

## Determinants and effects of human capital reporting and controlling

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**Abstract** Human capital is one of the most important organizational resources. Nevertheless, companies' internal and external management control and reporting instruments only marginally take human capital into account. The purpose of this paper is therefore twofold: In the first section, we empirically identify the drivers influencing external human capital reporting by assuming that companies reporting on their human capital use the same information that they do for internal control purposes. We thus extract this information from corporate annual reports by means of content analysis. Subsequently, we analyze 130 listed German companies' number of human capital disclosures and their content. Our results show that human capital reporting is influenced by firm size, industry membership, and shareholder structure. In the second section, we introduce an indicator-based instrument for active human capital controlling. That is, we show how human capital can be actively controlled with regard to corporate strategy and, thus, be integrated into traditional management control instruments.

**Keywords** Human capital · Human capital reporting · Voluntary disclosure choices · Human capital controlling

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## 1 Introduction

In our knowledge-based economy, successful companies' most important assets are intangible (e.g., Edvinsson and Malone 1997; Lev 2001; Stewart 1999). An organization's human capital can specifically be regarded as a valuable resource and a key factor for sustainable competitive advantages (Huselid 1995; Pfeffer 1994; Prahalad and Hamel 1990; Wright et al. 2001). However, to date, companies only disclose limited information on this resource. Furthermore, human capital aspects are—at best—only marginally considered in internal corporate control instruments. Consequently, two major problems might arise: On the one hand, external parties cannot clearly comprehend a company's value-adding potential. On the other hand, internal management cannot control the organizational human capital with regard to the company's strategic objectives. This paper broadens the discussion about drivers affecting the likelihood of external human capital reporting. Furthermore, it provides an approach that combines human capital controlling with overall corporate strategy.<sup>1</sup>

Therefore, the purpose of this paper is twofold: First, we identify drivers influencing companies to voluntarily report on and control their human capital and therewith the paper supports the theory of voluntary disclosure choices as follows: Voluntary disclosure help to reduce information asymmetry and companies tend to influence the decision of external stakeholders with selective reporting. In doing so, we presume that companies' willingness to internally use human capital-related control instruments is closely related to the external provision of such information. Companies that disclose human capital information to external parties can therefore be assumed to use the same information for internal control purposes. Variations are possible due to a sophisticated internal control system, which content should not be revealed to competitors or an external reporting design that euphemizes the ability of internal systems to launch positive information to external parties. But the high degree of interdigitation between external reporting and internal use of this information does not allow substantial variations concerning human capital purposes. Another reason could be an uncoordinated communication between different departments, i.e. one department is responsible for internal control aspects and the other for external reporting procedures. But as the internal and external reporting departments get closer together due to international accounting regulation requirements (e.g. IFRS, US-GAAP), this deviation is negligible as well. Second, we introduce a field-tested performance management instrument for active human capital controlling in a case study. Thus, we show how this important organizational resource can be incorporated into (traditional) corporate management systems. Based on human-capital-related cause-and-effect relationships, this instrument enables internal human capital controlling by taking the overall corporate strategy into account. Thus, by using such strategic human-capital-related control instruments, positive effects can be expected on financial performance—at least in the long term.

The empirically identified drivers of external disclosures are also valuable for internal purposes, since the amount and content of externally disclosed information are

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<sup>1</sup>We use the term “controlling” following Anthony and Govindarajan's (2007) management control approach. In this sense, management control systems (and human capital controlling as part thereof) are tools to aid management to steer an organization toward its strategic objectives and competitive advantage.

indicative of the internally used human capital control instruments. Since the externally disclosed information seems to be important for the company, it can be assumed that this information is important for internal use as well.

The remainder of the paper is structured as follows: In Sect. 2, we examine the role of corporate reporting in general. We then focus on human capital as a key organizational resource, as well as on the different possibilities to control and report on human capital. In Sect. 3, we analyze German companies' disclosure behavior with regard to human capital issues by focusing on the possible drivers that influence these disclosures. This allows inferences regarding the use of human-capital-related control instruments. Finally, in Sect. 4, we introduce an instrument for active human capital controlling and reporting based on human capital's company-internal and company-external cause-and-effect relationships.

## 2 Theoretical background of human capital reporting and controlling

### 2.1 The role of corporate reporting

According to traditional neo-classical theory, a company's main (and only) objective lies in creating shareholder value by maximizing the market value of the owners' equity (Copeland et al. 1994; Friedman 1962; Jensen 2001; Rappaport 1998). This approach is justified by regarding shareholders as residual owners. They bear the full economic risk of all corporate activities, while contractual relationships protect other stakeholders (Rappaport 1998).

Shareholder value theory implies that management and owner structures are separated. Hence, both parties operate in an agency relationship (Jensen and Meckling 1976). Consequently, information and agency problems might occur between shareholders and management (Healy and Palepu 2001). First, the information (or "lemons") problem arises from management having better information about and insight into the company's economic situation than investors. If investors—due to a lack of information—cannot distinguish between "good" and "bad" investment objects, they value both as average. Consequently, they undervalue good firms and overvalue bad firms (Akerlof 1970; Healy and Palepu 2001).

Second, agency problems occur when managers act in a way that is not in the investor or shareholder interests. Since shareholders (principals) cannot fully monitor managers' (agents') actions, managers can use the provided equity to make decisions that are harmful to the shareholder interests (Coase 1937; Eisenhardt 1989; Healy and Palepu 2001).

Although other activities can also be undertaken, corporate disclosures—for instance with regard to human capital matters—can solve information and agency problems by providing investors with the required information. By reducing the information asymmetries, such disclosures specifically increase the addressees' level of information (Diamond and Verrecchia 1991; Kim and Verrecchia 1994). Accordingly, all the available company and human capital information should be reflected in the stock value (Fama et al. 1969; Fama 1970, 1991; Healy and Palepu 2001). Corporate reporting is therefore critical for efficient capital markets. Providing investors with

the required information reduces information asymmetries, agency, as well as transaction costs, while the allocation of (financial) resources is improved (Botosan 1997; Botosan and Plumlee 2002; Healy and Palepu 2001; Lambert et al. 2007).

In recent years, there has been a considerable increase in voluntary reporting (e.g., Gelb and Strawser 2001; Gray et al. 2001). Currently, companies spend a great deal of effort and money on such voluntary disclosures. Based on the theories developed by Modigliani and Miller (1958), three main goals or motivations have been identified for (financial) accounting choices (Fields et al. 2001; Holthausen and Leftwich 1983; Watts and Zimmermann 1986): contracting, asset pricing, and influencing external parties. Two of these motives—*influencing external parties* and *asset pricing*—are believed to be appropriate to explain voluntary reporting choices and, thus, human capital disclosures.

First, wishing to influence external parties other than the actual or potential company owners can be a key motive for voluntary reporting (Fields et al. 2001). That is, by disclosing information on various items, managers intend to influence stakeholders' decisions (or at least their attitudes) (Fields et al. 2001; Watts and Zimmermann 1978).<sup>2</sup> This theory therefore suggests that managers disclose information in order to influence an outcome that is beneficial for the firm (Fields et al. 2001).

Second, according to the disclosure choice literature, asset pricing is driven by information asymmetries that arise when markets do not perfectly aggregate individually held information (Fields et al. 2001). In short, managers have an incentive to make voluntary disclosures, since firms with high levels of disclosure—and, hence, low information risks—are likely to have lower capital costs than firms with a low disclosure level and high information risks (Botosan 1997; Botosan and Plumlee 2002; Healy and Palepu 2001; Lambert et al. 2007).

Since there are no official regulations for human capital reporting, related disclosures are completely voluntary.<sup>3</sup> Hence, the same theoretical foundations apply to human capital reporting as to any other (voluntary) disclosures.

## 2.2 Human capital as a key company resource

Human capital can be regarded as a company workforce's performance potential. It comprises all of the employees' knowledge and motivation, as well as their willingness to apply this knowledge in their task fulfillment (Schultz 1961; Becker 1964). With regard to human capital theory, early works by, for instance, Smith (1776), Schultz (1961), and Becker (1964) already refer to the human as a "resource." Human capital theories claim that economies, companies, organizations, and individuals can improve their performance and, thus, their disposable income by investing in education (Blaug 1976).

<sup>2</sup>The stakeholder approach argues that companies should try to fulfill all stakeholders' demands, which—at least in the long term—results in higher economic profits (Donaldson and Preston 1995; Freeman 1984; Frooman 1999).

<sup>3</sup>According to *DRS 15*, for instance, companies have to disclose information which might have a substantial impact on the firm value, or which might be relevant for their future development. Thus, even if human capital is not explicitly mentioned, companies are encouraged to provide information (or at least "some" information) on their workforce's ability if this could have an impact on the corporate performance.

Human capital theories and economic science generally assume that long-term (economic) growth and competitive capability depend wholly on technical progress and, thus, on human capital (Solow 1956; Mankiw et al. 1992). In the context of the resource-based view, human capital has also become the focus of strategic management (Chadwick and Dabu 2009; Barney 1991; Penrose 1959; Snell et al. 1996; Wright et al. 2001).

Human capital is not an independent (monetary) company value. This capital must first interact with a company's physical and/or financial assets, as well as with its other intangible assets to contribute to value creation. Consequently, human capital has no intrinsic value for a company. Inevitable problems emerge from these characteristics. The extent to which a company's human capital influences its financial success can therefore very rarely be unambiguously determined (e.g., improved employee motivation's influence on a company's success cannot be easily quantified). However, it should be noted that our knowledge of human capital's mechanisms and drivers is relatively limited.

Nevertheless, according to general bookkeeping standards, human capital cannot be an active asset on a company balance sheet. Unlike its other forms of capital, the company does not possess human capital. Instead, the asset is tied to the employees, as they are legally not the company's property (as slaves used to be). Notwithstanding accounting standards prohibiting an active human capital entry, there are other possibilities that do allow a company to report on its human capital and other intangible assets. Normally, the annual report communicates these "assets" to external parties by means of qualitative (and partially quantitative) human capital information.

### 2.3 Fundamentals of human capital controlling

Traditionally, corporate control employs performance measurement and management systems to measure and quantify the different company objects' efficiency and performance potential. Performance measurement is used to assess efficiency and effectiveness, where

- efficiency refers to the relationship between the output value and input value, and is used to measure input-output relationships ("doing things right"), while
- effectiveness variables are oriented towards a concrete objective target and its specific output regarding a company's long-term objectives ("doing the right things").

Financial and non-financial key performance indicators (KPIs) are defined in line with the organizational value creation in order to assess these dimensions. Key performance indicators are used to quantify an activity's performance efficiency (Neely et al. 1995). When defining KPIs, performance management's basic requirements should be kept in mind (Neely et al. 1997).

Performance management contributes to an improvement on all company levels by stimulating more effective planning and control procedures. In addition, integrating KPIs ensures performance management's future orientation. This is due to KPIs' ("leading indicators") predicting characteristic is more pronounced than that of financial indicators. Consequently, performance management not only supports a stakeholder and performance-based target formulation, but also allows strategy to be

better implemented. In addition to its future orientation, performance management is also characterized by its simultaneous consideration of the causal relationships between performance metrics. Achievement creation's interactions and target conflicts become apparent through the KPIs' interrelationships, thus enabling timely adaptations and reactions. More performance-related and overlapping cross-communication processes can then be activated.

Academia and business practice have developed various approaches to human capital controlling (see, for example, Kaplan and Norton 1996; Wucknitz 2009; Scholz et al. 2004). The most complete and most suitable approaches for reporting on and control of human capital are indicator-based or scorecard approaches, of which the most common are the *balanced scorecard (BSC)*, *HR scorecard*, *human capital indicator*, and *intellectual capital statements* (German: Wissensbilanz). In these approaches, various indicators help identify, classify, and quantify intangible assets' individual components, such as human capital and its components. Multidimensional indicator models, which are normally company specific, therefore represent human capital. Indicator-based approaches can be easily combined with other human capital evaluation methods and instruments.

According to Sveiby (2010), there are three groups of instruments or indicators for evaluating human capital:

- First, direct intellectual capital methods; well-known approaches are *human resource accounting (HRA)*, the *Saarbrücken formula*, *human capital return on investment (HCROI)*, and *human capital value added (HCVA)*.
- Second, market capitalization methods; well-known approaches are the *market-to-book value*, *Tobin's Q*, and *human capital market value (HCMV)*.
- Third, residual income methods; well-known approaches are: *workonomics*, *economic value added (EVA<sup>®</sup>)*, and *human economic value added (HEVA)*.

These methods' results can be incorporated as independent indicators in each indicator-based approach, thus providing a holistic view of the problem.

### 3 Empirical evidence of human capital reporting

On the basis of the theoretical background developed above, we empirically tested the spread of human capital controlling and reporting, as well as the drivers influencing these actions. In doing so, we presumed that companies reporting on their human capital also use the same information for internal control purposes. In the next section, we thus theoretically identify the drivers that influence (voluntary) human capital disclosures. We then focus on the methodology applied to empirically examine these drivers. In Sect. 3.3 we present and discuss our study's results.

#### 3.1 Drivers influencing human capital reporting

Internal management instruments, as well as external disclosures, only consider human capital to a limited extent (e.g., Lev 2001; Stewart 1999). Nevertheless, recent years have seen an increase in voluntary disclosures—at least in human-capital-related areas like corporate social responsibility (e.g., Gelb and Strawser

2001). The significant variation in companies' voluntary disclosures might also be reflected in the information provided on human capital. Previous studies (e.g., Deegan and Gordon 1996; Gamerschlag et al. 2011; Holder-Webb et al. 2008; Meek et al. 1995; Overfelt et al. 2010; Roberts 1992) have found that a number of firm-specific drivers—such as firm size, industry membership, profitability, and shareholder structure—influence corporate disclosures. As pointed out below, we assume that these factors also influence human capital disclosures.

First, firm size has been identified as a main driver of corporate disclosures, as larger organizations are more likely to use formal channels of communication (Brammer and Pavelin 2006; Godfrey et al. 2009; Meek et al. 1995; Roberts 1992) to disseminate information (e.g., annual reports or other corporate documentation). Furthermore, large companies might disclose more information as their stakeholder entity might be larger and, thus, the demand for information is greater. Previous empirical studies confirm the link between firm size and the level of disclosures (e.g., Gray et al. 1995; Meek et al. 1995; Roberts 1992). Hence, it can be assumed that firm size also affects a company's willingness to provide human capital information.

Second, industry membership has been identified as having a significant influence on corporate disclosures. Since companies from different industries face different stakeholder demands, their disclosure behaviors are affected by these demands and, thus, vary across industries (e.g., Deegan and Gordon 1996; Holder-Webb et al. 2008; Overfelt et al. 2010). However, we cannot anticipate which industries might be associated with high or low human capital disclosures.

Third, profitability might affect human capital disclosures. Since human capital is regarded as a valuable organizational resource (Chadwick and Dabu 2009; Wright et al. 2001), a positive association can be assumed between profitability and human capital disclosures. Human capital disclosures could therefore be interpreted as an indicator of high profitability by assuming that high human capital disclosure levels are associated with high profitability.

Finally, the shareholder structure might influence a company's disclosure behavior and, thus, its reporting on human capital issues. Disclosures are likely to be greater in widely held firms, allowing the principals (shareholders and other stakeholders) to effectively monitor that their economic interests are optimized, while agents (management) can signal that they act in the owners' best interests (Chau and Gray 2002; Fama and Jensen 1983). This suggests that companies with a large group of small shareholders are likely to provide more human capital information in their reports. Empirical evidence supports this view with regard to other voluntary disclosures (e.g., Gamerschlag et al. 2011).<sup>4</sup>

Against this background, we analyzed German companies' disclosure behavior to verify or refute these assumptions. We concentrated on companies listed on the German *DAX*, *MDAX*, and *SDAX*, which include the 130 largest listed German companies (Deutsche Boerse 2010). Our sample focuses on the index com-

<sup>4</sup>However, although other factors influencing voluntary disclosures could be identified, such as company visibility (Belkaoui et al. 1989) and the company's relationship with its US stakeholders (Bancel and Mittoo 2001; Gamerschlag et al. 2011), the factors mentioned above are assumed to be the most relevant in the recent literature.

position as at the end of 2008. We furthermore consider four publication periods between 2006 and 2009 which indicate the reporting years between 2005 and 2008. In line with previous research, we concentrated on the annual report, which constitutes the most important reporting instrument for a company and external parties, especially capital markets (Abdolmohammadi 2005; Guthrie et al. 2004; Vandemaele et al. 2005). Only reports provided in English were considered, although all the companies in the sample provide their annual reports in English as well as in German. Since some company reports were not available for all the years, and we subsequently deleted 37 observations. We therefore had a total of 483 firm-year observations. On the whole, we analyzed a total of 82,000 annual report pages. While former studies dealing with voluntary human capital disclosures have often focused on either web-based disclosure (Cormier et al. 2009) or surveyed executives (Guenther et al. 2005), we analyze human capital multidimensionally, using objective data extracted from corporate reports by means of word-based content analysis. Additionally, we use a large-scaled study of more than 82,000 pages of German companies' annual reports.<sup>5</sup> This differs from smaller and less focused studies (e.g., Vuontisjärvi 2006; Knauer 2010).

### 3.2 Methodology

Our analysis focuses on the human capital information (the message) that corporate reports (the communication channel) transmitted and that the sample companies (the source) sent to their stakeholders (the receiver) (see Shannon and Weaver 1998). Similar to previous studies, we use content analysis to quantify the amount of human capital information in the reports. Content analysis is a method of codifying written text into various groups or categories by means of selected criteria. This type of analysis assumes that frequency is an indication of the subject matter's importance (Abdolmohammadi 2005; Guthrie et al. 2004; Krippendorff 2004) and seeks to generate a numerically based summary of a chosen message set (Krippendorff 2004; Neuendorf 2002). Previous literature suggests that content analysis provides valid results for corporate reporting research, thus allowing the researcher to evaluate the extent of various items' disclosure (e.g., Deegan and Gordon 1996; Déjean and Martinez 2009; Gray et al. 1995; Guthrie et al. 2004; Guthrie and Farneti 2008).

Depending on the unit of analysis, there are several ways of undertaking content analysis, for instance, by counting words, sentences or sections, or by reading the entire text (Neuendorf 2002). We decided to use words as the unit of analysis, because the coder is not required to provide subjective judgment. Furthermore, searching for specific terms in the text is the most reliable form of content analysis: It always yields the same results in repeated trials, and can be easily replicated (Abdolmohammadi 2005; Krippendorff 2004; Neuendorf 2002). We used the PDF reader's word count function after manually checking its validity by focusing on the keywords provided in Table 1. To define the keywords used in the analysis, we employed the framework introduced by Abdolmohammadi (2005). These keywords are also mostly in

<sup>5</sup>The annual report can be regarded the most important communication channel between a company and its stakeholders, especially with regard to shareholders (Abdolmohammadi 2005; Guthrie et al. 2004).



**Table 1** Keywords for the content analysis

Category	Keyword
Qualification/competence	Brain power
	Competence
	Competencies
	Education
	Expertise
	Intangible skills
	Intelligence
	Know-how
	Knowledge
	Learning
	Qualification
	Specialist
	Training
	Motivation/commitment
Career	
Employee retention	
Employee satisfaction	
Employee commitment	
Employee turnover	
Entrepreneurial spirit	
Motivation	
Staff turnover	
Personnel	Diversity
	Empowerment
	Human resource
	Personnel
	Recruiting
	Recruitment

line with other studies' content, which is often mentioned against the background of intellectual capital disclosures in general and human capital disclosure in particular (e.g., Abeysekera and Guthrie 2004; Bontis 2003; Bukh et al. 2005; Cordazzo 2007; Guthrie et al. 2004, 2009; Olsson 2001).

When deriving the keywords, singular and plural forms were also considered ("competence" and "competencies"). In line with Abdolmohammadi's (2005) framework and the overall human capital literature (e.g., Schultz 1961; Becker 1964), we classified the keywords into three categories. The first two categories comprise keywords containing information on the workforce's "qualification/competence" and its "motivation/commitment." Additionally (and according to Abdolmohammadi 2005), we added a perspective on "personnel" information, since human resource management practices are essential for human capital's future development (e.g., Huselid et

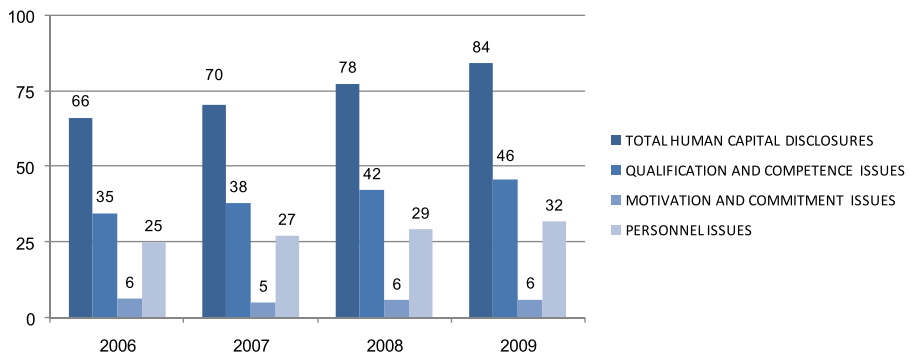
al. 1997; Ichniowski et al. 1997). The total human capital disclosures comprise the sum of all the three categories. Thus, in the end, we have four variables reflecting the number of hits when searching for all the keywords in each category. All these variables were identified for each of the companies and for each year.

The Deutsche Boerse (2010) classification was employed to classify the sample companies into 18 industries. The authors used the number of employees, the amount of total assets, as well as the DAX<sup>6</sup> index membership as measures of the company size. We used the common shares' free float percentage, as well as profitability, measured by return on invested capital (ROIC), as other drivers that could influence human capital disclosures. The number of employees, the percentage of shares in free float, and the index membership for each year and company are available on the Deutsche Boerse AG website (Deutsche Boerse 2010). The total assets and ROIC are available on the Thomson One Banker (2009) website.

### 3.3 Results and discussion

The results of our content analysis show that the extent of human capital disclosure is increasing over time. The average number of hits (total human capital disclosures) increased from 66 hits in 2006 to 84 in 2009. This trend has largely been caused by an increase in disclosures on personnel's qualification and competence, as well as on personnel issues. On average, disclosures on qualification and competence issues account for approximately half of all human capital disclosures, followed by disclosures on personnel issues. The least information is provided on personnel's motivation and commitment matters. This category is the only one that did not increase between 2006 and 2009. Figure 1 displays these developments.

Over the same time period, the average number of pages in the analyzed reports increased from 150 to 188. When we control for this effect by dividing the number of hits by the analyzed reports' number of pages, we see that this ratio is stable with regard to German companies' disclosure behavior. Figure 2 shows this development by means of the provided human capital information per report page and per disclosure index.



**Fig. 1** Average number of hits for human capital disclosure categories

<sup>6</sup>The DAX30 comprises the 30 largest listed companies in Germany (the "blue chips").

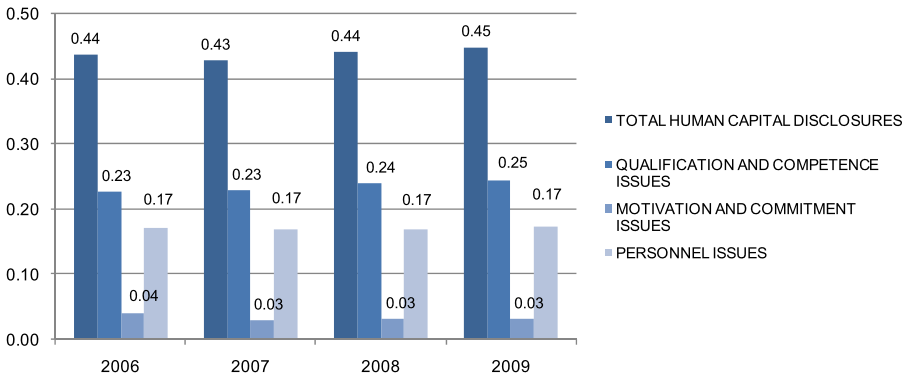


Fig. 2 Provided human capital information per report page

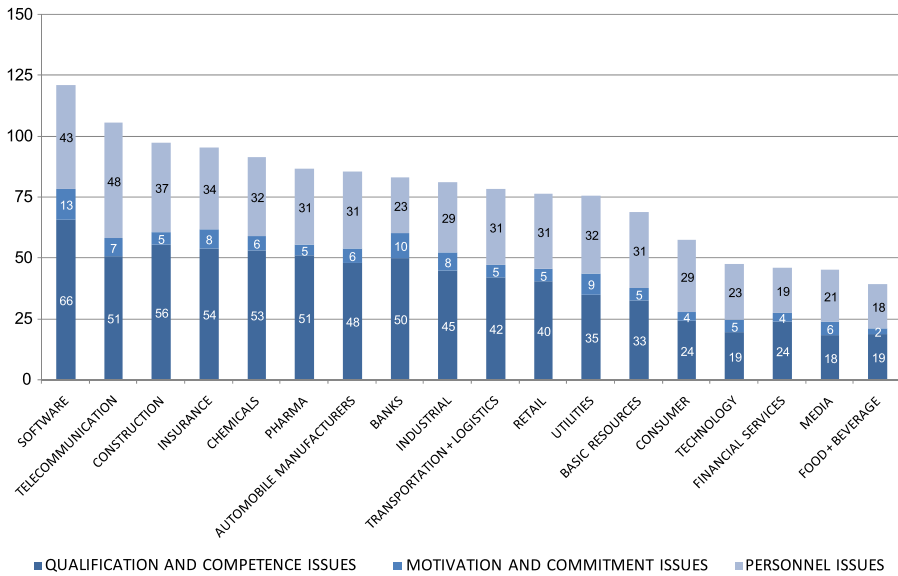


Fig. 3 Average number of hits for human capital disclosure categories by industry

Figure 3 shows the provided human capital information per industry. On average, companies from the *software, telecommunication, construction, insurance, and chemical* industries provide the most information on their human capital.<sup>7</sup> Companies from industries like *food and beverage, media, and financial services* provide the least information. Thus, human capital disclosures are affected by industry membership and the companies’ overall disclosure behavior, which also includes disclosures on, for example, CSR issues.

<sup>7</sup>However, it should be noted that the *software* and *telecommunication* industries are represented by just one company each. The results might therefore be company specific.

To identify the drivers that influence human capital disclosures, we applied *t*-tests to compare our content analysis's results with human capital disclosures' potential drivers. We therefore split the sample companies into two groups for each potential driver. We used their mean values to divide the companies into

- small and big ones (measured by the number of employees, total assets, and DAX membership)
- those with a high or low percentage of common shares in free float
- service sector companies and those from other sectors
- profitable and less profitable ones.

As shown in the analysis results in Table 2, the companies' size—measured by the number of employees, as well as the total assets—affects their willingness to disclose information on all human capital aspects. On average, large companies disclose more human capital information, as their mean values are substantially higher than those of small companies. Furthermore, DAX members provide more human capital information than other companies. Free float only affects qualification-related and competence-related disclosures and, consequently, total disclosures: The higher the percentage of shares in free float, the more information the sample companies provide. Additionally, industry membership affects the companies' willingness to report on human capital: On average, service sector companies provide less human capital information than other companies. The results shown in Fig. 3 might appear obvious since service companies, such as those from the *media*, *financial services*, and *retail* sectors, provide relatively little human capital information. Profitability does not, however, affect the companies' disclosure behavior since no significant difference could be detected between very profitable and less profitable companies.

However, to control for possible interfering effects between the applied independent variables, we employed an additional multivariate analysis. We used regression analysis to control for these effects by using the total human capital disclosure index (HCRTOT) as the dependent variables and its assumed determinants as the independent variables. In line with previous literature (Gamerschlag et al. 2011; Roberts 1992) we decided to employ a multivariate analysis in combination with the univariate results. Table 3 shows the results of our analysis. We applied three regression equations by using three different measures for firm size (number of employees in column (A), the amount of total assets in column (B) and DAX membership<sup>8</sup> in column (C)). The results of our analysis fully confirm the previous results: Human capital reporting is mainly affected by firm size. The percentage of shares in free float also seems to influence related disclosures. Furthermore, industry membership influences companies to disclose information on human capital issues, since we have found a negative association between service sector companies and their willingness to disclose human capital information. However, profitability does not affect the companies' propensity for human capital disclosures at all.

Our results reveal that human capital disclosures are affected by the same drivers as disclosures in other areas. Hence, the most important determinants of human capital disclosures are the companies' size and their industry membership. This is in line

<sup>8</sup>We use 1 if the corresponding company belongs to the DAX index in the relevant year and a 0 otherwise.

**Table 2** Drivers influencing disclosures on human capital issues (*t*-test)

	No. of employees		Total assets		Member of DAX		Freefloat		Industry		Profitability	
	Mean	<i>p</i>	Small	Big	Yes	No	High	Low	Service	Other	High	Low
Valid N	368		419	64	112	371	245	238	185	298	208	275
HCRTOT	63.96	***	69.30	112.22	103.58	66.36	78.73	71.14	65.39	80.95	75.19	74.84
HCRQC	33.80	***	37.01	63.50	58.80	35.00	43.63	37.32	34.45	44.29	40.74	40.36
HCRMC	4.93	***	5.11	11.20	8.99	4.99	6.17	5.66	5.39	6.25	6.41	5.55
HCRPS	25.23	***	27.18	37.52	35.79	26.36	28.93	28.16	25.55	30.41	28.04	28.93

Legend: HCRTOT = total amount of disclosure; HCRQC = amount of disclosures with regard to qualification and competence issues; HCRMC = amount of disclosures with regard to motivation and commitment issues; HCRPS = amount of disclosures with regard to personnel issues

\* Significant at the 0.1-level ( $p \leq 0.1$ ); \*\* significant at the 0.05-level ( $p \leq 0.05$ ); \*\*\* significant at the .01-level ( $p \leq 0.01$ )

**Table 3** Drivers influencing disclosures on human capital issues (regression analysis)

	(A) Coefficient prob.	(B) Coefficient prob.	(C) Coefficient prob.
Constant	***	***	***
No. of employees	.32 ***		
Total assets		.11 **	
Member of DAX			.33 ***
Freefloat	.08 *	.08 *	.04
Service Industry	-.14 ***	-.17 ***	-.16 ***
Profitability	.60	.03	.03
YR06	-.11 **	-.10 *	-.11 **
YR07	-.07	-.06	-.07
YR09	.07	.07	.07
Adjusted R-squared	.14	.05	.15
F-value (Prob.)	12.04 (***)	4.72 (***)	12.74 (***)
N	472	472	472

\* Significant at the .1 level; \*\* Significant at the .05 level; \*\*\* Significant at the .01 level

with previous research on voluntary disclosures. Surprisingly, service sector companies provide less human capital information than companies from other industries. Since human capital can be considered service companies' main (and probably only) resource, their lack of sufficient information provision was not anticipated. Nevertheless, since human capital disclosures are affected by the same determinants as other disclosures, we can assume that companies providing information on other aspects also provide human capital information.

The finding that shareholder structure affects human capital disclosures is also in line with previous research: Companies' voluntarily disclosures increase with the percentage of shares in free float, since they use disclosures to communicate with their more dispersed owner structures. These findings also seem to be applicable with regard to disclosures on human capital issues.

Finally, it is impossible to infer anything from company profitability with regard to human capital disclosures, since no evidence was found to associate profitability with higher human capital disclosure levels.

#### 4 Human capital controlling: an instrument for practice

As pointed out in Sect. 2.3, management control employs performance measurement and management systems to assess and control the efficiency and effectiveness of human capital. Strategic performance management focuses on the link between organizational objectives/strategy and performance measurement systems (Kloot and Martin 2000; Chenhall 2005). The main feature of these strategic performance management systems is that they link strategy to performance measures, using cause-and-effect chains. A practical-oriented approach should capture, elaborate on, and analyze

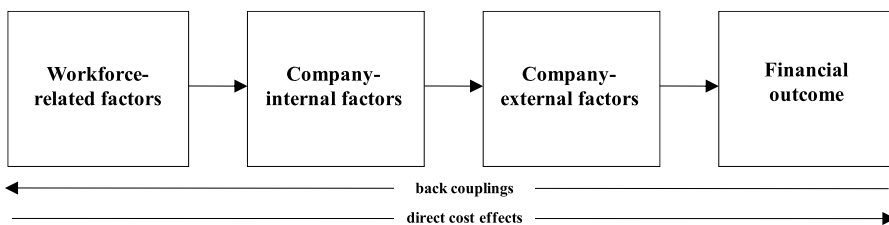
the existing information, while recognizing the important means and ends within an organization (Neely et al. 2002; Garengo et al. 2005; Broadbent and Laughlin 2009). The framework should also control and manage the achievement of outcomes. Furthermore, such an approach should show how performance is measured, and display the links between different performance measures (Lebas 1995; Marr 2006; Marr et al. 2004; Sousa et al. 2005). Thus, it should identify the key success factors within an organization. Feedback and feedforward loops from various levels of the organization, and the impact of the external environment should also be considered in the framework (Bititci et al. 1997).

Based on this reasoning, we examine performance management's task in the selective capturing, control, and communication of tangible and/or intangible elements within a causality-based coupling of inputs, processes, outputs, and outcomes in order to improve the degree of organizational target achievement and precise reporting. In the next sections, this description is used to develop an instrument for controlling and reporting human capital. With the help of leading indicators, this instrument enables the active control of human capital aspects with regard to corporate strategy. In Sect. 4.1, we develop a cause-and-effect model that links the company's human capital to financial performance. On this basis, we present an instrument for human capital controlling, as well as the steps for its implementation in Sect. 4.2. However, although there are other approaches with regard to controlling and reporting human capital, the instrument introduced in the following sections illustrates the theoretical findings by means of a practical example. Thus, this approach crucially supports design-orientated research, as well as the design of a human-capital-related controlling and reporting instrument against the background of other settings.

#### 4.1 Cause-and-effect model of human capital

As a starting point, we developed a theoretical model comprising a section of a company's value-adding process that focuses on human capital. Like a strategy map (Kaplan and Norton 2004a, 2004b), the model has a cause-and-effect system that constitutes final relationships between a company's human capital and its financial performance, while taking three factor levels into consideration (see Fig. 4).

The model considers the direct and indirect relationships between the different factor levels, as well as possible back couplings and direct cost effects in the sense of a direct cost reduction. The relationships, back couplings, and effects comprise:



**Fig. 4** Cause-and-effect model of human capital

1. Workforce-related factors (human capital), such as the workforce's capabilities, its motivation, and commitment. Hence, workforce-related factors can be equated with a company's human capital. Furthermore, these workforce-related factors are interconnected, because they continuously influence one another (Guenther and Neumann 2005) while directly influencing company-internal factors.
2. Company-internal factors (structural capital) include a company's operational performance, its innovation ability, as well as its corporate culture. These factors describe the company's internal processes and can be regarded its core competencies. Mostly, internal factors result from workforce abilities. These internal factors constitute one of the most important drivers of competitive advantages (Prahalad and Hamel 1990) and directly influence the company-external factors.
3. Company-external factors (relational capital) are parameters outside the company that are relevant to a company's success. They are reflected in a company's attractiveness and reputation, as well as in particular stakeholders' level of need satisfaction. Company-external factors have a direct influence on the company's financial outcome. They can be regarded the link between a company and its environment, and enable sustained value creation. Thus, the company-external factors are directly reflected in the financial outcome.

The financial outcome can be considered a company's output quantity represented by either financial performance or shareholder value. However, financial outcome can be positively influenced by increased revenues or decreased costs. All the above-mentioned factors have a direct or indirect influence on financial performance, either through an increase (decrease) in returns or a decrease (increase) in costs.

When designing an instrument for human capital controlling, these cause-and-effect relationships have to be considered. In doing so, the model's different dimensions have to be operationalized by defining appropriate KPIs for each factor category. The concrete elaboration of cause-and-effect relationships, as well as the concrete choice of indicators is crucial for the instrument and has to be discussed by the implementing company's members. The KPIs have to be chosen with regard to the individual corporate strategy and the human capital strategy.

#### 4.2 Designing the control instrument

Against the background of a research project financed by the German Ministry of Research and Education, an instrument was developed for strategic internal control and reporting. The instrument was implemented in a large German automobile industry corporation with more than 20,000 employees in a case study context.<sup>9</sup> The instrument is based on a scorecard or indicator-based approach, and uses various KPIs to

<sup>9</sup>Several other concepts were developed in this context (Kaplan and Norton 1996; Wucknitz 2009; Scholz et al. 2004). Our instrument observes and visualizes a variety of cause and effect relationships of human capital (which we have verified in joint workshops with the practice partners), ranging from qualification and motivational aspects to financial ratios and operationalizes them with appropriate KPIs across all levels. This includes "soft" ratios in terms of motivation etc., but also "hard" indicators, which have a corresponding financial basis. So we try to combine the advantages of the other methods. Finally we carry all the relevant human capital information visually together in a management cockpit. This cockpit design considers the mode of action of human capital in the installation process.



measure and account for the company's human capital. Within the case study, we employed five steps when designing this instrument for human capital controlling and reporting:

- (1) Incorporating human capital into strategic corporate management starts with an analysis of the addressees and/or recipients of a report. Since the addressees and/or recipients' decisions will later be supported by the tool to be implemented, they should be integrated into this design from the outset. The recipients' information requirements should be determined during workshops and interviews.
- (2) The purpose of the second step (impact analysis) is to glean a comprehensive picture of human capital's impact on business performance (Marr 2006). This includes an analysis of human capital's interaction with other intangible assets' components (structural and relational capital). It has proved helpful to graphically represent intangible assets' final effect on a company's financial performance in the form of cause-and-effect relationships (as shown in Fig. 4). At best, this illustrates intangible resources' transformation into financial and economic (i.e. monetary) results (Marr 2006; Kaplan and Norton 2004a, 2004b; Marr et al. 2004). This allows decision-makers to provide targeted control.
- (3) In this step, the human capital's components must be made measurable to make them accessible for active control. This requires assigning indicators with which the specific value's characteristics can be measured. The quantification of human capital's components by means of applicable indicators gives the company's decision-makers a possibility to intervene in terms of its (strategic) development.
- (4) In the fourth step, the human capital controlling and reporting tool is designed. The design should not only focus on using the relevant KPIs, but should also incorporate a visually appealing user interface (management cockpit). It is crucial that the graphical design represents human capital's mechanism with reference to the cause-and-effect relationships identified in step 2. These indicators can then perform their function as leading indicators and plot developments from the outset. Furthermore, this step also contains other framework conditions such as the measuring frequency, reference values, and responsibilities in the company.
- (5) The fifth step involves making the measurement information internally and externally available. For reasons of complexity, the available human capital information should be integrated into existing reporting channels, such as an addendum to the annual financial statements.

We thus developed an instrument for human capital controlling and reporting within a case study and based on these five steps. Figure 5 shows the developed instrument with its dimensions—*motivation and commitment, qualification and development, employer branding, productivity, and financial success*. It contains human capital's components and explains its causes and effects within the company.

Each of the control and reporting tool's dimensions is operationalized by a specific number of KPIs. Each strategic sub-goal is assigned to a dimension defined in the framework. From this sub-goal, each indicator's corresponding target values are derived and serve as reference values for the realized values in the survey period. Furthermore, an indicator sheet is constructed for each indicator applied in the control and reporting tool. This indicator sheet contains all of the appropriate indicator's

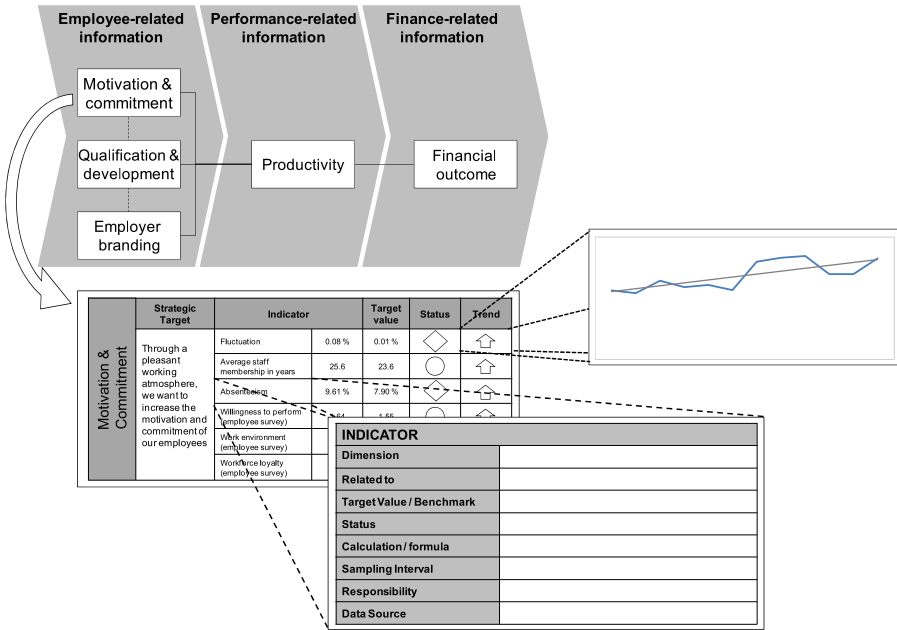


Fig. 5 Performance management instrument for human capital controlling and reporting

relevant information in a separate field (see Fig. 5). The indicator’s development over time is also displayed graphically, as shown in the amplification of Fig. 5. Thus, this visualization enables interpreting such a development and makes all the relevant information available that decision-makers require. With the help of the developed instrument, it is possible to actively control human capital by taking into account the overall corporate strategy, as well as possible time-offset effects.

5 Conclusion and limitations

Human capital is one of the most important organizational resources. However, at present, it is only marginally considered in companies’ internal and external control and reporting instruments. On the one hand, this can lead to a misallocation of resources, agency and transaction cost, as well as to possible market inefficiencies since—due to a lack of information—shareholders cannot appropriately evaluate their investment objects’ financial status. On the other hand, it is impossible to control human capital with regard to the company’s strategic objectives if this capital is not adequately considered in strategic performance management instruments. Hence, in this paper we have therefore pursued two objectives:

First, the drivers influencing companies to disclose human capital information have been identified. Since this information seems relevant (or it would not be disclosed), the disclosing companies are also presumed to use this information internally for control purposes. We undertook content analysis to detect the amount of human

capital information and its content provided by Germany's 130 largest listed companies. In total, we analyzed more than 82,000 pages of annual reports by generating four human capital disclosure indexes. We used these indexes to empirically identify drivers influencing such disclosures. Our results show that human capital disclosures are affected by the same drivers as disclosures in other areas. Therefore, the most important determinants of human capital disclosures are the companies' size, industry membership, as well as their shareholder structure. In the field of accounting research, our results extend the discussion about voluntary disclosure choices (Fields et al. 2001). As large companies report more than small ones and non-service firms more than service companies, we can assume that companies want to reach different stakeholders with the reporting. Companies intend to affect the stakeholders' attitudes towards them in a favorable manner. They cater to represent themselves as positive as possible in public. In focus are those companies, which are already met with much attention, either because they are particularly large (e.g. they have many employees or are listed on a prominent stock index), or because they are in the public eye by reason of other things like environmental aspects or through labor union-related topics. Accordingly, these companies report more about human capital and other aspects than other companies. Hence, by providing human capital information, companies try to influence the decisions of external stakeholders and to avoid potential regulations by politicians or harmful actions by other pressure groups ('influencing external parties' category mentioned by Fields et al. 2001).

In order to reduce capital costs, businesses disperse as much as possible (positive) information about internal conditions, including also on human capital. The positive correlation between free float and reporting shows that the more shares are in public float, the stronger companies depend on formal means of reporting—and apparently also make use of them to reach their stakeholders. The motivation behind this is that because of more information the risk is lower for shareholders to make wrong decisions. Voluntary disclosures—at least disclosures on resources like human capital—help to reduce information asymmetries which arise when individually held information is not perfectly aggregated by capital market participants (Fields et al. 2001). Consequently more reporting leads to lower (equity) capital costs as the company specific risk premium is reduced due to improved information situation. Accordingly these companies report more than others. However, we found no relationship between profitability and human capital disclosures. Furthermore, and in line with previous literature, our results show that the number of human capital disclosures is increasing over time. Companies with low disclosure levels, such as those from the financial services and media industries, should specifically acknowledge and consider this. Such companies perhaps need to rethink and adjust their disclosure behavior to this new state-of-the-art in order to remain up to date. However, as with all empirical and conceptual research, our results are subject to limitations. The industry classification used to achieve our empirical results is open to criticism, as some industries are only represented by a single company. Further limitations arise from the way content analysis was undertaken. Using keywords as units of analysis may be an inappropriate methodology, as the words are detached from their contextual background. Additionally, deriving keywords for the content analysis from previous studies is not risk-free, as these studies might not capture all relevant aspects of hu-

man capital. Finally, since only one country was researched, the cultural as well as regulatory aspects cannot be generalized.

Second, we introduced a performance management instrument that allows human capital to be controlled actively with regard to the company's strategy by considering the human-capital-related cause-and-effect relationships. Hence, this approach enables designing performance management systems with a focus on human capital. On the basis of the assumed cause-and-effect relations, we designed an indicator-based instrument that controls this resource and also takes corporate strategy into account. Furthermore, we introduced a five-step processing concept to implement the instrument. This processing concept enables companies to design and implement a firm-specific instrument for human capital controlling. However, there are some limitations with regard to the developed model: Its background is open to criticism, as we did not empirically verify human capital reporting's assumed cause-and-effect relationships before implementing the instrument. Furthermore, the instrument's assumed positive effects on corporate performance could not be verified at this early implementation stage.

Despite these limitations, we believe that our results provide interesting insights into the drivers of human capital reporting and into theories' contributions to human capital reporting's possible effects on corporate performance. Additional research should consider these effects in greater detail. The effects of internally and externally provided information on corporate financial performance have to be specifically examined, as well as their effects on companies' market value (e.g., on share price). Further research could also examine the developed model in more detail in respect of its assumed positive effects on corporate financial performance.

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