanese human resource systems (see Koike, 1994, pp. 52-53), they are increasingly common elements of compensation systems in Britain and France. The considerable use of such pay policies suggests that Japanese multinationals have modified their compensation practices so as to create a more direct links between short-term performance and pay than is common in Japan.

The section concludes with an evaluation of the employee ranking systems instituted in the case study affiliates, involving job grading and annual evaluation for promotion. Such ranking systems are typical of Japanese industrial practice. They have been analysed by such authors as Coriat (1990), Koike (1994) and Itoh, (1994) as serving to provide individual employees with long-term incentives for the acquisition of skills and competences. The discussion shows how such systems have been modified and combined with particular forms of contingent pay to generate distinct local hybrid systems.

Tables 14 presents figures showing the percentage of the affiliates which involve any of their operators in four common forms of contingent pay: profit sharing, gain sharing, collective or team bonus payments and compensation for suggestions. A larger percentage of the French sample of affiliates report making some use of each of the four practices. However, the differences are only statistically significant in the case of profit sharing and gain sharing.

Table 14

Pay Policies of Affiliates: Production Operators

	Percentage of Affiliates Making any Use of the Policies	
Policy:	UK	FRANCE
Profit Sharing	18*	41
Gain Sharing	4**	41
Collective Bonus	29	41
Compensation for Suggestions	40	45
No. of respondents:	*55*	*22*

** = significantly different at the .01 level; * = significantly different at the .05 level
The test of significance of difference used is Pearson's Chi-squared.

The higher rates of utilisation of profit sharing and gain sharing in France can probably be accounted for by the impact of state intervention in the form of tax advantages for those companies that introduce *intéressement légal* for their employees by means of negotiations with the local unions or the *comité d'entreprise*.[14] Amongst the case study affiliates located in France, only one, FR_1 Auto, has a profit sharing plan that doesn't take the form of *intéressement légal* and which links pay to achieving certain performance and quality targets.

The cross tabulations presented in Table 15 extends the analysis (see pp. 12 above) of the link between the adoption of work practices demanding high involvement on the part of employees and the use of contingent pay systems.

[14] The ordinance of 4 January 1959 provided financial incentives for firms to link employee compensation to company profits while the ordinance of 17 August 1967 made such pay system obligatory. See Reynaud (1975, p. 252). Support for this interpretation of the British/French difference is provided by the bi-modal distribution of the use of profit and gain sharing in the French sample, reflecting the fact that in so far as the firm benefits from the tax advantages the plan must cover the entire workforce. Thus, for both *intéressement légal sur le résultat de l'exploitation* and *l'intéressement légal sur le résultat de productivité,* 36 percent of the respondents reported involving over 66 percent of their employees in the policies while a mere 5 percent reported intermediate penetration rates of between 0 and 66 percent.

Table 15

Crosstabs between Work Practice Clusters and Use of Contingent Pay

Cluster Contingent Pay	1	2	3	4	Total
No use	14 58.3	3 33.3	4 21.0	4 16.0	25 32.5
Any use	10 41.7	6 66.7	15 79.0	21 84.0	52 67.5
Total	24 100.0	9 100.0	19 100.0	25 100.0	77 100.0

Pearson chi2(3) = 11.5474 Pr = 0.009

The results show that there is a highly statistically significant relation between the classification of affiliates according to clustering by combination of work practices (see Table 10 above) and their classification according to whether they make any use of at least one of the contingent pay policies identified in Table 14. Inspection of the numbers in Table 15 shows that contingent pay systems are more present among the 'innovators' grouped in Clusters 3 and 4 than they are among the 'experimenters' grouped in Cluster 2. Contingent pay systems are considerably more present among the 'innovators' than they are among the 'traditional firms' grouped in Cluster 1. The results support the conclusion drawn above on the basis on the case study evidence concerning the tendency of European-based affiliates to promote employee involvement by paying for it directly.

Job grading, evaluation and promotion

This sub-section draws on our case study evidence to provide a more complete understanding of how Japanese multinationals have adapted their pay and incentive systems to local context conditions in Britain and France. One of the stylised facts of Japanese human resource practice is that the compensation system provides incentives for the long-term development of skills and competences (Koike, 1988; Itoh, 1994). This is accomplished by means of job grading systems and annual evaluation procedures that link both annual increments to base pay and promotion to an assessment of the individual's success in expanding the range and depth of his or her skills and problem-solving capability. Such systems, as presented in the classic

descriptions of Koike (1988) or Aoki (1988), are based on grading systems which assign points to a worker depending on how many jobs he or she can undertake without supervision and on the range of technical or maintenance-related problems he or she can solve.

With the exception of BR_1 Auto and FR_3 Auto, all the affiliates visited, make use of job grading systems combined with annual evaluation procedures to determine both promotion, annual increments in base pay, and the allocation of merit pay where it exists. BR_1 makes use of a traditional British job grading system based on the classic distinctions between manual grades, craft grades (setters and maintenance workers) and lower-level management grades (chargehands and foremen). The director of the plant commented that the Japanese parent firm had tried to impose a Japanese human resource philosophy on its US-based operations and observed that the, "same mistake has not been made here." FR_3 Auto was acquired by its Japanese parent in 1985 and subsequently has made no major changes to its classification and pay system.

In the case of the electronics producers, the job grading and promotion systems in place are modified versions of those currently used by the Japanese parent firms. In the France-based affiliates certain of these modifications can be accounted for by the requirements imposed by regional collective agreements (*conventions collectives*) for the engineering and metalworking sectors. Branch *conventions collectives* establish legally mandatory classification systems which fix a range of scores or *coefficients* which are divided into levels (*niveaux*) and then further subdivided into a set of finer grades (*echelons*). A range of coefficients, and thus levels and grades, is set for broad occupational categories: workers (ouvriers), technical employees (*techniciens*) and foremen (*agents de maîtrise*). This system creates a much more stratified or hierarchical classification structure than is typical of the Japanese parent firms, with 16 different coefficients of grades for manual grades as compared to 6 or 8 grades.

The coefficient that is assigned to an employee is determined in part by the characteristics of the job and in part by his or her formal qualifications. The branch collective agreements do not, however, link job coefficients to precise job characteristics, but this is done internally through job evaluation procedures. At FR_1 Electronics and FR_3 Electronics, we were informed that the employee prepares a description of the job performed in consultation with his or her supervisor. These descriptions are then examined independently by a management committee and the job grade (*coefficient*) is set. Since branch collective agreements in this sector impose a minimum coefficient corresponding to the level of formal qualification acquired by the individual through the national educational system, this latter factor must also

be taken into account in determining the assigned coefficient. There is, of course, no counterpart in Japan to this requirement to take into account formal qualifications when determining an employee's job grade.

Within these constraints, the electronics producers visited In France have sought to introduce flexibility to the system by allowing for a range of base salary levels for the same coefficient. Further FR_1 Electronics and FR_3 Electronics have a system of individual merit pay raises which form a permanent part of the individual's salary, though it is conceptually distinguished from base pay. In this way the France-based affiliates in the electronics sector have sought to introduce Japanese style-incentive systems. The principal difference has to do with the criteria upon which raises and promotions are decided. In contrast to the common Japanese practice of evaluating employees at least in part on the basis of the acquisition of competences, a distinct preference is show for assessing employees on the basis of achieving specified productivity or quality targets.[15] The explanation for this has to do with job characteristics and management's policies regarding on-the-job training. In all of the plants visited, a significant percentage of the employees are not involved in job rotation schemes or in continuous improvement activity. This simply precludes any generalisation of employee evaluation based on the on-going acquisition of competences.

Similar remarks pertain to the two British-based electronics producers visited. The manager of the production division at BR_1 Electronics described how they had abandoned, as unworkable in the UK, the parent firm's promotion and evaluation system a number of years following the affiliate's creation. It was replaced with a system of individual evaluation based on achieving targets. At BR_2 Electronics the Japanese parent plant's system of points based on acquiring competences was only in place for team leaders and supervisors with responsibility for training. The lack of job rotation for those working on the assembly lines precluded any generalisation of the system.

Although the limited number of visits undertaken precludes drawing firm generalisations, our interview evidence suggests that Japanese multinationals have modified their evaluation and promotion systems so as to create a much more explicit link between pay raises and promotion on the one hand, and improvements in measured performance on the other, than is common in their domestic operations. In combination with the extensive use of contingent pay systems, this amounts to a significant local modification in the way the affiliates

[15] A common practice is for the individual employee to fix these targets at the beginning of the evaluation period in consultation with the supervisor.

structure the interface between work organisation and pay and incentives.

5. Performance

One might well pose the question: Does the use of Japanese inspired work methods matter for performance? This section addresses this question in a very preliminary manner by asking whether a positive relation exists between the intensity with which the work practices are adopted and performance, as measured by average growth in turnover and the importance of new products in turnover. In order to do this, ordinary least squares regressions have been run for the subset of affiliates that were established before 1995. The results of the regression analysis are presented in Table 16.

Table 16

Regression Results: The Effects of the Factors on Performance

	Dependent variable			
	GRWTH		NEW	
	Coeff.	Std. error	Coeff.	Std. error
Factor 1	1.71	2.14	11.31*	5.21
Factor 2	1.25	3.02	10.76	7.23
Factor 3	-1.28	3.36	1.67	8.03
R^2	.02		.13	
N	56		53	

* = significant at the .05 level.

The dependent variable for the first regression, GRWTH, is the average percentage growth in turnover between 1995 and 1997. The dependent variable for the second regression, NEW, is the proportion of 1997 turnover accounted for by new products introduced between 1995 and 1997. The factor scores on the three factors identified above (p. 14) are the independent variables for both regressions The first of these three factors, as will be recalled, can be interpreted as measuring the degree to which an affiliate is innovative in its work practices. The second and third factors correspond to more fine distinctions between firms using either project teams or job rotation at a high level and those using certain of the other practices at a low level.

The results reported in Table 16 indicate that there is no significant relation between the factors and measured growth in turnover, while there is a significant and positive relation

between the first factor and new products as a percent of turnover.[16] This latter result provides support for the view that adopting a number of practices simultaneously at a high level of intensity can improve the firm's capacity to introduce new products.

6. Conclusion

This paper has focused on the nature of the employment systems adopted by Japanese multinationals in their industrial plants located in Britain and France. The labour market institutions of these two countries differ in important respects and one might anticipate that these differences would impact on the ability of Japanese companies to transfer their business practices. The evidence presented here provides only partial support for this thesis. Despite some differences in emphasis, Japanese multinationals operating in Britain and France have experienced comparable degrees of success in transferring their work practices. The principal difference between the employment systems of the UK and France-based affiliates concerns the nature of their pay and job classification systems, and how these are linked to employee involvement. This ability to combine Japanese style work practices with different national human resources systems points to a surprising universality of Japanese organisational forms.

This conclusion should be qualified, however, by noting that the transfer remains partial in both national settings. Operators are not involved in problem-solving and continuous improvement activities to the same extent as their counterparts in Japan. Local team leaders and supervisors often lack the necessary training and experience to impart these skills to operators. In this latter respect, there are some interesting differences between typical arrangements in Britain and France.

On the face of it, the British craft tradition provides a favourable setting for instituting Japanese-style job ladders where team leaders and supervisors, who are selected for their communication skills and for their capacity to solve mechanical problems (see Koike, 1994 and Shibata, 1999), are promoted into their positions after long tenure as workers. Japanese supervisors and team leaders generally combine technical and managerial competences. In Britain it is common for employees with formal technical qualification such as the ONC or even HNC to start out on the shopfloor and to subsequently advance to positions of technical responsibility. While this creates a group of employees who combine technical skills with

[16] Separate regressions including dummy variables for the sector of activity produced the same results.

knowledge of shopfloor practice, it often proves difficult to persuade such employees to work on the shopfloor. This situation was evoked during our interviews at BR_2 Electronics, where it is common for supervisors to have the NEBSS, a primarily managerial qualification. Thus supervisors in the UK affiliates visited generally lack the necessary technical skills to impart mechanical problem-solving skills to operators.

In the case of France, a different situation was encountered. While team leaders (*moniteurs*) and supervisors may be promoted up from the ranks of operators, as in Britain, it is also the case that school leavers with the BTS (*brevet de technicien supérieur*), a mostly technical qualification, may be recruited directly into these positions. In such instances, supervisors will have a relatively high level of technical qualification compared to their counterparts in Britain. However, they will lack the plant-specific shopfloor experience that constitutes the basis for developing good communication and problem-solving skills. In subsequent fieldwork we plan to focus on this difference between Britain and France so as to judge more filly its impact on the performance and organisation of teamwork.

A further area of research that has not been addressed in this paper is employee representation. In this area one can anticipate rather stark contrasts between the affiliates located in the two countries. In France employers are legally required to engage in annual wage negotiations with local union representatives (*délégués syndicals*). They are also legally required to establish various non-union forms of employee representation, including *comité d'entreprise* and *groupes d'expression directe*. Needless to say, nothing like this exists in Britain, and the majority of the affiliates which responded to our questionnaire stated that they do not recognise a union for collective bargaining purposes. There is a considerable body of literature linking the existence of formal systems of employee representation to the success of employee involvement schemes.[17] In a future publication we plan to explore the possible impact of national specificity in employee representation systems on employee involvement in continuous improvement activities.

Another key question that remains to be fully addressed is that of performance. Our evidence of the link between organisational innovation and capacity to introduce new products gives some comfort to the view that Japanese work practices do count for something. A more adequate treatment of this question, though, requires examining additional measures of performance and would compare the affiliates with a comparable sample of indigenous firms.

[17] See Lorenz (1995) for a discussion of the literature.

We plan to undertake this comparative performance exercise in future research that will make use of existing national surveys whose focus on work organisation overlaps with our own.

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Appendix

Table 1

Results of Multiple Correspondence Analysis of Organisational Practices

	Coordinate Positions			Contributions			Factor Loadings		
Response Variables	Factor 1	Factor 2	Factor3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
ROT = 1	-0.66	0.42	0.50	5.2	3.6	6.5	0.24	0.09	0.14
ROT = 2	0.31	-.1.01	0.36	0.9	17.3	2.7	0.04	0.41	0.05
ROT = 3	0.40	0.40	-0.77	2.0	3.3	15.8	0.09	0.09	0.33
QC = 1	-.74	0.24	0.09	8.4	1.6	0.3	0.45	0.05	0.01
QC = 2	0.25	-0.98	-0.20	0.6	16.1	0.8	0.02	0.38	0.02
QC = 3	1.02	0.65	0.07	9.1	8.5	0.1	0.36	0.15	0.00
TEAM = 1	-0.69	0.11	0.15	8.7	0.4	0.9	0.55	0.01	0.03
TEAM = 2	0.28	-0.66	-1.16	0.6	5.3	20.6	0.02	0.11	0.35
TEAM = 3	1.20	0.31	0.61	12.7	1.5	7.2	0.50	0 ?03	0.13
CONTROL = 1	-1.38	0.52	0.14	11.8	2.9	0.3	0.42	0.06	0.00
CONTROL = 2	-0.14	-2.08	1.08	0.0	16.1	0.8	0.02	0.38	0.02
CONTROL = 3	0.35	0.09	-0.15	3.1	0.4	1.2	0.36	0.02	0.06
PROJECT = 1	-0.66	-0.04	-0.32	7.9	0.0	4.0	0.50	0.00	0.12
PROJECT = 2	0.66	-0.63	0.51	4.2	6.6	5.6	0.17	0.16	0.10
PROJECT = 3	0.90	1.09	0.13	5.0	12.6	0.2	0.18	0.27	0.00
JIT = 1	-0.74	-0.11	0.08	9.5	0.3	0.2	0.56	0.01	0.01
JIT = 2	1.13	0.55	1.71	3.9	1.6	19.6	0.13	0.03	0.29
JIT = 3	0.68	0.01	-0.49	6.3	0.0	7.1	0.31	0.00	0.16

For the definitions of the response variables, see Table 9 above.