Patterns of work reorganisation in the course of the IT industry’s internationalisation

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Abstract
The IT industry was considered to be relatively resistant to the international relocation of jobs for a long time, but this has changed profoundly since the 1990s when IT companies started to make use of low-wage destinations on a larger scale. According to many authors, the internationalisation of the IT industry not only puts jobs in high-wage countries in jeopardy, but also fundamentally changes the organisation and control of IT work. Whereas IT work was once considered a prime example of "post-Taylorist" forms of work organisation, it is now argued that the global division of labour necessitates the standardisation and formalisation of the labour processes that will lead to extended managerial control and reduced autonomy of employees in their work.

Drawing upon two case studies in transnationally operating IT companies, my paper critically examines this prognosis. I will argue that the forms of work organisation and control in the IT industry do not develop homogeneously or uniformly in the course of internationalisation. Instead, it is possible to identify specific modes of reorganisation with very different consequences for employees’ autonomy in the labour process that are shaped by the dynamic interplay between different patterns of internationalisation, on the one hand and specific institutional settings of the offshore destinations on the other.
1 Offshoring of software development and IT services: a change in management strategies?

For a long time, “offshoring”, defined as the spatial relocation of working tasks to foreign countries\(^1\), seemed to be an exclusive phenomenon of the manufacturing sector, while jobs in the service sector were considered to be comparatively resistant to this trend. This has changed a great deal since the late 1990s when “changes in technology, work organization, educational systems, and many other factors have caused service work – previously regarded as immune to these forces – also to become tradable” (Aspray, Mayadas and Vardi 2006, p. 19). In the following, “offshoring” also became popular in certain parts of the service sector. At the heart of this development is the IT industry\(^2\) (Boes and Kämpf 2007). From the late 1990s onwards\(^3\) locations like India with its great pool of skilled and English-speaking IT professionals were able to attract a great deal of business from the centres of capitalist production when companies from the US and, some time later, also Europe started to “offshore” labour to these emerging locations in the pursuit of lower labour costs or new pools of talent\(^4\).

This development spurred a lively debate on the risks and dangers of IT offshoring in industrial countries. According to many authors, the rise of global IT production not only puts jobs in high-wage destinations like the US and Europe in jeopardy\(^5\), but also marks “a new era” for labour in the IT industry by fundamentally changing the organisation and control of work in this sector (Boes et al. 2007; Kämpf 2008; Aspray, Mayadas and Vardi 2006; Sahay, Nicholson and Krishna 2003; Herbsleb and Moitra 2001; Oecking, Jahnke and Kiehle 2009; Meyer 2006).

In recent debates, IT work has usually been considered a prime example of post-Taylorist and post-Fordist forms of work organisation and control and labelled as a kind of “knowledge work”, supposedly constituting a central aspect of the dominant mode of production in a society’s shift from an industrial to a knowledge society (Heidenreich 2003; Castells 1996). In this regard, knowledge work is characterised as a highly innovative and creative kind of work. Therefore, it is often argued that a Tayloristic mode of control with its high degree of division of labour and task fragmentation as well as close direction and evaluation of working tasks is impossible or at least counterproductive when talking about knowledge work (Töpsch, Menez and Malanowski 2001, p. 307; Willke 1998, p.169f; Robertson and Swan 2003, p.835f).


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1 According to this definition, “offshoring” does not have to go along with “outsourcing”, i.e. with a transfer of company functions to other companies or business partners. Instead, as will be argued later, offshoring can imply offshore outsourcing as well as captive offshoring. The latter is based on maintaining one’s own production centres in other world regions.

2 When referring to the IT industry in this paper, the hardware sector within the IT industry is not addressed. The globalisation of economic activities in the hardware sector started earlier and has its own specific history and shall not be discussed here.

3 There were companies offshoring IT work to foreign countries already back in the 1980s, but the development really started to speed up in the late 1990s and the first years of the 21st century (Aspray, Mayadas and Vardi 2006).

4 See Dossani (2007) for the history of the Indian IT industry’s rise.

5 Actually, there are very different forecasts regarding this point: while some authors stressed the huge potential of job losses, others argued that the internationalisation of the IT industry does not necessarily have to threaten jobs in high-wage destinations (see Aspray, Mayadas and Vardi 2006).
Accordingly, then, knowledge workers have to be granted a high level of autonomy in planning and executing their working tasks (Abel and Pries 2007, p. 112). To sum up, in order to control the IT labour process, management was supposed to rely on strategies of “responsible autonomy” to use Friedman’s (1977) famous term. This has remained the dominant view on IT work for a long time, although a number of studies emphasised that elements of “direct control” (Friedman 1977) strategies are not completely absent in the management of knowledge work as well (see for example, Kraft and Dubnoff 1986; Kraft 1979; Barrett 2005; Prasad 1998; Friedman 1990a; Friedman 1992; Mayer-Ahuja and Wolf 2007; Thompson, Warhurst and Callaghan 2001).

Due to these specific characteristics of knowledge work in general and software development and IT service work in particular, IT work was considered very difficult to transfer globally (Boes 2005, p.17). However, this has changed profoundly in the last two decades: From the 1990s, IT work has actually been transferred to low-cost destinations, and software companies have started to develop software in global development networks. Many authors argue that this “global shift” (Dicken 2007) fundamentally affects the organisation and control of IT labour. It is assumed that the internationalisation, on the one hand, depends on and, on the other, further intensifies the standardisation and fragmentation of products and services as well as the IT labour process (Boes et al. 2010, Sahay 2003, Aspray, Mayadas and Vardi 2006, Flecker and Meil 2010). For the IT employees, this is expected to mean the end of their formerly rather holistic job profiles. Instead, facing the increasing global division of labour, employees are now said to specialise in particular tasks (Meyer 2006) in more standardised and formalised working processes (Boes and Kämpf 2007, Sahay, Nicholson and Krishna 2003). This is expected to reduce the scope for the employees’ autonomy in their work and to give rise to more direct forms of management control in the labour process, because the standardised and formalised working processes enable management to closely direct, monitor and evaluate the labour process (Kämpf 2008, Flecker and Meil 2010). In short, the “new era” in the global IT industry is expected to be closely related to a shift in management strategies that can be labelled as a shift from strategies of responsible autonomy to strategies of direct control.

2 Scope and aims of this paper

This paper critically examines this prognosis. Drawing upon two case studies in IT companies relocating work from Germany to India, it is argued that instead of a clear and uniform shift in management strategies from responsible autonomy to direct control strategies, the internationalisation of the IT industry comprises very different modes of work reorganisation that are shaped by the dynamic interplay between different patterns of internationalisation including different configurations of the companies’ global value chains, on the one hand, and the specific institutional settings of the offshore destinations work is being relocated to, on the other. It will be demonstrated that these arising modes of work reorganisation do not in every case have to limit the employees’ autonomy in the labour process. After a short description of the sources and the empirical methods of my research in the next section, the paper is structured as follows:

First, the process of spatial relocation of IT labour is analysed. Drawing upon differences in the internationalisation strategies of IT service and software product companies, it is argued that the “offshore outsourcing” of IT service providers and the “captive offshoring” of software product companies constitute different patterns of work relocation that are based on the character of products and services offered by these companies, implying different configurations of the companies’ global value chains (relational/hierarchical).
Second, the Indian IT industry as the most successful offshore location is introduced. Due to the boom of the Indian IT industry, a shortage of IT labour has evolved during the last years, spurring high rates of personal turnover. It is argued in this part that this is increasingly becoming a problem for IT companies, clearly shaping the way work can be organised and controlled in the Indian development centres.

Third, the conception of labour control used in this paper is explicated by referring to Friedman’s (1990a) management strategies approach. Friedman’s terminology will guide the presentation of the empirical case studies in the following sections. In the following two sections, results from the case studies are presented. It will be demonstrated how both sample companies’ way of organising and controlling labour in their Indian development centres is shaped by the structure of the global value chains that the Indian location is integrated in and the specific situation on the Indian labour market.

Finally, the paper concludes by pointing out the implications, which the presented results of the case studies have for future research.

### 3 Sources and methods

This paper presents findings from two intensive case studies. The first company (ServiceTec) is one of the big Indian IT service companies. The portfolio of this company contains the entire range of IT services, from rather simple support and maintenance projects to more complex software development and research projects. 31 employees and managers from two project teams dealing with German clients were interviewed in India and Germany. One project team was working on a support project for the web portal of a big German company that included technical support as well as content management. The other project team developed a new application for a German customer from the financial sector in Bangalore, where it employs around 3000 people. This case study comprised 29 interviews with developers and managers from one team of this company, which is developing a module for a new standard software package in Bangalore. The rest of the application is developed in different locations all over the world, including Germany where an additional 9 interviews were conducted with employees who are directly cooperating with the Indian team. This article draws mainly on these intensive case studies. Since the question this paper tries to answer is whether the internationalisation of the IT industry leads to closer and more restrictive control of offshore labour, the primary focus is on the way work is organised and controlled in the offshore locations of both my sample companies.

### 4 Relocating IT labour: different patterns of internationalisation

The spatial relocation of IT work can take different forms. An important difference that has recently been widely debated is the difference between “offshore-outsourcing” and “captive offshoring”, representing different approaches towards the relocation of IT work and including different kinds of actors and configurations of global value chains (Fleckner and Meil 2010; Boes and Kämpf 2007; Aspray, Mayadas and Vardi 2006).

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6 The paper presents key results from research the author has done for his PhD in a research project funded by the German Research Foundation (DFG). The project was headed by Prof. Dr. Volker Wittke (Sociological Research Institute Göttingen – SOFI) and carried out by PD Dr. Nicole Mayer-Ahuja (SOFI) and the author of this paper from May 2006 to 2010. Around 25 semi-structured interviews with experts on IT development in Germany and India, and roughly 80 semi-structured interviews with managers and employees of six IT firms, including German software product companies and Indian IT service companies have been conducted in this project.
“Offshore outsourcing” refers to a form of spatial relocation (“offshoring”) that by definition goes along with a transfer of company functions to other companies or business partners (“Outsourcing”) (Aspray, Mayadas and Vardi 2006). The main actors of this form of relocation are IT service providers, providing their customers with a wide array of services, ranging from rather simple support and maintenance projects to more complex custom software development projects. Although the biggest players in the world market for IT services are still Western companies like IBM, Accenture and EDS, especially the Indian service providers (for example, Wipro, TCS and Infosys) have recently drawn a lot of attention. According to many authors, it is the Indian service providers that have pioneered the systematic combination of outsourcing and the spatial relocation of IT services to low-cost regions like India (Dossani 2007), enabling them to compete with the big Western IT service providers in terms of costs and rapidly increasing their market share (Singh 2005; Athreye 2005b). Accordingly, it has become the so-called “global delivery model” of the Indian service providers that figures as a kind of blueprint for successful offshore outsourcing of IT services and many Western companies have followed their lead (Athreye 2005a; Boes et al. 2007).

Flecker and Meil (2010) describe the governance form of the global value chains in the IT service sector as “relational” using the classification of Gereffi, Humphrey and Sturgeon (2005). This is because the relationship towards client organisations is inherent in the service provider’s business model and this relationship is supposed to bring in a lot of complexity and to limit the possibility to codify the transactions leading to greater dependence on the IT service provider (Flecker and Meil 2010, p. 691). Although this is definitely true when comparing the provision of services with product development where modular or even market-based forms of value chains are easier to establish, this does not mean, however, that standardisation is absent in the area of IT services. On the contrary, Flecker and Meil (2010, p. 691) mention that the dependency on the service provider is something of a “contested terrain” (Edwards 1979), because customers constantly try to reduce their dependency in order to raise competition between service providers and thus get them to lower the costs of the services offered. These attempts are spurred by the increasing standardisation or “commodification” (Carr 2005) of software, also enabling the standardisation of commonly used IT services (Boes and Kämpf 2007). So, although services are different to products as they cannot easily be split up and modularised, customers try to push this as far as possible and service providers in many fields already deliver very standardised services to customers and face high competition for costs rather than quality of the services offered.

This puts the customers in the position to be very demanding when choosing their service providers and to demand certain preconditions before signing a contract. So the extensive “process orientation”, considered a key element of the “global delivery model” of the Indian IT service providers by many authors (Athreye 2005a; Lema and Hesbjerg 2003; Boes et al. 2007), can be considered a direct outcome of the client relationship of IT-service companies that try to signal quality and efficiency to clients by implementing a whole range of standardised process models and descriptions like ISO9000, Capability Maturity Model Level 5 or Six Sigma (Upadhya 2009; Prasad 1998). These process descriptions – as will be demonstrated in greater detail later – standardise and formalise the labour process to a great extent and play a crucial role in understanding the organisation and control of labour in the Indian service provider in my sample.

The standardisation and formalisation of working processes and the implementation of these standard process descriptions is further spurred by the fact that IT service providers usually have to work in existing, mostly older systems\(^7\) and are given the tasks that the client

\(^7\) Surprisingly, a lot of projects in the service company of my sample were still working on mainframe technologies because customers were still using that technology.
company has outsourced – a process that often implicates that a certain degree of formalisation and standardisation of the working tasks has already taken place before these tasks were shifted to the service company. Also, the scope for the technical design of a new application is often limited by the already existing systems used by the customers, when applications are developed as add-ons or plug-ins to these systems.

Another factor contributing to the process orientation of IT service providers is the pricing model in the area of IT services. Like in the area of the IT-enabled services, like call centres, service-level agreements (SLA) have become a common way of regulating the relation between customers and the service provider (Flecker and Meil 2010; for the area of call centres, see Taylor 2010). These SLAs specify the services to be delivered to the client and the related costs in great detail, giving the clients transparency about the projects and putting the provider under pressure to specify each activity to be accounted for.

With ServiceTec, one of the big Indian IT service providers, strictly following a “global delivery model”, is analysed in this paper.

“Captive offshoring”, however, implies setting up internally owned production centres in far-away world regions (Aspray, Mayadas and Vardi 2006). Typically, the main actors in this kind of offshoring are the big Western software product companies (like Microsoft, Oracle, SAP, Adobe and so on), which seldom go for “offshore outsourcing”, but predominantly prefer captive forms of offshoring, including “dependent captives which carried out dedicated work for the core unit” (Flecker and Meil 2010, p. 686, Boes et al. 2007).

In contrast to the area of IT services, there is currently no dominant model of how to integrate the subsidiaries into the company’s arising global value chains (Flecker et al. 2007; Boes et al. 2007). Some companies use their foreign subsidiaries to carry out rather simple, labour-intensive parts of development like coding, testing and maintenance, while others have recently started to also transfer more complex tasks and their subsidiaries are slowly moving up the value chain into technical design and R&D activities (Flecker and Meil 2010, p. 687). The different approaches heavily impact the complexity of working tasks transferred to the offshore development centres and the possibility to codify the transactions between locations.

My sample company NovoProd is one of those companies that already transfer high-end work to its offshore subsidiaries. The Indian development centre analysed in this paper is involved in the development of a new software product. The overall development is spread over a couple of locations including NovoProd’s headquarters in Germany.

So, although at first sight, the form of governance in NovoProd’s case seems to be “hierarchically”, because the Indian development centre is a fully owned subsidiary, the internal structure follows a rather “modular” approach. NovoProd tries to modularise the application and give each location the ownership for a certain module. Being formally responsible for a module of the software product, working tasks in the Indian development centre are quite complex, including the design as well as coding and testing of the module. Speaking of modular value chains usually implies a high degree of codification of the transactions between the modules (Gereffi, Humphrey and Sturgeon 2005, p. 86). But although NovoProd tries to create a modular design of the software, the codification of the transactions between the different modules is a crucial point. Developers in different locations develop the application simultaneously and there are complex interdependencies between the modules. So whenever a change in one module is made, it might have an effect on other modules as well. This generates the need for intensive communication within NovoProd’s development network and limits the possibilities to bring in a lot of standardisation and to reduce the complexity of the tasks performed at each location.

It will be argued later how these differences in the global value chains impact on the way ServiceTec and NovoProd organise and control labour in their Indian development centres.
But first the Indian IT industry needs to be introduced, pointing out the specific challenges it poses for IT companies running operations in that location.

5 Relocating IT labour to India

Having introduced the patterns of internationalisation analysed in this paper, I will now turn to the Indian IT industry, whose institutional setting will be analysed with regard to its impact on the modes of work organisation and control. Due to limited space, the scope of this paper is the influence of the Indian IT labour market on work organisation and control.

India is the world’s most successful offshore destination. In the 1990s the industry grew by 50% every year, and even from 2000 onwards, there was still an annual average growth of roughly 30% in revenues (Upadhya and Vasavi 2006, p. 8). A dominant feature of the Indian IT industry is its export orientation. In 2009 export earnings were expected to account for more than 75% of total software and services revenues (NASSCOM 2009). So, in the course of this IT boom, an ever-increasing number of people were employed in the IT industry, predominantly in the export-oriented sectors of the industry (Figure 1 shows the development of employment in the Indian IT industry during the last years.) Due to the rapid expansion of the Indian IT industry and its demand for IT professionals, IT companies have faced a lack of talent in recent years causing a rapid increase in IT wages and high rates of personal turnover as companies try to poach each other’s staff predominantly through financial incentives (Arora et al. 2001; Mayer-Ahuja and Feuerstein 2008; Upadhya and Vasavi 2006). As a result, companies face major problems retaining employees, because the employees’ mobility power (Smith 2006) enables them to easily switch companies and often to significantly increase their salaries, and also the quality of their work (Lacity, Rudramuniyaiah and Iyer 2008).

Figure 1: Employment in the Indian IT industry 2002 – 2009 (Source: NASSCOM 2009)

There are other institutional factors also influencing the organisation and control of labour in the Indian IT industry that could not be considered in this paper, for example the form of political regulation, the economic pressures or a specific breadwinner model (see Mayer-Ahuja 2011; Mayer-Ahuja and Feuerstein 2008 for a more detailed discussion of this point).

For a more detailed description of the development, see Dossani 2007; Athreye 2005a; Arora 2006.

In this paper, the questions of how these high rates of attrition are produced within the Indian IT industry and what social, economic and political factors contribute to this phenomenon have to remain unanswered. For the discussion of these issues, see Mayer-Ahuja and Feuerstein (2007, 2008).
As already argued elsewhere, dealing with high rates of attrition in India comprises a "mixture of strategies – aimed simultaneously at ‘restricting’ and ‘channelling’ it" (Mayer-Ahuja and Feuerstein 2008, p. 171). “Restricting” in this regard means that companies attempt to retain employees by offering incentives. Looking at the Indian IT industry, obviously financial incentives have been very prominent in this regard. Closely related to this is the offer of fast and foreseeable career paths within the organisation – a strategy the Indian service providers often follow. Due to the rapid increase in business, they have been able to regularly promote their employees, offering quick increases in salary and status. Another important incentive is the offer of attractive working tasks, as developers often leave a company when they are not content with the quality of the tasks allotted to them (Lacity, Rudramunithaiah and Iyer 2008).

However, another strategy for dealing with attrition is to “channel” it organisationally, meaning to standardise and formalise the labour processes to such an extent that the frequent departure of team members does not harm the progress of projects. It is again the big Indian service providers that have made great progress in this regard (see also Mayer-Ahuja and Feuerstein 2007).

It will be demonstrated later by referring to my sample companies that there are important differences in the way product and service companies are affected by attrition and how they organisationally try to deal with this problem by adjusting the way work is organised and controlled.

However, before turning to the case studies, the next section will explain the conception of labour control used in this paper to compare the modes of work reorganisation of my two sample companies.

6 Conceptualising changes in labour control: Friedman’s management strategies approach

To analyse the emerging forms of labour control, Andrew L. Friedman’s concept of management strategies (Friedman 1990b; Friedman 1977) is used in this paper. The advantage of this concept is not only that it differentiates between two basic types of strategy: “responsible autonomy” and “direct control” that map the shift in work organisation and control many authors expected in the course of the IT industry’s internationalisation (see section 1, p. 3). Moreover it is useful because it “conceive[s] of these strategies as two directions towards which managers can move, rather than two pre-defined states between which managers chose” (Friedman 1990b, p. 179). Hence, by utilising Friedman’s concept of management strategies it is possible to analyse and compare the management strategies in the sample companies, drawing upon common dimensions of labour control.

Friedman distinguishes between two types of strategy for management in order to transform labour power into actual labour. The two strategies stem from the “peculiar” characteristics of labour as a commodity. On the one hand, once employed, managers can make their employees do more than has actually been negotiated in the employment contract. On the other hand, the actual spending of the labour power is inseparably connected to the workers’ “independent and often hostile will” (Friedman 1990b, p. 178). So there are basically two ways of handling this dilemma: strategies of “responsible autonomy” stress the “malleability” of labour power, by granting employees “responsibility, status, light supervision” while soliciting their loyalty (Friedman 1990b, p. 178). In contrast, strategies of direct control intend to limit the scope for individual decisions through close supervision and detailed instruction and direction of the tasks to be performed by each and every worker (Friedman 1990b, p. 178).
To analyse and identify the strategy implemented by management, Friedman distinguishes four categories of activities “through which the strategies towards maintaining authority are most easily articulated” (Friedman 1990b, p. 187): task organisation, control structure, lateral relations and labour-market relations. Each category contains a set of activities carried out by management. To link the way each activity is carried out by management with the strategic choice, Friedman identified strategic dimensions in each category that provide information about the strategic orientation of management (for all the following, see Friedman 1990b, p. 190 et seq.).

In the category of task organisation, which comprises the type and form of work requests, the methods of production, the scheduling and organisation of the work processes and the tools and machinery available, it is the length, variety and originality of the working tasks the employees face in the labour process that can help identify strategic orientations of management. In cases where a strategy of direct control is followed, the working tasks will most likely be short term, routinised and low on complexity, demanding little creativity from employees. In cases of a responsible autonomy type of strategy, working tasks will be rather long term, changing often and demanding a great deal of creativity from employees.

The control structure contains the instruction, monitoring and evaluation of the employees that can happen at the beginning of, during or the end of each working process analysed. The strategic dimensions are the degree of formality and detail, in which the work of the employees is instructed, monitored and evaluated, as well as the question of whether work or people are monitored and employees are evaluated by reward or punishment. Ideally, applying a strategy of responsible autonomy, loose instruction and monitoring is expected to go along with a focus of the monitoring activity on the results, rather than the actual working process and rewarding means of evaluation. Strategies of direct control tend rather to closely instruct, monitor and evaluate the working process and evaluate by punishment when certain timelines or allowed times are not met.

The third category of activities concerns the organisation of communication and cooperation structures among the employees of a certain team, unit, different departments or even different organisations. The strategic dimensions include the overall degree of communication among employees and whether this is direct face-to-face communication or technically supported. The last dimension addresses the question as to whether relations among the staff are cooperative or competitive. For strategies of responsible autonomy, it is assumed that there is a need for extensive direct face-to-face communication for employees closely connected to self-organised working processes, which is typical for this kind of management strategy. Also, extensive teamwork is expected, implying more cooperative than competitive relations among staff. In contrast, a strategy of direct control often does not require a lot of communication among employees, as the labour process is modelled and structured in fine detail by management, so that the remaining communication is often embodied in technical or hierarchical routines. Also, competition among staff is often enforced to spur employees’ effort.

The last category addresses all the activities management carries out with regard to the labour market and the way employees move through the firm, namely the recruitment, training, promoting and sometime laying off of employees. The strategic dimensions in this category are the dependency on particular employees and the degree to which management is trying to grant employment security to them. The differences between the two strategic orientations are quite clear in this category: responsible autonomy strategies grant the employees a lot of autonomy and rely on their problem-solving capabilities, which has the consequence of making them very difficult to substitute in contrast to direct control strategies. So managers trying to go for responsible autonomy strategies will tend to grant employment security to the employees they depend on to gain their loyalty.
7 The globalisation of IT service work: the case of ServiceTec

When looking at the IT service provider of my sample, those authors arguing that the internationalisation of the IT industry goes along with a shift of management strategies towards strategies of direct control seem to be right. The work organisation and control in ServiceTec’s Indian development centre greatly resembles that of a “software factory”. The process orientation introduced as an important feature especially of the “global delivery model” of the Indian service providers is very obvious at ServiceTec. As managers at ServiceTec like to emphasise, ServiceTec’s goal in task organisation is to make the projects “process-dependent and not people-dependent”. For every service ServiceTec offers to its clients, there is a formal process description in place defining the exact input and output of each and every working task necessary to deliver that service. As a project manager puts it:

“And we have systems [...] for every, every aspect of project management, we’ve got templates, we’ve got guidelines, for everything: from requirement analysis to delivery, to maintenance, to support. So we have a lot of guidelines, a lot of templates, a lot of processes in place, which we have developed over a period of time.”

According to the process descriptions, the course of every project is planned in minute detail in the first phase of the project in close collaboration with the client – an activity that is internally called “tailoring”. A clear list of tasks is negotiated, and for each task the time necessary for completion is defined. The estimation of the timings is based on the experience gained from previous projects and sector-wide best-practice standards. This way, the overall project gets fragmented into very small, low-complex subtasks that are individually assigned to the programmers in the project team. Usually, the distribution of tasks cannot be discussed within the team; they are assigned by the project manager instead. According to managers and developers the timeframe of these tasks is 2-8 hours. Usually there are small differences in the timings, because in development projects the teams tend to have slightly longer tasks (6-8 hours), whereas in support and maintenance projects, tasks can become very short term (1-2 hours sometimes). As a general rule, project managers try to define and distribute tasks that do not exceed 8 hours.

This kind of task definition and distribution leads to very monotonous and routinised work for the developers at ServiceTec. Due to the extensive use of formal prescriptions like process descriptions and coding guidelines, the creativity to be shown by the developers is very limited. A manager expresses this outcome very clearly:

“The entire organisation works fully on standards, processes, frameworks. For everything there’s a standard, everything there’s a document, for everything there’s a template, everything works like that. [...] We have been saying that, it is becoming too ... – in a sense that: Does a person really need to apply the brain to do anything?”

The process descriptions also play a crucial role when analysing the control structure at ServiceTec. On the one hand, the process descriptions contain detailed information for the developer on how to perform their tasks, acting as the central means to direct and instruct the developers in a very detailed fashion. On the other hand, relying on the detailed process descriptions, project managers are able to very closely monitor the efforts of developers.

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11 This task is usually done by employees situated in the client’s country. ServiceTec usually has small offices in all the clients’ regions to perform those tasks that require close customer interaction. These tasks usually involve most of the planning, so the result of this global setup is that the developers in the offshore development centres focus almost exclusively on work-intensive and less complex tasks.
There is a time-tracking system in place used to track the working times of all the employees in great detail. This system plays the double-role of being the basis for accounting and project management at the same time. According to project managers, clients request regular status reports of the projects – in certain projects more than once a day. The system in place gives ServiceTec the ability to constantly monitor the progress of the projects and to spot any delays early.

Having the actual amount of work time, on the one hand, and the detailed estimations for the time necessary to perform each task included in the process descriptions, on the other, ServiceTec is also able to evaluate the performance of its developers in great detail. Additional systems in place support the tracking of programming errors that can be easily traced back to the individual developers. Drawing on all these systems, the developers are appraised twice a year by their project managers. On the basis of the data from the time-tracking system and other systems providing information about the quality of work, a list is compiled that ranks all team members according to their performance. The position on this list, which is publicly available to all the team members, is the basis for higher management when deciding on promotions and salary increases.

It is a declared strategy at ServiceTec to create a culture of “individual contributors” among the developers, meaning that every developer is in direct competition with the other team members in pursuit of the best ranking within the team that decides about promotion and increases in salary. There are a couple of additional – rather symbolic – areas of competition among the developers (for example, for the most spirited developer, employee of the month and so on) to further spur the competition between the developers. This is also the reason why we do not find a lot of teamwork at ServiceTec among the developers. Every developer is supposed to work on his or her tasks and is appraised on the basis of individual performance. Teamwork in a sense that a team has to closely work together to solve a problem rarely happens, as a developer very clearly states:

“No, two people working on the same defect means: one resource is wasted.”

In cases of an issue arising in the course of the project, the developers address the project manager in charge who deals with the problem. In cases where a developer has to get in contact with another team or another unit in the company for a certain task, ServiceTec tries to make sure that all the communication is channelled through the respective project managers.

Thus far, it has been the business model of the IT service provider that was named as the reason for the direct control strategy prevailing in the Indian development centre, especially the relationship with clients and the standard and process orientation of the global delivery model. However, the standardisation and formalisation also serve another goal: The routinised and highly task fragmented character of the labour process outlined above also reduces the dependency on individual team members.

On the one hand, this enables ServiceTec to follow a very special recruitment strategy. In recent years, ServiceTec has grown very rapidly from having under 10,000 to more than 90,000 employees in 2010. So, recruiting large numbers of employees was a key factor for this growth. The character of the work enabled ServiceTec to recruit large numbers of people straight from university, even students with non-IT backgrounds. All new employees are placed in a centre for basic training for the first 4 months, where they are trained in technologies and methodologies according to the needs of the company. According to the HR department, after this short period of initial training, all the developers are equally utilisable in the projects at the end of the training period, which makes staffing very flexible for ServiceTec.
On the other hand, standardisation and routinisation of the labour process figures as a means to deal with the high rates of attrition in the Indian IT industry. According to managers from the HR department, ServiceTec faces high attrition rates of roughly 14% for the whole company. At the entry level (1-3 years in the company) the rates of personal turnover are said to be even higher. To deal with this, ServiceTec attempts to channel it by reducing its dependency on particular staff. The slogan that projects shall always be “process-depending and not people-depending” gets a second meaning in this regard. According to interviewees, it only takes around 3 weeks to replace any leaving team member. That way, high rates of attrition do not threaten the progress of the projects to a great extent. To maintain this independence, ServiceTec takes a lot of measures in addition to the implementation of the standardised and formalised process descriptions: working tasks are constantly rotated among developers and developers keep changing project teams and units on a regular basis to make sure that the developers do not develop strong ties to certain technologies or customers, which would lead to increased dependency on individual developers.

However, the picture would be incomplete without also stating the measures taken by ServiceTec to restrict attrition. It only takes 3 weeks to replace employees, but still ServiceTec takes care that the attrition rates do not exceed a tolerable level.

One of the most important aspects of ServiceTec’s strategy of “binding” employees is the creation of fast and foreseeable career paths within the company; usually a developer gets his first promotion within the first two to three years. The wage system also favours those spending longer time with the company. At the entry level, wages are rather moderate, but quickly increasing with every promotion.

So, the developers we interviewed at ServiceTec usually named the good career options as their reason for staying with ServiceTec, whereas most mentioned the monotonous and routinised character of the work as a reason for leaving and searching for better work (see Mayer-Ahuja and Feuerstein (2007) for a more detailed analysis of the management of attrition at ServiceTec).

To sum up, in all the categories of activities, ServiceTec management’s strategic orientation towards direct forms of control can be demonstrated. So, in ServiceTec’s case the internationalisation of IT work really goes along with an intense standardisation and routinisation of IT work. As argued in this section, the kind of work organisation and control is, on the one hand, shaped by ServiceTec’s global business model. The clients, insisting on the successful implementation of standardised process descriptions and demanding close monitoring of external service providers, spur the creation of a very task-fragmented and routinised labour process. On the other hand, ServiceTec uses the standardisation and formalisation to effectively deal with attrition in the Indian labour market, immunising the progress of the projects to personal turnover.

However, by contrasting ServiceTec with the second company of my sample, it will be argued in the next section that internationalisation does not necessarily have to include the standardisation and routinisation of IT work.

8 Global product development: the case of NovoProd

NovoProd follows a very different strategic approach than ServiceTec. The complexity of interactions between the involved locations and the need for close cooperation between
developers at different sites outlined above, heavily impacts the way work is organised and controlled in NovoProd’s Indian offshore development centre.

The overall development of the software product is structured in so-called “waves”. A “wave” is a defined amount of time (mostly a couple of months, depending on the phase of the development) for which the steering committee coordinating the development has to set certain goals to be reached by its end. A goal might be a couple of features of the application or a number of defects removed. Within each wave, every location has a set number of tasks to accomplish by the end of the wave for their respective module. In the Indian development centre, it is then decided how these tasks are further distributed between the various project teams and developers involved in the development.

When it comes to the developers, it is obvious that NovoProd does not intend to fragment and routinise the working tasks. The assignment and distribution of the working tasks is usually discussed in a team meeting and the developers may apply for certain tasks they are most interested in. The tasks themselves are rather long term. Most of the time, developers get assigned to tasks that last for the entire duration of the wave. Accordingly, the tasks always include various activities the developer has to perform in order to complete the task. In contrast to ServiceTec, NovoProd explicitly does not try to limit the responsibility of the developers to a great extent. Instead, project managers always emphasise that they do not want to get too involved in the micromanagement of the developers. The developers are supposed to plan and execute their tasks by themselves as much as possible. So, when distributing the tasks to developers, project managers do not usually specify in detail how the tasks should be accomplished. The developers confirm that the tasks assigned to them often contain a lot of problems they have to solve on their own or in close cooperation with colleagues at different locations.

As the timing for the working tasks is rather long term, there is hardly any detailed scheduling. Fixed dates are the ends of the waves. These are difficult to shift, because the whole development is structured by these timings. Within each wave, the detailed planning and scheduling of the working tasks is done by the developers themselves in cooperation with the project managers. According to managers and developers the timings for the tasks often get shifted due to unforeseen problems in the development. So scheduling at NovoProd is quite flexible.

When asked for the reasons behind this way of task organisation, managers name the complexity of the work carried out at NovoProd. The simultaneous development and the strong interdependencies between modules are said to create a constant need for the developers to closely cooperate with a lot of people and to react to changes by themselves without having to contact their project manager for each and every decision. This quality of the work is also held responsible for the lack of standardisation and formalisation of the development process itself. NovoProd does not rely much on standardised process descriptions. There are some basic process descriptions and development guidelines in place, but they are not implemented with the aim of extensively reducing the dependency on and the responsibility of the developers. The guidelines are more concerned with the design of the overall application and predominantly regulate the interplay between the different modules.

Concerning the working processes within each module, NovoProd still follows a very “people-centric” approach, as a manager from the quality department states. This results in quite challenging tasks for developers. As one developer puts it:

“We have the ownership of our work. In other companies we don’t have ownership for the work we are doing. It’s basically, somebody is forcing us. So here, whatever we do comes basically from the senior-level management in India. And also, it’s not like they are the owner
of those tasks. They assign the tasks – now, we are responsible. So the feeling of ownership is there – I mean, that’s why I like it. The work culture is good.”

The “people-centric” approach also affects the control structure at NovoProd, which is not as formal and detailed as at ServiceTec. In cases where developers cannot solve a problem on their own, the instruction and direction of the developers is done by the project manager. The project managers are very involved in the development and are always available for the developers. There are, as mentioned above, also some coding guidelines and design templates in place, but their relevance in the actual work of the developers is limited. Moreover, the intention to implement these process models and coding guidelines is different than at ServiceTec. As a manager from the quality department puts it:

“So, there is a lot of this R&D [research and development – PF] mindset that is there. That, you know, we’ll be creative, I’ll keep trying, third time something works. So, in that situation, you cannot put a high overhead of process, because the challenge is to make it work first, yeah? I don’t want to be a burden. So we try to put some bare minimum checks and balances in place that are required. But not – if you ask me, are you 100% compliant? No, we are not!”

So the idea of these processes in place at NovoProd is not to limit the scope for individual decisions and responsibilities and to structure the development according to these guidelines. Processes are rather seen as a “broad framework” to coordinate the global, distributed development between different locations, as a manager from the quality department explains:

“So, I would say, any organisation [...] should be able to put some broad framework in place, in which people can operate. But within that – yes, you should give flexibility, you should not bring in the bureaucracy angle. Keep that to the minimum!”

Accordingly, both managers and developers report that guidelines and basic processes play a minor role in the working processes and are often skipped, when deadlines are approaching or issues have to be resolved quickly.

The monitoring of the projects’ progress is done in weekly meetings where the developers present their progress and problems are discussed within the team. There is also no strict time-tracking system in place. Instead, developers document their working times by themselves on a daily basis. The focus of the monitoring is rather on the results the developers present than on the actual working processes. But the project managers are situated close to the project teams and always present. This way, depending on the management style of the respective project manager, monitoring may become more frequent than the weekly status meeting.

The evaluation of the developers’ performance is also not that detailed like it is at ServiceTec. There is an annual appraisal of the developers and there are also some individual objectives set for them, but collective objectives, like team or unit performance dominate the appraisal as well as the decision about salary increases. At NovoProd, there are no rankings for the developers. There is a rating for every employee, but the outcome is confidential and is not used to publicly rank the members of a team.

Looking at the relationships within the project teams in NovoProd’s Indian development centre, we find intense teamwork. Each project team is responsible for a certain part of the overall application and is given “ownership” for that part, meaning that the team is responsible for delivering that part on time and according to the quality standards. As already mentioned, tasks are discussed within team meetings and the same is true for any issues or problems arising. Furthermore, the tasks given to the developers are not independent of each other. Instead, it is very often the case that two or more developers have to closely work
together to accomplish their task. So real teamwork is found among the developers at NovoProd. However, close cooperation is not only necessary within the teams in India, but also between the various locations involved in the development network. NovoProd encourages its developers to autonomously contact developers from other teams and locations if an issue arises. They explicitly do not try to channel the communication through the project managers, fearing they might become “bottlenecks” in the communication and negatively affect the productivity of the development.

The teamwork is further enhanced by management’s attempt to create cooperative relations among developers at NovoProd. Developers are not placed in intensive competition, because personal ratings are treated confidentially and the differences in the individual wages depending on the ratings are rather moderate compared to ServiceTec. When asked for the reasons for this kind of lateral relations, managers again named the complexity of transactions in an environment of distributed development. Communication is intense and close cooperation is crucial to development. Managers stated that communication could not be effectively channelled without becoming a hindrance to the overall development, so they enable and encourage all developers to directly communicate with their counterparts. NovoProd’s way of work organisation favours experienced developers able to plan and execute their tasks by themselves and who specialise in certain areas and become experts in them. Hence, the labour process and the progress of the overall development rely heavily on the individual programmer’s skills and competences.

In the first few years after NovoProd opened its subsidiary in India, it tried recruiting IT professionals straight from the university, but as managers reported, the young and inexperienced employees had major problems with the self-organised and autonomous character of NovoProd’s task organisation. Asked for the reasons for this strategy, managers from the HR department named qualifications and skills needed to work at NovoProd. Employees need to be knowledgeable in a wide range of technologies and additionally need to be experienced in order to organise and plan their working tasks by themselves. This made NovoProd switch to recruiting slightly older and experienced IT professionals who have very often spent the first years of their careers in one of the big Indian service providers. But the dependency on qualified developers not only affects NovoProd’s recruitment strategies. At the time of the case study, NovoProd did not have problems recruiting a sufficient number of highly skilled developers. The bigger problem for NovoProd was keeping them within the company for a long time.

Generally, product companies in Bangalore (like Microsoft, Google, Oracle, Adobe or Siemens) are reported as losing a smaller share of their staff to competitors than service companies (see Upadhya and Vasavi 2006). In our interviews, developers and managers usually named the quality of work as the main reason for this difference. Many of the interviewed developers considered the development of new software products as the most attractive kind of IT work, because it often involves challenging tasks and involvement with the latest technologies. This seems to be true for NovoProd. Developers interviewed in the case study emphasised the quality of work at NovoProd as an important reason for joining and staying with the company. However, asked for probable reasons for leaving the company, developers in the interviews named the slow promotions at NovoProd. Unlike ServiceTec, NovoProd does not follow a very hierarchical approach. Accordingly, like in the German headquarters, developers do not get promoted very quickly. But in the context of Indian society, formal titles (rather than actual responsibility on the job) decide about social status. According to interviewees, finding a suitable partner for marriage, receiving a house loan or having children admitted to a “good school” is much easier for a “project manager” than for a “simple” developer, even if they are
working for a highly reputable company. Accordingly, some developers tend to leave NovoProd because of “slow personal growth”. So far, the problem of attrition seems to be less pronounced for NovoProd: managers estimate an annual rate of roughly 8%\(^\text{13}\). But although the attrition rates are lower at NovoProd, lowering attrition is a highly debated topic. Following a very “people-centric” approach as outlined above, NovoProd relies heavily on the experience of its employees – not only in relation to the developed application, the technologies and methodologies used to develop it, but also with regard to social ties within the company. Close cooperation works much better when developers of the various locations know each other and become familiar with each other. Accordingly, people leaving the company are a big problem for NovoProd because the kind of work organisation in the Indian development renders “channelling” of attrition by reducing the dependency on individual developers very difficult. Replacing departed team members takes a lot of time and effort and endangers the progress of development. According to managers from the HR department, it takes NovoProd 3-6 months to fully replace a leaving developer. So, even 8% are a dangerous number for NovoProd.

Talking about the character of work at NovoProd so far, it is necessary to note that the form of work organisation described above is NovoProd’s strategic goal. There are project teams that are managed that way, but there are also teams that do not yet receive full ownership of their work. There is a close relationship between the way the projects are controlled and the personal turnover rates the project teams faced previously. In teams in which a lot of members had left and had to be replaced, NovoProd was unable to establish the self-organised kind of work organisation. In these cases, the project teams had to be more directly controlled by their managers. Accordingly, instruction and direction as well as monitoring became much more detailed than for the other projects in the Indian development centre, and the working tasks in these teams are not as complex.

For NovoProd, as argued above, this rather direct way of managing teams in the Indian development centre is far from optimal. To change this, restricting attrition takes highest priority. In order to make employees remain in the company NovoProd has experimented with inventing new job titles, hoping that this would stop people from moving out because of “slow personal growth”. They also use financial incentives to keep up with the overall increase of wages in the industry.

In conclusion, it can be noted that in NovoProd’s case, the internationalisation of production does not go along with a shift in management strategies towards direct control. Admittedly, there is an increased division of labour due to the modularisation of the overall product and there are also some formal processes and coding guidelines in place to support the coordination of the overall development process. However, by focussing on the management strategy applied at the Indian development centre, it is obvious that NovoProd does not follow the strategic goal to control the labour process with a direct control strategy like ServiceTec does. Instead NovoProd tries to implement a rather responsible autonomy kind of control strategy to deal with the complexity resulting from NovoProd’s global setup.

But the case of NovoProd also emphasises the need to consider the institutional settings of the host countries when analysing the reorganisation of work in the course of the IT industry’s internationalisation. Companies’ strategies have preconditions and the institutional settings of the offshore destinations may – as outlined in this case study – (partly) undermine the attempts to implement a certain strategy.

\(^{13}\) Exact numbers were unfortunately not made available for this study.
9 Conclusion

Returning to the question raised at the beginning, even with the very limited scope of this paper, it could be demonstrated that there is no uniform shift in management strategies towards direct forms of (offshore) labour control in the course of the IT industry’s internationalisation. While the case of ServiceTec, with its very standardised and routinised working processes, seems to confirm the proponents of this prognosis, the case of NovoProd clearly shows that the standardisation and routinisation of IT work is not in every case the answer to globally distributed working processes. Instead a lot of features from “traditional” IT labour control can be identified in NovoProd’s Indian development centre, following a rather responsible autonomy type of strategy.

The presented results of the case studies rather point to very different modes of work reorganisation. As shown, IT service and software product companies significantly differ in their internationalisation strategies, comprising very different forms of governance in the industry’s arising global value chains. It was argued that although the business model of IT service providers can be formally labelled a “relational” approach, there is a considerable pressure for standardisation and formalisation of transactions in play, as clients, on the one hand, try to fight the dependency on particular providers by spurring competition for standardised services and, on the other, demand close control of the outsourced projects. Looking at the big software product companies reveals a hierarchical approach to govern globally distributed development processes. In cases where offshore locations are not only used for merely simple and labour-intensive tasks, it could be shown by referring to NovoProd’s Indian development centre that a globally distributed development network implies very complex interactions among the involved parties that is very difficult to codify.

These differences in the governance of global value chains heavily impact the kind of work undertaken at the Indian development centres of both my sample companies and – as was shown – give rise to very different strategies of labour control as well. For ServiceTec, client-induced pressure to standardise and formalise the project organisation by demanding the successful implementation of globally recognised process models like CMMI or Six Sigma and to closely monitor the progress and efforts undertaken for the purpose of accounting (especially in case of SLA’s) lead to a very restrictive form of labour control, as the implemented process descriptions standardise and formalise the course of the projects to a great extent, leaving the developers with small, short-term and low-complexity working tasks that are easy to monitor for the management. In contrast, managers at NovoProd have always emphasised that the complexity at play in NovoProd’s global development network limits the possibility to standardise and formalise the labour process above a certain basic level. Instead, the self-organisation of the developers and their ability to autonomously deal with their working tasks is crucial for NovoProd’s form of labour control.

But it is not only the different patterns of the IT industry’s internationalisation that shape the way work is organised and controlled. Focussing on the impact of the Indian IT labour market and the high rates of personal turnover the Indian IT industry has become famous for, the influence of the institutional settings of the offshore locations on work organisation and control has been demonstrated. In ServiceTec’s case, the efforts to handle attrition go hand in hand with the standardisation and formalisation of the working processes that clients demand. This might explain why it is the Indian IT service providers that are particularly known for their very process-oriented “global delivery model”. At the product company of my sample, the influence of the labour market on work organisation and control became especially clear. Attrition poses a great threat to the self-organised kind of work organisation that heavily relies on the developer’s individual skills and experiences. As was argued, the Indian labour market
forced NovoProd to apply more direct forms of control to some teams than it had originally intended.

To sum up, the results of the case studies presented in this paper point to the dynamic and contingent character of work reorganisation in the arising global IT industry. Instead of assuming broad industrial-wide trends in work organisation and control, the presented results draw attention to the dynamic interplay between varying patterns of global value chain restructuring and the different institutional settings of the locations that get integrated into those chains, in order to understand how the situation for IT employees is changing due to the globalisation of the IT industry.
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