Do New Production Concepts and a new Management of Employment Relations, yield higher Employee Performance and lower Job Strain?

Karolus Kraan and Peter Oeij [1]

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ABSTRACT
In this article old versus new production concepts (NPCs) and employment relation instruments, are studied, separately and in combination, to find out which yield high employee performance and low job strain. Therefore, in 2005, TNO conducted coupled surveys among 149 supervisors and employees.
In the past decades, in reaction to dysfunctions of Tayloristic and professional bureaucratic production concepts and employment relations, several new forms of employment relations and NPCs, appeared. Examples are the Socio-technical New Production Concept and customised employment relations. In this study both this NPC and customised performance targets demonstrate positive associations with employee performance.
According to Socio-technical theory the design of employment relations is relatively unimportant, as human resources are mobilised primarily by the production concept. Our results for this NPC show the legitimacy of this assumption, because its high employee performance is irrespective of the employment relations. On the contrary, in the other NPCs and in professional bureaucracies, respectively employment relations characterised by an increased period needed for learning the job and customization of performance targets, can compensate for their lower employee performance. Furthermore, the results do not show increased job strain, due to new production concepts, or new employment relations.

Key words: Production concepts, Employment relations, Employee Performance

[1] The authors are employed at TNO Work and Employment. Correspondance: Karolus.Kraan@tno.nl. Postal address: P.O. Box 718, 2130 AS, Hoofddorp, The Netherlands. Tel.: 00 31 23554982.

INTRODUCTION

In reaction to dysfunctions of rigid Tayloristic production structures and Fordistic employment relations several *New Production Concepts* (NPCs) and new modes of managing *employment relations* came into being, both in the Netherlands and abroad. Under the label 'New' a broad palette of concepts can be found, like the Socio-technical Production concept, Lean Production, Work Flow Management, Business Process Reengineering (BPR), Enterprise Resources Planning and Human Resource Management (HRM). However, in empirical studies these concepts are often hard to distinguish from each other. Besides, the NPCs and new management modes of employment relations, differ in the scope of aspects taken into account (Fruytier, 1997). Furthermore, *customised (tailor-made) employment relations* are becoming more and more usual, at least in the Netherlands. This is the result of decentralization tendencies in the bargaining processes (Fruytier, 1997). In the Netherlands, in the past, on the one hand representatives of employers, employees and the government regulated the employment relations, at macro level, in collective labour agreements.
On the other hand, the domain of the production concepts was mainly a management issue. As a consequence both the management modes of employment relations and the production concept applied had their own dynamics (Ten Have, 1993).

The aim of this study is to examine which production concepts and type of employment relations, in combination, serve employers' and employees' interests best. With regard to employers' interests we will confine ourselves to employee performance, a measure of productivity. Employees' interests are conceived here by the degree of job strain, as an indicator of the quality of jobs.
For framing a research model and deducing the hypotheses relating on the one hand to production concepts and the management modes of employment relations in organizations on the other, two theoretical positions can heuristically be useful, namely Modern Sociotechnical theory (MST) (cf. De Sitter, 1982, 1994) and transaction cost theory (cf. Willamson, 1981; Ouchi, 1980). Both theories are complementary (cf. Ten Have, 1993), because MST is a very elaborated theory about the functioning of production concepts as a system, whereas transaction cost theory primarily focuses on the determinants and management modes of employment relations.
We will distinguish two 'old' and two 'new' production concepts, namely the Tayloristic production concept and the professional bureaucratic production concept on the one hand, and the Socio-technical production concept and other NPCs on the other. The production concepts differ in the way the production and control structures are designed and the extent to which labour is standardised.
MST, as developed in the Netherlands by De Sitter (1982; 1994) in particular, shows the relevance of these characteristics in relation to the joint optimalization of productivity and flexibility. The object of study of MST partly overlaps and is a reaction to the work of Taylor and his scientific management doctrine. There is also substantial overlap with the organisational dimensions researched by Ohno that eventually resulted in another NPC, namely the 'Japanese' Lean production concept (see for a more detailed

discussion e.g. Van Hootegem, 2000). The Lean production concept became famous for its high performance in the automotive industry, as a study showed in the early nineties of the previous century (Womack, Jones and Roos, 1990). Although there are no fundamental differences in the theoretical literature concerning the Socio-technical and Lean production concepts (Christis, 2006), MST pays explicit attention to the design and quality of jobs. Therefore, we will distinguish the Socio-technical production concept as a separate '*Idealtype*'.
However, the design and management of employment relations is not elaborated theoretically by MST. It can be questioned whether this is legitimate, for, as a consequence of globalization[2], demands on flexibility of workers and organizations are increasing. Therefore it can be supposed that in the NPCs a shift from the Fordistic, bureaucratic employment relations to more flexible employment relations has taken place.
Transaction cost theory can fill in the gap left by MST, for in transaction cost theory several interesting notions with regard to employment relations can be found. In the case of Tayloristic organizations, high standardization of jobs is characteristic and teamwork is not practiced; therefore, as transaction cost theory states, the specificity of qualifications of these employees is low and therefore workers can be replaced easily (depending, of course, on the labour market situation). Furthermore, their efforts are individually traceable and outputs can be made explicit. Besides, strict control of workers has to be applied, leading to high costs and workers can only become committed to the organization by their employment relations, for instance by relatively high wages and, in the case of professional bureaucracy, high job security.
On the contrary, in NPCs like the Socio-technical one, workers are primarily motivated intrinsically, by their job content (Fruytier, 1997). They are made responsible for the work processes and have, as should be the case, been given decision latitude to cope with these new responsibilities. Because team effort is needed to do the job in an NPC and the relationships between co-workers are reciprocal (Thompson, 1967), coordination is based on trust instead of control (cf. Ten Have, 1993).
An implicit difference with the Fordistic employment relations of the Tayloristic production concept is that workers in the NPCs can achieve a better labour market position. For, as a result of the low division of labour, they are able to qualify by the job itself, thereby increasing their attractiveness for the employer (and, as a result, also diminishing the power distance and increasing their bargaining power). Therefore probably the employment relations of these workers will contain *customized (tailor-made) performance targets.*

It is likely that these highly employable, multi skilled workers in especially the Socio-technical NPC also have the most favourable working conditions - i.c. working under acceptable time pressure -, compared to the more peripheral -'*spot market*'- workers of the Tayloristic production concept (cf. Williamson, 1981). (For the specialists in the

[2] Regarding globalization the Netherlands are fourth in the order of ranking, following Switzerland, Austria and Belgium (Globalisation list by the research institute ICIS; de Volkskrant, 2006).

professional bureaucracy the situation might be different, because the division of labour is low in this production concept.)
Furthermore, one might expect that the workers in the Socio-technical production concept will be more productive, due to the high specificity of their jobs and/or customized employment relations.

The following paragraph presents the research model and ends by formulating the central research question and hypotheses. These guide the empirical part of this research. In the subsequent paragraph the method, the data and the operationalisation of the concepts will be dealt with. In the last paragraph, the most important findings of this research are discussed.

RESEARCH MODEL AND HYPOTHESES

The central research question of this study is to examine the following issue: which production concepts and type of employment relations, in combination, serve employers' and employees' interests best, i.e. yield high employee performance and healthy job strain respectively?

As argued above, we can deduce the following five main hypotheses:

H.1. Workers in the Socio-technical NPC yield the highest productivity (*H.1.a*) and experience the lowest time pressure (*H.1.b*), compared to workers in other production concepts.

H.2. Workers that can be replaced easily, because the period needed to learn the job is short (a low job specificity), yield the lowest labour productivity (*H.2.a*) and experience the highest time pressure (*H.2.b*), especially compared to workers holding jobs with a high specificity.

H.3. Workers having jobs with a low job specificity in the Tayloristic production concept yield the lowest labour productivity (*H.3.a*) and experience the highest time pressure (*H.3.b*), especially compared to workers having jobs with a high job specificity in the Socio-technical NPC.

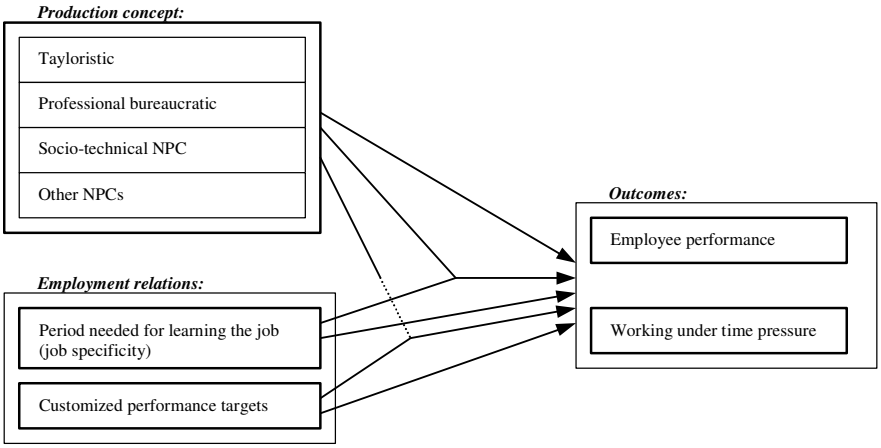
H.4. Workers with customized performance targets yield higher labor productivity (*H.4.a*) and experience lower time pressure (*H.4.b*) than workers without customized performance targets.

It might be that a feedback mechanism is involved here, because it is almost a sine qua non: productivity will be the prime reason for their favourable customized employment relations. These workers have to be productive to achieve and keep their customized performance targets.

H.5. Workers in the Socio-technical NPC with customized performance targets yield the highest labour productivity (*H.5.a*) and experience the lowest time pressure (*H.5.b*), compared to other workers.

Figure 1 presents the relations that will be studied in the following paragraphs.

Figure 1. Research model.



METHOD

Respondents and procedure

In 2005, 10.942 members of an internet panel of a market research company were asked to participate in our research. The market research company drew a sample from its panel which is representative for the Dutch labour force, stratified on branch. Depending on one's answer to the question: 'Do you directly manage any employees?', respondents filled out either a questionnaire for employees (if their answer was 'no'), or a questionnaire for managers (if 'yes'). The two respective questionnaires were filled out by 1613 employees and 1525 managers respectively. In order to get data from different sources, especially managers' performance assessments of employees, we asked all participating employees and managers whether they were willing to supply an e-mail address of their respective manager c.q. employee about whom they had just filled out a questionnaire. If they agreed, their manager c.q. employee received an e-mail with a link to the questionnaire. Following this procedure, we finally got a sample of 149 employee-manager dyads.

The mean age of the employees in the sample was 35 years, with a minimum of 16 years and a maximum of 65 years (*s.d.* = 10.1). About half of the employees (54%) were male; 25.5% had followed higher education, 23.5% was lowly educated.

The mean age of the managers was 39 years, with a minimum of 19 years and a maximum of 59 years (*s.d.* = 9.4). The majority of the managers (75%) was male; 53.7% had followed higher education, 10.7% was lowly educated.

Measurements

We derive the core defining characteristics of the *'Idealtypen'* of production concepts from the theoretical framework of MST. The production structure and the control structure of the organisation are relevant to the employee productivity and the job quality, because the production structure indicates how products are made or services are produced and how the work will be prepared and supported; the control structure clarifies how problems at work are solved. At job level the production structure influences the scope and content of the tasks. The control structure influences the possibilities of carrying out the set tasks in a job, the so called regulating possibilities (Vaas et al., 1995). Both structures therefore determine stress-related risks in jobs and the opportunities, offered by the job, for learning and qualifying further oneself.

Layout of the production structure. The type of production structure was measured, among supervisors, as follows. First, two descriptions were given of the two major types of production structures – the grouping of operations, performed on a product or service by workers and/or machines.

The first description given considers the major type of the *line or functional structure*: "in the *line structure* different orders, products or services in sequence pass either the same work stations along óne line, ór are products or services dealt with by óne line of workers or specialists. In the *functional structure* workers or specialists from the same discipline are brought together in a separate department or are machines of the same type grouped together. The products or services are dealt with in different sequences between these machines groups of specialists/departments".

In the second description given the flow or production oriented structure was explained. "In this structure all specialists, workers or machines which belong to the completion of a (clear-cut part of a) product of group of customers, are grouped together".

Respondents had to answer which of these two options applied to the work processes in their team/department; the answer categories also included the option 'combination of line/functional and flow/production'.

Production structure: group technology. Whether teamwork is practiced in the company is measured, among supervisors, with the self designed item: "Do you and your employees form a team of minimum 4 and maximum 20 persons working together on a product or service?" (answer categories: no; yes).

Control structure. The control structure is measured, among employees, by a scale measuring the degree of 'Team autonomy' (Molleman, Nauta and Jehn (1994)). The scale, with alpha=.79, consists of four items: "As a team we ourselves can decide how we do our work; As a team we ourselves can decide what will be our end products/services; As a team we ourselves can decide which tasks we perform at what moment, and; As a team we ourselves can divide the tasks ('who does what')" (answer categories: 1 = certainly not 2 = not very 3 = a little 4 = certainly 5 = most certainly).

Division of labour: standardisation of job content. The quality of the job content is also measured among employees and is indicated by two concepts (cf. Karasek, 1979, Karasek, Pieper and Schwartz, 1985; Dhondt and Houtman, 1992), namely task autonomy (the extent to which the job has independent regulating possibilities with regard to work pace, order and method) and skill discretion. The four items of the Skill discretion scale (alpha=.79), are: "My job requires a high level of skill; My job is varied; My job requires me to learn new things; My job requires creativity." The second indicator with regard to the job content is task autonomy, measured here by three items: "I myself can decide how I do the job; I myself can decide the order/sequence of my tasks; I myself decide when I do a task" (answer categories for the skill discretion and task autonomy scales range from 1 = certainly not to 5 = most certainly).
Period needed for learning the job. The period workers need for learning to perform the job well, is measured by the self designed item: "How much time did it take you to learn to perform your job in this organization well?" (answer categories: a few hours; a few days; a few weeks; a few months; a few years).
Perceived customization of performance targets. The degree to which employees perceive a customized employment relation with regard to performance targets is measured with the self designed item: 'Do the requirement that you have to fulfil, fit your own personal situation?'. Answers ranged from 1 = definitely not, to 5 = definitely.

With the above variables we performed a principal component analysis. The results in Table 1 show a 3 factor solution. It can be seen that (partly) flow oriented production structures and teamwork are indicators of the same latent factor (factor 2). We can call this factor production structure. However, the association between the variables flow oriented production structure and teamwork can be neglected (Cramer's V=.09; not significant) so in reality both organization features are practised rather independently by organizations (see also Dhondt and Benders (1998), who came to the same conclusion in their study).
It also appears (Table 1) that team autonomy, task autonomy and skill discretion indicate the same latent factor (factor 1). So, this latent factor indicates both the control structure and division of labour. It is possible to combine the three indicators into one scale (alpha=.73).
The period needed for learning to perform the job well, loads high on the third factor. We call this factor employment relations (factor 3).
The variable perceived customization of performance targets, which we also expected to indicate employment relations, is a somewhat ambiguous indicator, for, apart from its loading on the third factor, it also loads on the first factor. This loading might be explained by the 'power' core workers with a high job quality have for customizing their employment relationship. On the basis of the factor loadings of the two employment relations indicators, in the analyses we can keep them as separate indicators for employment relations.

Table 1. Principal Component Analysis (coefficients)

	Component		
	1 Control structure and division of labour	2 Production structure	3 Employment relations
(Partly) Flow oriented production structure		.77	
Teamwork		.74	
Team autonomy	.80		
Task autonomy	.80		
Skill discretion	.75		
Period needed for learning the job			.90
Perceived customization of performance targets	.53		-.50
Variance explained: 62.8%			

Note: Varimax rotated solution with Kaiser Normalization.

Next, we constructed a typology of production concepts. We split the scale measuring the control structure and division of labour by the median. Combining the control structure and division of labour construct with the production structure creates a 2*2 matrix (**Figure 2**).

Figure 2. Four production concept 'Idealtypen'

		Control structure and division of labour:	
		- decentralised, un-standardised	- centralised, standardised
Production structure:	- functional/line structure	*Professional bureaucratic*	*Tayloristic*
	- (partly) flow oriented structure, teams	*Socio-technical NPC*	*Other NPCs*

A theoretically pronounced quadrant is firstly the quadrant with organizations with a process based production structure, applying group technology and with a decentralized control structure and low standardization of tasks. This is the *'Idealtype'* of the Socio-technical New Production Concept. Secondly, there is the theoretically pronounced quadrant with organizations with a line or functional production structure, with a highly centralized control structure and high division of labour: the Tayloristic production concept. The two remaining production concepts are mixtures and therefore somewhat diffuse. Professional bureaucratic organizations are those organizations in the quadrant with the Tayloristic like production structures but combined with a decentralized control structure and a high job quality.
The last *'Idealtype'* of the matrix is almost equal to the Socio-technical one, but with the important difference that tasks are standardized and the control structure is not decentralized. This is characteristic for the way NPCs like Business Process Reengineering, Work flow management or Lean production are implemented and practiced by organizations. 'Other NPCs' is the label used here for this quadrant with production concepts.

The two dependent variables of this study are operationalised as follows.

Performance. Performance of the employee is measured with one self designed item among superiors, i.e. 'Please assess your employee with a report mark from 1 to 10 for his/her overall work performance in the past four working weeks.' (In the Netherlands, where this study was performed, the standard norm is that report marks range from 1 to 10, with 1 = very bad, 5 = just insufficient, 6 = just sufficient and 10 = excellent.)
Working under time pressure. When people are overloaded mentally by work, it is regarded as an important risk for the well being of employees (Karasek & Theorell, 1990). In that case work leads to (permanent) stress reactions and burnout. Work load is measured here as 'working under time pressure', measured straightforward by the item: "Do you work under time pressure (answer categories 1 = never, 2 = sometimes, 3 = often, 4 = always).

Conducted analyses
For answering the central research question and the testing of the hypotheses, regression analyses were conducted. Because of our interest in the combination of production concept with the types of employment relations, special attention will be paid to the combined influences of these - i.e. interaction effects[3]. After calculating the separate dummy and scale scores, interaction terms were calculated. These are the product of the production concept dummies and the two indicators of employment relations. To prevent collinearity, these constructs were centred on the mean values (Aiken & West, 1991).

RESULTS

Table 2 shows means, standard deviations and correlations of all variables in this study.

Table 2. Means, standard deviations and correlations of all variables

	M	s.d.	N	1.	2.	3.	4.	5.	6.	7.
1. Tayloristic (dummy)	.16	.37	149							
2. Professional bureaucratic (id.)	.17	.38	149	-.20*						
3. Socio-technical NPC (id.)	.26	.44	149	-.26**	-.27***					
4. Other NPCs (id.)	.26	.44	149	-.26**	-.27***	-.35***				
5. Period needed for learning the job	3.5	.94	148	-.04	.05	-.09	.09			
6. Perceived customized performance targets	4.0	.83	148	-.10	.08	.20*	-.22**	-.12		
7. Employee productivity	7.7	.77	149	-.22**	.01	.17*	.04	.10	.23**	
8. Working under time pressure	2.3	.58	149	.00	-.08	.00	.03	-.07	-.18*	-.09

* $p < .05$; ** $p < .01$; *** $p < .001$.

[3] The interaction effects have to be visualized by means of figures. The four production concepts are represented by the direction and strength of a relation between an aspect of the employment relations on the one hand and employee performance or job strain on the other hand. The lines are based on the un-standardised regression coefficients. In each figure the line per group reads as follows: the middle of the line corresponds to the mean of the variable on the x-axis and the mean of the variable on the y-axis. The length of the line measures two standard deviations of the group.

First, a noteworthy descriptive result is that the mean values on the variables Period needed for learning the job, Perceived customization of performance targets and Employee productivity are reasonably high in a positive sense (Table 2). The sample thus appears somewhat positively biased, probably due to the fact that all respondents had given permission to either their superior or their employee to fill out a questionnaire about their mutual relationship. It is likely that people in more trustful relationships are more likely to do this than people in less trustful relationships. Indeed, the fact that the mean value on performance as assessed by the manager is 7.7, a high report mark, also indicates that, on average, the mutual relationships in this sample were good.
Second, Table 2 shows that the variable perceived customized employment relations is related with on the one hand the Socio-technical NPC (r=.20) and on the other hand the other NPCs (r=-.22). These employment relations can be explained by the high, respectively low specificity of the qualifications in these production concepts.
In the two 'older' production concepts regulating employment relations by customization of performance targets is not applied.

Employee performance
Compared to workers in the Tayloristic production concept workers in the Socio-technical production concept perform best, as can be seen from Table 3. This supports Hypothesis 1.a. The analysis also shows that workers in the other NPCs perform almost as well as the workers in the Socio-technical NPC.
With regard to the employment variables, it turns out that the specificity of a job is not statistically significant related to employee performance, which is a rejection of Hypothesis 2.a. Perceived customized performance targets, however, are related to high employee performance, so Hypothesis 4.a is supported. This association will, of course, as stated above, be a matter of recursive causality. Furthermore, it will be an indication of the bargaining power of these employees.
With regard to the interaction effects of production concept practiced and the chosen management modes of employment relations, the results illustrate MST's prime focus on structural variables (Figure 3 and 4). In other words in this NPC, adopting a specific type of employment relations does not alter the association with employee performance. These results support the consistency of Modern Socio-technical Theory, but are a rejection of Hypothesis 3.a and 5.a.
The situation in the other NPCs is different. In these concepts employee performance is strongly dependent on the specificity of jobs: here, workers in jobs that require a long period of learning (i.e. high job specificity), perform better than workers with jobs with a lower specificity. It is not clear how this result should be interpreted.
With regard to the instrument of customization of performance targets, the interaction effect with production concept is statistically significant, although not in the hypothesized direction (Hypothesis 5.a). In professional bureaucracies employees perform better when customization of performance targets is applied. To a lesser extent this also holds true for the Other NPCs and this result is in line with what we just saw for the job 'specificity' thesis. These results show that HRM instruments (with regard to

the employment relations) in thése production concepts can compensate somewhat for the inefficiencies caused by the division of labour or production structure chosen.

Table 3. Regression analysis

Dependent variable:	Employee Performance		Working under time pressure	
Independent variable:	β	P	β	p
Production concept:				
- Tayloristic	ref.		ref.	
- Professional bureaucratic	.08	.384	-.09	.334
- Socio-technical NPC	.24*	.011	.05	.624
- Other NPCs	.19*	.043	-.03	.796
Period needed for learning the job	.16	.054	-.10	.265
Tayloristic * Period needed for learning the job	ref.		ref.	
Professional bureaucratic * Period needed for learning the job	-.02	.838	.08	.431
Socio-technical NPC * Period needed for learning the job	-.10	.341	.01	.908
Other NPCs * Period needed for learning the job	.07	.459	.04	.661
Perceived customized performance targets	.22**	.008	-.19*	.032
Tayloristic * Perceived customized performance targets	ref.		ref.	
Professional bureaucratic * Perceived customized performance targets	.22*	.017	.08	.422
Socio-technical NPC * Perceived customized performance targets	.03	.797	-.17	.102
Other NPCs * Perceived customized performance targets	.11	.260	-.07	.503
R2 (Adjusted R2)	.17 (.10)		.09 (.01)	
F	2.59**		1.14	
p	.005		.335	
Df	11, 135		11, 135	

* $p < .05$; ** $p < .01$; *** $p < .001$.

Job strain

Although perceived customized performance targets are positively associated with lower job strain (see also Table 1 with the univariate correlations), the overall regression model is not statistically significant (Table 3). This is partly caused by the fact that the production concepts do not differ in the aspect working under time pressure (Table 3); this result is congruent with earlier research (Kraan, 2005). Also the specificity of the job and the interaction effects do not explain differences in job strain. The results of the analysis therefore reject Hypothesis 1.b, 2.b, 3.b, 4.b and 5.b, probably partly due to the fact that working under time pressure was measured by one item only.

Figure 3. Interaction effect of production concept with period needed for learning the job (job specificity), on employee performance

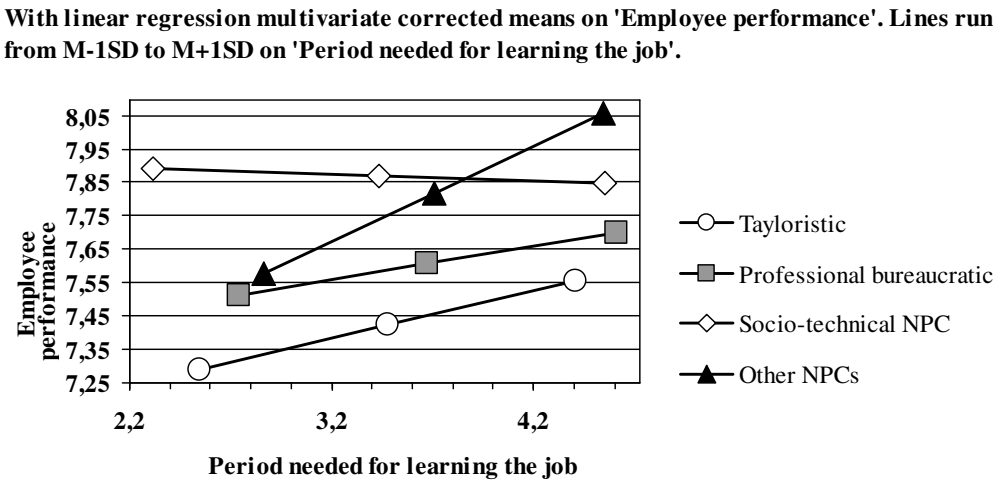
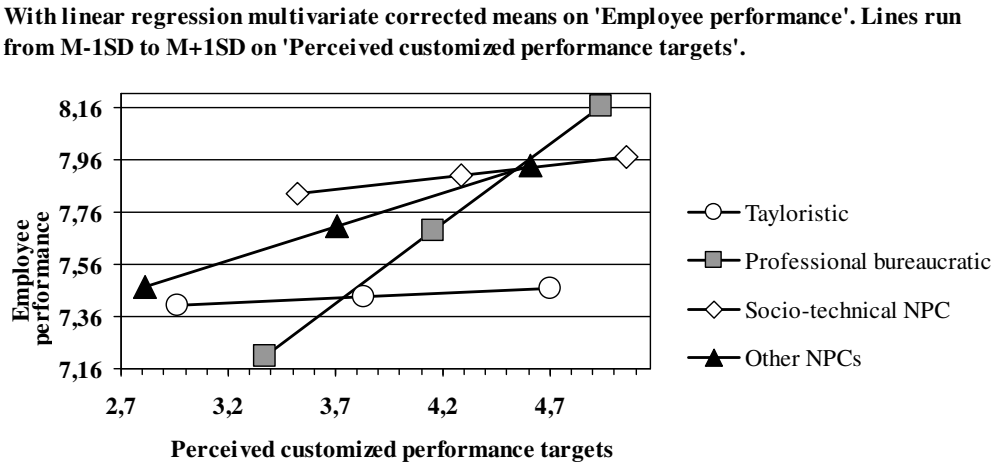


Figure 4. Interaction effect of production concept with perceived customized performance targets, on employee performance



CONCLUSION AND DISCUSSION

From a methodological as well as a theoretical point of view this research had, apart from some weaknesses, several strengths. As a result of the methodology applied, the results are not or hardly influenced by self-report biases of the respondents. Because we

were able to use data from the employer and the employee the validity of the measurements is high. Furthermore, we examined effects that are relevant for both employers and employees. For future research on this topic, however, it is advisable to use a longitudinal instead of a cross-sectional research design. Then the causality of the relations can definitely be 'proved'. In the study presented we sometimes had to make assumptions about the direction of the causality, whereas, as was explained, also feedback mechanisms or recursive causality may play a role as well.
The concepts researched were derived from Modern Socio-technical Theory (MST, De Sitter, 1982, 1994) and transaction cost theory, so two different, and, as we supposed, complementary theoretical disciplines. From that perspective, one of the most interesting results is the absence of interactions between the Socio-technical New Production Concept (NPC) on the one hand, and the employment relations or HRM instruments studied, on the other hand. This result is remarkable for its consistency with Modern Socio-technical theory. The prime focus of this theory is on structural variables and the analysis shows that, irrespective of the use of HRM instruments, workers in this production concept show the best performance. This is also an argument for De Sitter's refusal to use the term Human Resources *Management*. Instead he used the term Human Resources *Mobilization*, for it is the way tasks are divided and jobs are designed that make workers productive and motivated. On the contrary, in the professional bureaucratic production concept and the other NPCs, the HRM instruments studied can make a difference for the performance of employees, as the results showed. We did not examine to what extent this is the outcome of differences in access to employment relations 'á la Carte' (cf. Delsen, Benders and Smits, 2006). It might lead to segmentation tendencies in the (internal) labour market, also as a result of their increased bargaining position, gained by their high performance. This would be an interesting question for further research.
Another interesting research question is to what extent other HR instruments are able to further increase the performance of workers in the NPCs. The absence of interaction effects with customized performance targets is not a remarkable result, for this HR instrument is related to the level of the individual employee. Recently however, MST also became interested in HR instruments which take into account the teamwork concept. Working in a team goes hand in hand with reciprocal coordination and team efforts, and therefore the specificity of the employment relation is high. Studying NPCs practicing new HR instruments, like remunerations which are (partly) based on team performance, could be an interesting way to go.

REFERENCES

Aiken, L.S. & S.G. West (1991), *Multiple regression: Testing and interpreting interactions*, Sage, Newbury Park.
Christis, J. (1988), "Taylorisme en nieuwe productieconcepties", *Te Elfder Ure*, Vol. 29 No.3, 43-73.

Christis, J. (2006), “Nieuwe Productieconcepten”, *Oral presentation at TNO Work and Employment,* 23 march.
de Sitter, L.U. (1982), *Op weg naar nieuwe fabrieken en kantoren,* Kluwer, Deventer.
de Sitter, L.U., in co-operation with J.L.G. Naber and F.O. Verschuur (1994), *Synergetisch produceren; human resources mobilisation in de productie: een inleiding in de structuurbouw,* Van Gorcum, Assen.
Delsen, L., Benders, J. and Smits, J. (2006), “Choices Within Collective Labour Agreements á la Carte in the Netherlands”, *British Journal of Industrial Relations,* Vol. 44 No. 1, pp. 51-72.
de Volkskrant (March, 2006), “Nederland scoort hoog op globaliseringslijst”.
Dhondt, S and I.L.D. Houtman (1992), *Vragenlijst Arbeidsinhoud: constructie en eerste toets op betrouwbaarheid en validiteit*, NIPG-TNO, Leiden.
Dhondt, S. and Benders, J. (1998), “Missing Links; Production Structures and Quality of Working Life in the Clothing Industry”, *International Journal of Operations Production Management,* Vol. 18 No. 12, pp. 1189-1204.
Fruijtier, B. (1997), *Werknemersmacht in de arbeidsorganisatie: voorwaarde voor het poldermodel*, OSA-publication A164, Tilburg.
Karasek, R.A. (1979), “Job demands, Job Decision Latitude and Mental Strain; Implications for Job Redesign”, *Administrative Science Quarterly*, Vol. 24 No. 2, pp. 285-308.
Karasek, R.A., Pieper, C.F., Schwartz, J.E. (1985), *Job Content Questionnaire and User's guide. Revision 1.1.*, USCLA, Los Angeles.
Karasek, R. and T. Theorell (1990), *Healthy work, stress, productivity, and the reconstruction of working life*, Basic Books, New York.
Kraan, K. (2005), “Complex and Diverse Ict in four Types of Organisation; differences in stress-related risks and monotonous work?”*, Paper presented at the 1st Bi-annual European Conference - ICT, the Knowledge Society and Changes in Work*, SCP, The Hague.
Kraan K. (2005), “Complex en Divers Ict-gebruik in vier typen Organisatieconcepten; Verschillen in werkdrukrisico’s en kort-cyclische arbeid?”, *Tijdschrift voor Arbeidsvraagstukken*, Vol. 21 No. 4., pp. 269 283.
Mintzberg, H. (1983), *Structure in fives; designing effective organizations,* Prentice-Hall, Englewood Cliffs.
Molleman, E., Nauta, A. and Jehn, K.A. (2004), “Person-job fit applied to teamwork; a multilevel approach”, *Small Group Research*, Vol. 35 No. 5, pp. 515-539.
Ouchi, W.G. (1980). “Markets, bureaucracies, and clans”, *Administrative Science Quarterly*, Vol. 25 No. 1, pp. 129-141.
ten Have, K. and A. Vissers (1987), *Arbeid tussen markt en organisatie*, OSA, Institute for Labour Studies, Den Haag.
ten Have, K. (1993), *Markt, organisatie en personeel in de industrie; een empirisch onderzoek naar productieregimes als configuraties van arbeidsdeling en arbeidsrelaties*, Dissertation, Tilburg University Press, Tilburg.
Thompson, J.D. (1967), *Organization in action: social science bases of administrative theory*, McGraw-Hill, New York.

Vaas, S., Dhondt, S. Peeters, M.H.H. and Middendorp, J. (1995), *Vernieuwde WEBA-methode. De WEBA-analyse, handleiding*. Samsom Bedrijfsinformatie, Alphen a/d Rijn.
van Hootegem, G. (2000), *De draaglijke traagheid van het management. Tendensen in het productie- en personeelsbeleid,* ACCO, Leuven.
Williamson, O.E. (1981), The economics of organization, the transaction cost approach, *American Journal of Sociology*, Vol. 87 No. 3, pp. 548-577.
Womack, J.P., Jones, D.T. and Roos, D. (1990), *The Machine that Changed the World*, Rawson, New York.