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Employee Empowerment and HR Flexibility in Information Technology SMEs

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ABSTRACT

HR systems in IT organizations need to be flexible to enable them to adjust to the fast rate of technological change. Employee empowerment, often practiced at IT organizations under the banner of agile practices, has been highlighted as likely to enable HR flexibility. Based on a research panel based survey of top managers at 163 IT organizations in New Zealand and Australia, we confirmed positive effects of employee empowerment on four dimensions of HR flexibility: resource flexibility in employee skills and behaviors, coordination flexibility in employee skills and behaviors, resource flexibility in HR practices, and coordination flexibility in HR practices. The results are consistent with the view that, at IT organizations, employee empowerment both promotes employee ability and willingness to be flexible and facilitates the organizational structures and practices that enable flexible use of HR resources.

KEYWORDS

IT organizations; HR flexibility; employee empowerment

Introduction

IT organizations are facing a particularly turbulent environment, attributable to the fast rate of technological change.¹⁻³ Because IT work is knowledge work, and the productivity of individuals and teams in many IT roles can vary quite considerably,⁴⁻⁷ human resources (HR) issues—such as hiring high quality employees, retaining valuable employees, and deriving value from the IT workforce—are a major priority for IT organizations.⁸⁻¹⁰ At the same time, HR systems within IT organizations should enable the organization to adjust to a constantly changing and difficult-to-predict environment¹¹; in other words, HR systems should be flexible. It is reasonable to expect that, in part, such flexibility can be achieved by empowering employees to be active, motivated, and intelligent agents.¹²

Even though HR issues at IT organizations have been addressed in multiple prior studies, they tend to belong to three easily identifiable research threads. First, multiple studies over a broad time span address the problem of IT professionals turnover, exemplified by Guimaraes and Igbaria,¹³ Wang et al.,¹⁴ Ghapanchi and Aurum,¹⁵ Serenko et al.,¹⁶ and Mueller and Benlian.¹⁷ Another strong research thread is devoted to gender imbalance in the IT industry, recently reviewed by Gorbacheva et al.¹⁸ The third established research thread relating to HR management at IT organizations, which emerged relatively recently, is devoted to on-demand IT workers and

gig economy, exemplified by Nwafor et al.,¹⁹ Kinsella et al.,²⁰ and Marjanovic and Murthy.²¹

However, overwhelmingly, the existing studies of HR in IT organizations have been conducted at the level of an individual (e.g., considering factors contributing to individual employee turnover or turnback intentions, as done by Wang et al.,¹⁴ Serenko et al.,¹⁶ and Maier et al.²² Very few studies of HR in IT organizations were conducted at the level of an HR system, considering attributes of HR systems and their consequences and antecedents. (Here and in the rest of this article by an HR system we mean a management system, rather than an information system supporting HR, as the term is occasionally used in IT and IS research.^{23,24} In the broader HR literature, however, such studies are common (see, for example, Podolsky and Hackett,²⁵ Schmidt et al.,²⁶ and Chadwick and Li.²⁷ In particular, we found no empirical studies of HR in IT organizations that would consider HR flexibility as an attribute of an HR system.

IT firms have been addressing the challenge of dealing with the ongoing high rate of technological change by embracing agile management practices, which are based on employee participation in decision making and employee empowerment.²⁸⁻³⁰ Thus, both the issue of HR flexibility in general, and the role of employee empowerment in enabling HR flexibility, are particularly relevant to IT firms. However, none of the existing

studies of HR flexibility focused in particular on IT firms. The purpose of the present study is to address this research gap. Correspondingly, the present study addresses the following research question: What are the effects of employee empowerment on HR flexibility in IT organizations?

In terms of the typology of research contributions suggested by Ladik and Stewart,³¹ the present study aims to make two contributions: a contribution to context and a contribution to theory. First, the study introduces to IS and IT researchers the concept of HR flexibility, a property of an HR system, as a concept highly relevant to understanding IT organizations. Second, the study explores how the dimensions of HR flexibility at IT organizations are affected by employee empowerment.

The rest of the article is organized as follows. First, in the literature review section we introduce the research background and highlight gaps in the literature. Then, we state and justify the hypotheses of the present study. This is followed by an introduction of the method (a research-panel based cross-sectional survey, with top managers as key respondents) and of the sample (IT small and medium-sized enterprises), followed by the results, their discussion, and conclusions.

Literature review

Dimensions of HR flexibility

Resource flexibility

Wright and Snell³² distinguished two general types of HR flexibility: resource flexibility and coordination flexibility. Resource flexibility is a characteristic of an organization's HR resources, specifically their potential applicability in different situations or environments. In other words, resource flexibility refers to the ability of HR resources such as the firm employees and HR related policies and procedures, in their current configuration, to enable the firm to be responsive to changes in its environment.

Resource flexibility in employee skills and behaviors.

An important dimension of resource flexibility is flexibility in employee skills and behaviors,^{32,33} defined as the range of employee skills an organization can deploy. Thus, in the IT industry context, employees who are capable of learning new technologies, programming languages, and development frameworks can contribute to their organization's resource flexibility in employee skills and behaviors. An important aspect is employees' willingness to exercise their ability to learn and to behave in flexible ways.^{32,33} For example, an IT

employee who heavily invested in learning a particular framework or technology, and acquired a reputation as an expert, may be quite capable of learning a new technology. However, such an employee may be unwilling to do so because switching to a new technology would result in loss of investment and status.³⁴ Such a behavior would subtract from the organization's resource flexibility in employee skills and behaviors. On the other hand, in the IT industry, workers with deep knowledge and skills in a particular domain who are also skilled enough and are willing to be productive working in broader related domains are known as "T-shaped" workers, and they are particularly valued.^{35,36} We argue that T-shaped workers are valued because they contribute to the organization's flexibility in employee skills and behaviors.

Resource flexibility in HR practices. A further dimension of resource flexibility (following Wright and Snell³² is resource flexibility in HR practices: the malleability and the breadth of applicability of HR routines, policies, and procedures. Certain HR practices, such as the practice of rewarding employees for absence of faults (e.g., aiming to reduce the number of software bugs or to maximize service uptime), may incentivize resistance to change, because the use of new technologies or frameworks is associated with increased risks of faults occurring.^{37,38} Further, narrow performance metrics used for performance management, such as numbers of lines of code or agile project velocity, require considerable re-configuration effort and time when software languages and development frameworks change or teams are re-configured.^{39,40} Similarly, an excessive emphasis on narrowly-defined IT certifications incurs maintenance costs when technology changes or the firm switches to using a different technology.⁴¹ At the same time, generic HR practices such as management by objectives⁴² or socialization (social activities aimed to facilitate knowledge sharing),⁴³ are applicable in a very broad range of situations, and thus are robust in the face of change and can be easily configured to promote or facilitate change (e.g., by defining objectives in terms of change or by arranging events to facilitate tacit knowledge exchange between groups of employees who need to collaborate to effect change).

Coordination flexibility

While resource flexibility is a characteristic of an organization's HR resources in their current configuration (both employees and HR practices), coordination flexibility refers to the ability to acquire, configure, and redeploy resources. In other words, coordination flexibility is the organization's ability to change the configuration of HR resources in response to changes in its

environment. Way et al.³³ distinguished three dimensions of coordination flexibility: coordination flexibility in HR practices, coordination flexibility in contingent worker skills and behaviors, and coordination flexibility in employee skills and behaviors.

Coordination flexibility in employee skills and behaviors. Coordination flexibility in employee skills and behaviors refers to an organization's ability to deploy workers employed on on-going contracts: either to redeploy employees with narrow skill sets ("I-shaped employees"³⁵ to work at different locations (redeploying them physically or virtually) or in different parts of the organization (redeploying them within the organizational structure). Both contractual arrangements and institutionalized practices may limit an organization's flexibility in this respect (e.g., a trade union may seek to limit an organization's ability to physically redeploy employees because such redeployment may be highly disruptive for their personal lives.⁴⁴ Further, organizations may differ in their ability to deploy workers to do work outside their core expertise (e.g., to offer developmental assignments.⁴⁵ Workers in the IT industry tend not to remain with the same employer for extended periods of time,^{46,47} and thus they need to be constantly upgrading their skills to remain valuable in the job market. Indeed, this may be a more important consideration in choosing an employer than remuneration. For example, a programmer may be highly motivated to gain experience working as an architect or project manager with a new technology because such experience is likely to result in higher employability and/or higher wages. Organizations, however, may differ in their ability to take risks by allowing someone with limited experience to assume an impactful role.

Coordination flexibility in contingent worker skills and behaviors. Coordination flexibility in contingent worker skills and behaviors refers to the organization's ability to attract and to effectively use contingent workers to fill temporary skill needs. In the IT industry these workers are often highly qualified and highly remunerated contractors, who are in high demand.⁴⁸ Firms with flexible HR practices would maintain on-going relationships with potential contractors to ensure that they are providing both monetary and non-monetary (e.g., good work environment, opportunities to up-skill⁴⁹ benefits to their temporary workforce. Contractors working with such an employer would covet repeat business, and they would be motivated to do work of the highest quality.

Coordination flexibility in HR practices. Finally, coordination flexibility in HR practices refers to an

organization's ability to quickly reconfigure existing HR practices and to implement new practices. For example, an IT firm shifting from predictive to agile IT project management may need to shift from individual-based to group-based performance appraisal,⁵⁰ which could be counter to existing institutionalized practices and expectations. Firm managers may vary in their ability to communicate the need for a change, in overcoming resistance, and in organizing training to prepare the employees to a new style of work.⁵¹

The five dimensions of HR flexibility have been operationalized by Way et al.³³ for survey-based research. Way et al.³³ also demonstrated the superiority of using their approach by comparing it with the prior approach offered by Bhattacharya et al.⁵² Their approach was superior in terms of better psychometric characteristics of the measures and greater predictive power. (Bhattacharya et al.⁵³ conceptualized HR flexibility as consisting of employee skill, employee behavior, and HR practice flexibility.)

Prior research has focused primarily on outcomes of HR flexibility and demonstrated its effects on organizational performance in a broad range of contexts. In a survey of firms in the hospitality industry, Luu⁵⁴ found that HR flexibility contributes to innovative work behavior. In a survey of organizations from a broad range of industries, Katou⁵⁵ found that skill and behavior flexibility both contribute to organizational performance. In a survey of professional service firms, Beltrán-Martín et al.⁵⁶ found that skill, behavior, and coordination flexibility contribute to success in the development of new services. In a survey of sales departments of pharmaceutical companies, Luu⁵⁷ found that HR flexibility promotes job crafting. In a survey of companies from a broad range of industries, Lakshman et al.⁵⁸ found that resource and coordination HR flexibility promoted the formation of intellectual capital. Way et al.⁵² found that a positive effect of HR flexibility on firm performance is more pronounced in highly dynamic industries. Even though Úbeda-García et al.⁵⁹ and Katou⁵⁵ associated HR flexibility with the use of high performance work systems, conceptualized as a combination of selective staffing, comprehensive training, developmental performance appraisal, and equitable reward systems). In view of the breadth of high performance work systems, their results left the question of how HR flexibility is achieved largely open. Finally, Way et al.³³ recommended further research to "examine, explicate, and illustrate the linkages between our five HR flexibility dimensions and identify their antecedents" (p. 1126), but so far, their call has remained largely unheeded. The present study takes a step toward responding to this call.

HR flexibility and employee empowerment

Wright and Snell³² emphasized the likely role of “participative infrastructure” in enabling HR flexibility, emphasizing “mechanisms the firm uses to provide maximum amounts of information to employees, to decentralize decision making, and to encourage employees to provide information or input into the firm’s decision-making processes” (p. 768). Thus, by empowering employees, the organization makes information about flexibility-relevant resources and about coordination related problems available to the decision-making process and contributes cognitive resources to the process. Participative infrastructure can be conceptualized as employee empowerment practices (also known as structural empowerment^{60,61} defined as the organization’s routines, policies, and processes enabling and promoting the participation of lower-level employees in decision making.^{60–63} For example, in the IT industry the agile project management movement pursues employee empowerment, with agile approaches to project management suggesting a broad range of participative practices.²⁸

Studies of the effects of employee empowerment practices are common. For example, Nowak⁶⁰ found that employee empowerment contributes to firm’s ability to respond to dynamic competitive environments. Further, García-Juan et al.,⁶¹ Yin et al.,⁶² and Raineri⁶³ demonstrated that employee empowerment contributes to organizational performance. However, none of the existing studies have investigated empirically the effects of employee empowerment practices on HR flexibility, which is the focus of the present study.

Hypotheses development

In the HR literature, employee empowerment is considered to be one of the practices forming a high performance work system (HPWS) – a system of mutually reinforcing HR practices resulting in an effective workforce by fostering employee motivation and enhancing their knowledge and skills.^{64,65} There is no universal agreement on which practices constitute a HPWS, but selective hiring, extensive development and training, performance feedback, performance-linked compensation, and employee empowerment are most frequently cited.⁶³ Much of the existing research on HPWSs has focused on their combined effect on firm performance, although it has been pointed out that different HPWS practices may have different effects.⁶⁶

Successful employee empowerment results in employees identifying with the organization and in employees’ affective commitment to the

organization.^{61,67} As a result, employees discretionally act in the interests of the organizational whole,⁶⁸ sharing tacit knowledge and assisting each other to solve problems. Such sharing results in quick acquisition of skills. Indeed, one of the benefits of agile practices is the enablement of peer-to-peer grassroots level learning.^{67,69} Moreover, empowered employees maintain open communication with managers, so that managers are aware of any skill of knowledge employees need and managers can arrange formal and informal training. This, again, results in employees being able to quickly acquire new skills when needs arise. Further, because employees identify themselves with the organization and are affectively committed to the organization,⁷⁰ they are willing to apply new knowledge as needed by the organization. Thus, employee empowerment contributes to flexibility in both employee skills and behaviors:

H1: Greater employee empowerment is associated with greater resource flexibility in employee skills and behaviors.

Open communication between employees and managers enables managers to have a clear picture of employee skills, including skills that are not immediately implied by the roles or tasks employees currently perform. Moreover, the flat organizational structure often associated with employee empowerment makes it easier to deploy employees to conduct work that addresses current priorities, rather than work implied by their position in a rigid hierarchy.⁷¹ Empowered employees are less likely to be perceived by middle managers as belonging to or limited to their areas of control, and thus political struggles around employee re-assignments are less likely.^{72,73} Thus, when employee empowerment is higher, coordination flexibility in employee skills and behaviors is likely to be higher:

H2: Greater employee empowerment is associated with greater coordination flexibility in employee skills and behaviors.

In IT organizations, employee empowerment is likely to be associated with agile practices.⁷⁴ This is a work structure that encourages employees to acquire broad skills—to become “T-shaped” employees, with areas of in-depth knowledge and with broad knowledge in related areas—and expects them to be deployed as necessary to ensure project success.³⁵ Because agile management emphasizes the performance of a project (a group), rather than individual performance,

employees have a greater incentive to acquire and deploy skills required by their projects, rather than to solely focus on enhancing skills in a narrow area of specialization. Moreover, open communication between employees and managers in organizations with empowered employees offers managers detailed information about skills currently needed by individual projects and by the broader organization, thus enabling the organization to make hiring decisions that address current needs. Further, empowered employees are likely to (formally or informally) participate in the hiring processes.⁷⁵ By contributing their tacit knowledge, empowered employees improve the organization’s ability to make hiring decisions informed by in-depth understanding of the organization’s and its customers’ needs. Thus, when employee empowerment is higher, resource flexibility in HR practices is likely to be higher.

H3: Greater employee empowerment is associated with greater resource flexibility in HR practices.

Open communication between employees and managers offers managers formal and informal feedback on established HR practices and on new HR practices under implementation. Further, employee participation in designing and implementing new HR practices both ensures that employee tacit knowledge is incorporated into the new practices and ensures employee buy-in,⁷⁶

increasing the effectiveness of new practices. As a result, employees are more likely to be aware of the new practices and are more likely to perceive them as appropriate and fair. Thus, when employee empowerment is higher, coordination flexibility in HR practices is likely to be higher:

H4: Greater employee empowerment is associated with greater coordination flexibility in HR practices.

Figure 1 shows the placement of the four hypotheses in the research model of the present study.

Method

Sample and procedure

To test the hypotheses of the present study, we conducted a cross-sectional survey of information technology SMEs in New Zealand and Australia, with senior managers acting as key informants. SMEs were operationalized as firms with 6 to 49 employees, following the definition by the Ministry of Business, Innovation, and Employment of New Zealand.⁷⁷

The guidelines established by the Massey University ethics committee were followed, resulting in filing low risk notification number 4000021796. Participants were notified that completion of the questionnaire implies

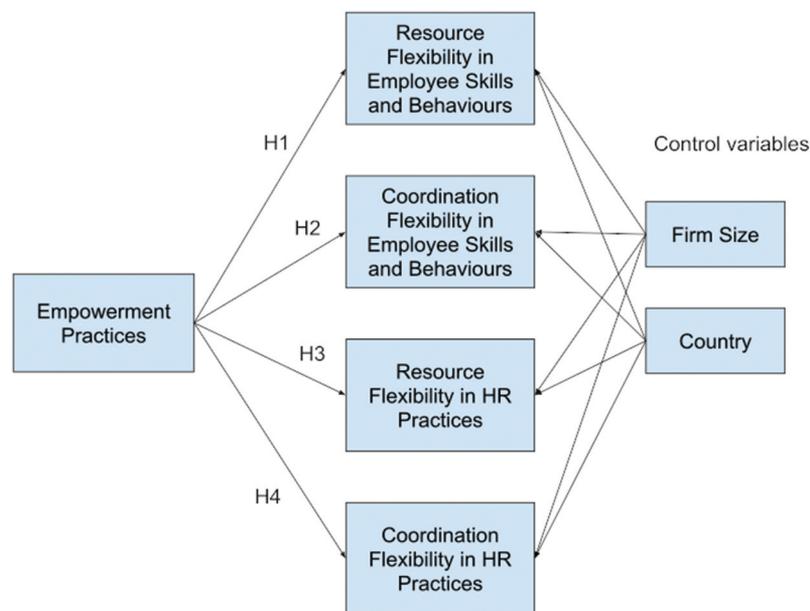


Figure 1. Research model.

consent. Following Small Business Council⁷⁸ guidelines, SMEs were defined as firms with the number of employees between 5 and 50.

Data were obtained from the Qualtrics research panel, targeting top managers of IT firms with at least 6 and no more than 49 employees in Australia and New Zealand; 163 responses were recorded. The two countries were almost equally represented in the sample: there were 86 responses (53%) from New Zealand and 77 (47%) from Australia.

Measurement

Items used to operationalize the constructs of the research model are listed in Table 1. Employee empowerment practices (EMPPR) were measured using the operationalization developed by Raineri.⁶³ Items for measuring the dimensions of HR flexibility—resource flexibility in employee skills and behaviors (RFESB), coordination flexibility in employee skills and behaviors (CFESB), resource flexibility in HR practices (RFHRP), and coordination flexibility in HR practices (CFHR) – were based on Way et al.³³ All measures had been

initially developed as reflective and were used as such in the present study. Items were measured on seven-point Likert scales, from “strongly agree” to “strongly disagree.” Firm size (measured as the number of employees) and country were included as control variables.

Results

The research model was validated by using PLS modeling using R package *sempr* (version 2.3.0), with VIF analysis conducted using R package *car* (version 3.0–12). PLS fitted the purpose of the present study because it allows to validate both measurement and structural models, can be used with small data sets, and is suitable for exploratory research.⁷⁹ Bootstrap analysis with 1000 subsamples was used to test the statistical significance of path coefficients.

Measurement model

To assess the measurement model, item reliability, internal consistency reliability, convergent validity, and

Table 1. Operationalization of constructs.

Empowerment Practices ⁶³	
EMPPR1	Employees in your firm are often asked by their supervisors to participate in decisions
EMPPR2	Employees in your firm are allowed to make decisions
EMPPR3	Employees are provided opportunities to suggest improvements in the way things are done
EMPPR4	Supervisors maintain open communications with employees
EMPPR5	Employees in your firm have reasonable and fair complaint processes
EMPPR6	Employees in your firm are involved in formal participation processes, such as quality improvement groups, problem-solving groups, and suggestion systems
Resource Flexibility in Employee Skills and Behaviors ³³	
RFESB1	Almost all of your firm's employees have the ability to quickly acquire skills that are necessary for them to be assigned to different work roles
RFESB2	Almost all of your firm's employees have the ability to quickly acquire skills that are necessary for them to adopt different technologies in their work activities
RFESB3	Almost all of your firm's employees can perform work activities that require different behaviors
RFESB4	Almost all of your firm's employees would be willing to accept a different job within your firm
Coordination Flexibility in Employee Skills and Behaviors ³³	
CFESB1	Your firm can quickly assign new work activities to employees who possess the skills necessary to perform these activities
CFESB2	Your firm can quickly reassign employees to a different job that requires different (e.g., greater) skills
CFESB3	Your firm can effectively assign different work activities to employees who perform below the required level
CFESB4	Your firm can effectively reassign employees to different jobs within your firm
Resource Flexibility in HR Practices ³³	
RFHRP1	Your firm's current compensation structure enables your firm to reward employees who perform different work activities and produce different outcomes
RFHRP2	Your firm's current work structure enables employees to develop the behaviors necessary to perform new/different work activities
RFHRP3	Your firm's current performance management process would enable your firm to motivate its employees to perform different work activities
RFHRP4	Your firm's current staffing procedures enable your firm to select employees who possess the skills necessary to be effective in performing many different work activities
RFHRP5	Your firm's current training process enables employees to learn new/different work activities
Coordination Flexibility in HR Practices ³³	
CFHRP1	Your firm can quickly and effectively implement different staffing procedures
CFHRP2	Your firm can quickly and effectively implement different compensation structures
CFHRP3	Your firm can quickly and effectively implement different work structures
CFHRP4	Your firm can quickly and effectively implement different empowerment processes

Table 2. Item loadings and cross-loadings.

	EMPPR	RFESB	CFESB	RFHRP	CFHRP
EMPPR1	0.805	0.574	0.515	0.523	0.496
EMPPR2	0.752	0.480	0.448	0.436	0.458
EMPPR3	0.823	0.527	0.441	0.503	0.470
EMPPR4	0.854	0.608	0.461	0.595	0.522
EMPPR5	0.769	0.437	0.344	0.473	0.367
EMPPR6	0.855	0.616	0.502	0.581	0.586
RFESB1	0.515	0.856	0.538	0.644	0.634
RFESB2	0.592	0.885	0.573	0.671	0.647
RFESB3	0.666	0.877	0.645	0.706	0.668
RFESB4	0.391	0.641	0.502	0.338	0.581
CFESB1	0.550	0.651	0.823	0.538	0.598
CFESB2	0.446	0.555	0.840	0.420	0.597
CFESB3	0.409	0.461	0.792	0.338	0.527
CFESB4	0.362	0.521	0.754	0.358	0.538
RFHRP1	0.374	0.487	0.320	0.775	0.423
RFHRP2	0.603	0.679	0.454	0.886	0.588
RFHRP3	0.589	0.641	0.473	0.878	0.534
RFHRP4	0.578	0.659	0.532	0.873	0.578
RFHRP5	0.558	0.656	0.441	0.852	0.559
CFHRP1	0.518	0.674	0.617	0.520	0.864
CFHRP2	0.508	0.691	0.613	0.620	0.882
CFHRP3	0.517	0.672	0.612	0.501	0.856
CFHRP4	0.549	0.633	0.611	0.565	0.871

Table 3. Internal consistency reliability and convergent validity.

Construct	Cronbach's alpha	Composite reliability (CR)	Average variance extracted (AVE)
EMPPR	0.895	0.92	0.657
RFESB	0.835	0.891	0.674
CFESB	0.819	0.879	0.645
RFHRP	0.907	0.931	0.729
CFHRP	0.891	0.925	0.754

discriminant validity were assessed. Item loadings are given in Table 2. All item loadings on their own constructs were higher than the threshold of 0.7, suggesting item reliability.⁷⁹ Further, for all constructs Cronbach alpha and composite reliability values were above 0.7, suggesting internal consistency reliability,⁷⁹ and AVE values exceeded 0.5, suggesting convergent validity⁷⁹ (see Table 3).

All items loaded on their own constructs higher than on other constructs in the model (see Table 2) and for all constructs, inter-construct correlations involving a construct were lower than the construct's square root of AVE (see Table 4), suggesting discriminant validity.⁸⁰ Finally, HTMT ratios of correlations for all pairs of constructs were below the threshold of 0.90 (see Table 5), thus meeting the recently introduced criterion of convergent validity by Henseler et al.⁸¹

Structural model

The results of structural model testing are summarized in Table 6. For all independent variables variance inflation factor (VIF) values were below the threshold of 5, suggesting that there were no collinearity issues.^{79,82}

Table 4. Discriminant validity: inter-construct correlations and square roots of AVE.

	EMPPR	RFESB	CFESB	RFHRP	CFHRP
EMPPR	0.810				
RFESB	0.674	0.821			
CFESB	0.562	0.691	0.803		
RFHRP	0.645	0.740	0.528	0.854	
CFHRP	0.603	0.768	0.706	0.635	0.868

Square roots of AVE are given on the diagonal, in bold.

Table 5. Discriminant validity: HTMT ratios of correlations.

	EMPPR	RFESB	CFESB	RFHRP	CFHRP
EMPPR					
RFESB	0.759				
CFESB	0.636	0.824			
RFHRP	0.698	0.820	0.586		
CFHRP	0.667	0.897	0.822	0.699	

Table 6. The results of structural model testing.

Path	Hypothesis	Path coefficient	<i>t</i> statistic	2.5% CI	97.5% CI	<i>p</i> value	VIF
EMPPR->RFESB***	H1	0.693	13.671	0.589	0.795	.000	1.058
EMPPR->CFESB***	H2	0.594	9.434	0.475	0.720	.000	1.058
EMPPR->RFHRP***	H3	0.658	11.897	0.557	0.765	.000	1.058
EMPPR->CFHRP***	H4	0.616	8.829	0.475	0.750	.000	1.058
CNTRY->RFESB		-0.006	-0.111	-0.114	0.103	1.088	1.002
CNTRY->CFESB		-0.032	-0.503	-0.153	0.098	1.385	1.002
CNTRY->RFHRP		-0.111	-1.941	-0.224	-0.006	1.947	1.002
CNTRY->CFHRP		0.026	0.418	-0.093	0.159	.676	1.002
EMP->RFESB		0.085	1.455	-0.034	0.197	.146	1.057
EMP->CFESB*		0.146	2.173	0.011	0.277	.030	1.057
EMP->RFHRP		0.079	1.309	-0.042	0.191	.191	1.057
EMP->CFHRP		0.052	0.804	-0.071	0.181	.422	1.057

* $p < .05$, *** $p < .001$.

All four hypotheses—H1, H2, H3, and H4 – were confirmed at high levels of statistical significance, suggesting that empowerment practices contribute to HR flexibility in a number of ways. Further, one of the control variables, firm size (measured as the number of employees) had a statistically significant effect on coordination flexibility in employee skills and behaviors. The effect could be interpreted as suggesting that in larger firms, managers have greater power to assign jobs to employees as needed. However, because the p value associated with this effect was relatively high ($p = .030$), with the large number of relationships tested for control variables, it could be due to capitalization of chance.

Robustness checks

As is common in panel-based research,⁸³ the data set contained responses with possible straightlining (with respondents using the same response category for all questions in a survey section) and responses completed much faster than the rest (speeders). Following the recommendation by Zhang and Conrad⁸⁴ and Schonlau and Toepoel,⁸³ we conducted the analysis with responses involving straightlining and speeders excluded. For the purposes of the analysis, we classified responses using the same category to answer all items measuring HR flexibility—RFESB, CFESB, RFHRP, and CFHRP—as responses involving straightlining. There were six straightliners. Further, following common practice,^{85–87} responses completed in one third of the median completion time were classified as speeders. There were five speeders.

The results of the analysis of the remaining 152 responses were, in essence, identical to the analysis of the full data set. Specifically, all reliability and validity criteria were met, there were no collinearity issues, and the statistically significant effects were the same as in the full data set. The implications for the hypotheses of the present study remained the same, suggesting that the overall approach was robust.

To guard for the possibility of common method bias, we used the marker variable technique.^{88,89} The survey included items measuring the respondent's fashion consciousness (based on Nam et al.⁹⁰ and Venkatesh et al.,⁹¹ see Table 7), a construct unrelated to the constructs of interest in the present study. Correlations of the marker variable with constructs of interest were low (EMPPR: -0.027, RFESB: 0.125, CFESB: 0.115, RFHRP: 0.010, CFHRP: 0.060), and none of them were statistically significant, offering evidence that common method bias was not a concern.⁸⁸

Discussion

Theoretical contributions

The findings of the present study—that employee empowerment practices positively affect HR flexibility—is consistent with the results of prior studies. Based on a survey of US firms from a range of industries, Way et al.⁵² found that the use of a HPWS positively affected a firm's HR flexibility (which was conceptualized similarly to the present study). Further, the operationalization of HPWS use in their study covered some of the content of the empowerment practices construct (e.g., access to

Table 7. Operationalization of the marker variable.

Fashion Consciousness	
FASHS1	When I must choose between the two, I usually dress for fashion, not for comfort
FASHS2	An important part of my life and activities is dressing smartly
FASHS3	A person should try to dress in style

complaints processes, participation in quality improvement groups). Based on a survey of Spanish hotel firms, Úbeda-García et al.⁵⁹ presented a similar finding. Their conceptualization of HPWS differed from Way et al.⁵² but included a focus on finding avenues of personal development for an employee, thus highlighting employee agency similarly to the concept of empowerment practices. Úbeda-García et al.⁵⁹ conceptualized HR flexibility in terms of behavioral flexibility, skill flexibility, and human resource practice flexibility. This was similar to Way et al.³³ (and thus, to the present study), but without explicitly considering the resource flexibility/coordination flexibility dichotomy.

Based on a survey of Spanish service firms, Escrig-Tena et al.⁹² found that quality management positively affects labor flexibility, which was conceptualized in terms of internal flexibility and external flexibility. This is similar to the operationalization used in the present study, but less comprehensive in content. Some of the content of the quality management concept (e.g., the quality philosophy aspect) was related to the empowerment practices conceptualization by Raineri⁶³ used in the present study.

Based on a survey of Indian manufacturing and service firms, Ketkar and Sett⁹³ found that a broad range of practices from the HPWS repertoire, including employee participation in decision making and maintaining channels of communication with employees, positively affect HR flexibility. Ketkar and Sett⁹³ operationalized HR flexibility similar to Úbeda-García et al.⁵⁹ using the dimensions of HR flexibility initially introduced by Bhattacharya et al.⁵³

The principal contribution of the present study is that it is the first study to have explicitly focused on the effects of employee empowerment practices on HR flexibility. Prior studies considered the effects of broader concepts with a minority of the content akin to aspects of the employee empowerment concept introduced by Raineri⁶³ and used in the present study. Further, our study is the first to explore the effect of employee empowerment on HR flexibility at IT firms. In these organizations, the concept of employee empowerment is particularly relevant in view of the practice of agile project management and the influence of agile thinking and agile management in a broader sense.

The results of the present study are consistent with a view that employee empowerment affects the ability and willingness of individual employees to be flexible (captured by the resource flexibility in employee skills and behaviors construct). Further, employee empowerment affects the capabilities of the organization as a whole, including (a) its ability to flexibly deploy employees

(captured by the coordination flexibility in employee skills and behaviors construct), (b) its ability and propensity to establish work structure and hiring practices that promote flexibility (captured by the resource flexibility in HR practices construct), and (c) its ability to flexibly adjust HR practices (captured by the coordination flexibility in HR practices construct). Future research could explore the relationships between different dimensions of HR flexibility. An example of this is the possible effect of resource flexibility in HR practices on resource flexibility in employee skills and behaviors, with HR practices encouraging flexibility resulting in more flexible employees.

Placing the results of the present study within the broader context of research on HR management at IT organizations, progress was achieved in making the contributions outlined in the Introduction. First, the concept of HR flexibility as a property of an organization's HR system has been shown to be relevant to IT organizations. This has implications for further research: by characterizing HR flexibility at the level of an organization the organization level consequences of different ways to organize IT work (such as by using different approaches to organizing and scaling IT projects) can be compared and understood. For example, even though in the existing studies of turnover of IT professionals¹³ Wang et al.¹⁴⁻¹⁷ tend to view turnover as undesirable, one may argue that high level of employee turnover results in qualified candidates available for hire to address current needs. The implications of employee turnover at IT organizations for HR flexibility could be addressed in future research.

Further, the present study demonstrated the effects of employee empowerment on HR flexibility. The finding that all dimensions of HR flexibility were affected suggests that employee empowerment is broad in its impact, enabling both the flexibility potential (resource flexibility) and the ability of the organization to realize this potential (coordination flexibility), extending from the ability of employees to be flexible to the ability of the organization to change the way work is conducted, organized, and rewarded (coordination flexibility in HR practices). In terms of the dichotomy of tactics and strategy, employee empowerment enables both tactical flexibility (performing flexibly in current roles, which is the focus of resource flexibility) and strategic flexibility⁹⁴ (changing the roles and the rules of the game, which is the focus of coordination flexibility). Thus, in the context of the IT industry, employee empowerment could both enable employees to be more responsive in understanding and meeting customer needs in deploying IT capabilities and enable the IT organization to change

how work is done, such as transitioning to agile^{95,96} or to a different paradigm of agile (e.g., to scaled agile.^{97,98} These results are in agreement with the findings by Chirico et al.⁹⁹ and Richard et al.¹⁰⁰ who highlighted the beneficial effects of participative approaches to strategy making.

Practical implications

The principles behind the agile manifesto suggest employee empowerment (<https://agilemanifesto.org/principles.html>):

Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done.

The best architectures, requirements, and designs emerge from self-organizing teams.

At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

However, the actual implementation of agile methodologies in IT organizations may follow the spirit of the principles to different extents. Indeed, an organization may declare adherence to agile principles (driven by the need to legitimize itself within an industry in which agile is increasingly seen as a fundamental competency of an IT organization), but implement methodologies such as Scrum in ways that are disempowering to employees.⁷⁴ For example, teams may be pressured to constantly increase the velocity of development, with backlogs largely decided by the product owner. As a result, teams may face work intensification and micromanagement, which is fundamentally at odds with both agile principles and employee empowerment.¹⁰¹

Other organizations may not declare themselves to be practicing agile, but may be using variations of agile approaches on a de facto basis.¹⁰² Thus, it is of value to conceptualize employee empowerment at IT organizations generically and independently from self-declared use of agile, as was done in the present study.

An implication of the results of the present study to IT organizations practicing agile is that when agile methodologies and practices are implemented according to their intended spirit (i.e., following the agile principles), the resulting greater employee empowerment is likely to contribute to greater HR flexibility, which in the turbulent IT industry is a desirable feature.

Further implications to practice stem from the breadth of the impact of employee empowerment practices. The results of the present study suggest that employee empowerment has a very broad impact, as it

enables flexibility both at the level of employees and at the level of the organization of work, both at the level of routine and at the level of the ability of the organization to transform how work is organized, resourced, and rewarded. For example, the results suggest that, in the context of IT industry, transformations such as transitioning to agile, to scaled agile, or to DevOps^{103,104} may rely on employee empowerment as an enabler.

Limitations

Even though Way et al.³³ introduced five dimensions of HR flexibility, including coordination flexibility in contingent worker skills and behavior, the present study covered only the dimensions relevant to employees on on-going contracts. Coordination flexibility in contingent worker skills and behavior is relevant to IT organizations, as argued in the Introduction. However, empowerment of contingent workers is an issue somewhat distinct from empowering workers on on-going contracts¹⁰⁵ and this has been left to further research.

The present study focused on information technology SMEs (defined as firms with the number of employees between 5 and 50). In such firms, employee communication with managers can take more direct forms than in larger firms, and employee empowerment mechanisms (particularly, at an informal level) may take different forms than in larger firms. Therefore, care should be taken when applying the results of the study to larger organizations.

The cross-sectional survey design employed in the present study does not allow to empirically distinguish causes from effects and is limited in its ability to explore mechanisms by which effects are achieved. It is desirable that qualitative studies investigating how employee empowerment practices result in greater HR flexibility are conducted in the future.

Disclosure statement

No potential conflict of interest was reported by the authors.

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