Human resource management and its impact on strategic business-IT alignment: A literature review and avenues for future research

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ABSTRACT

From an information systems perspective, organizations striving to leverage a strategic alignment between Information Technology (IT) and business areas often underestimate the role of human resource management in creating business value. This literature review analyzes 71 scholarly articles to assess the role of human resource management in supporting the strategic alignment between business and IT. We identify the organizational role of individual human resources in strategic alignment, their contribution to more effective strategic alignment, and how human resource management supports such contribution. Based on these insights, we formulate propositions and identify avenues for future research.

Introduction

In information systems (IS) research, it is widely acknowledged that the strategic alignment of information technology (IT) and business areas, hereinafter referred to as strategic alignment, plays a crucial role in enhancing an organization's performance, innovative ability and competitive advantage (Chan and Reich, 2007; Gerow et al., 2014). Strategic alignment goes well beyond the role of IT hard- and software in the business setting by decisively bridging the gap between business and IT on the strategic and operational level (Henderson and Venkatraman, 1993). The executives and managers responsible for setting the organization's missions, plans and objectives are the most important stakeholders and frequent focus of academic research (Reich and Benbasat, 2000; Schult and Wolff, 2012). Other stakeholders representing a central resource for the creation of business value, such as non-management business and IT personnel (Melville et al., 2004; Rockart et al., 1996), have received less attention in extant research. The objective of this paper is to provide a systematic overview of the current academic understanding of the role of these stakeholders in sustaining and improving strategic alignment.

For decades, scholars have relied on Henderson and Venkatraman's Strategic Alignment Model (Henderson and Venkatraman, 1993) to explain strategic alignment in organizations. The model mirrors a traditional focus on the business and IT areas, only mentioning human resources in the context of certain domain components. Although the model has proven useful for a long time (Avison et al., 2004; Renaud et al., 2016), it is not sufficient to meet the demand of 'aligning' human resources (Gagnon et al., 2008). Even though alignment research shows the benefits of aligning an explicit human resource (HR) strategy with the strategic goals of the

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Table 1

Overview of HRM functional tasks and practices (Noe et al., 2020; Wirtky et al., 2016).

Functional task	Practices
Planning involves determining how many employees and what skills are required to best meet the organization's future operational requirements.	*Job analysis* determines detailed information in terms of hard and soft skills needed in the short and long term. *Job design* defines the way work will be performed and the tasks that a given job entails. *HR planning* identifies the numbers and types of human resources required for meeting organizational goals.
Resourcing involves obtaining and productively employing the human resources necessary for fulfilling organizational needs.	*Internal staffing* matches human resource requirements with possible supply from within the organization. *External recruitment* seeks applicants from outside the organization for potential employment. *Selection* identifies the best candidates with appropriate knowledge, skills, and abilities.
Developing employees is critical for organizations in order to improve employees' job performance and prepare them for future tasks or positions.	*Performance management* determines output and performance of personnel, compares it with targets, and analyses discrepancies. *Training* enables employees to learn job-related knowledge, skills and behaviors. *Development* enables employees to acquire knowledge, skills and behaviors, improving their ability to meet changes in job requirements and in customer demands.
Motivating employees is essential in highly competitive labor markets. Motivational incentives result in higher performance and loyalty.	*Compensation* administers rewards in terms of pay and benefits linked to individual or group achievement. *Talent management* systematically retains employees and plans career opportunities. *Employee relations* maintains a positive work environment, improves collaboration in the workplace and helps corporate communication with diverse stakeholders.
Administrating and supporting other functional tasks through predominantly repetitive practices is helpful to establish a cultural and legal environment and to reduce costs.	*Personnel policies* cover desired beliefs, morals, and behaviors human resources should adhere to. *Labor compliance* ensures compliance with labor laws and regulations. *HR controlling* records, uses and analyzes human resource data to make evidence-based decisions.

business and IT areas (Baets, 1992), most organizations have not assigned responsibility for managing human resources in a way that achieves and sustains strategic alignment.

Traditionally, human resource management (HRM) is an organizational, strategic function dedicated to managing all individuals involved in driving business success and gaining competitive advantage, often performed by a human resource (HR) department. Several challenges demand the transformation of HRM to a 'business partner' with a more strategic role in terms of more involvement and responsibilities in the business (Ulrich, 2009; Ulrich, 1997; Wright, 2011). This transformation involves shifting HRM strategically from a downstream secondary process to an interdisciplinary and cross-departmental function that supports multiple areas and builds the organization's knowledge and skill base. Sustaining strategic alignment has long been the endeavor of organizations (Luftman and Brier, 1999), and effective HRM can help them achieve this goal. In order to create '*a firm foundation for advancing knowledge*' (Webster and Watson, 2002, p. xiii), we review prior research on strategic alignment and synthesize fundamental knowledge as well as research insights into how HRM sustains strategic alignment. This literature review identifies the roles relevant to strategic alignment and how individuals in these roles contribute to strategic alignment. Furthermore, several functional tasks of HRM and their impact are revealed in this context. We deduce several propositions and avenues for future research from these insights.

The methodological approach of this literature review is to apply grounded theory to generate rigorous outcomes and new perspectives on previously established areas. We begin by outlining the essential elements of HRM and strategic alignment and explaining our methodological approach. Then we present the insights gained through our literature review and suggest avenues for future research, before discussing our contributions and the implications of our research.

Human resource management and strategic alignment

Traditionally, the HRM function adopts various practices, policies, and systems to manage the human resources employed in the organization and gain an advantage over competitors (Jackson et al., 2014; Noe et al., 2020). In order to reveal how HRM contributes to more effective strategic alignment, we first investigate the functional tasks and practices of HRM as potential channels for managing human resources in the context of strategic alignment.

The functional tasks of human resource management

To meet and manage the organization's need for talent and skills, the HRM function traditionally focuses on several functional tasks involving a number of established practices (Noe et al., 2020; Wirtky et al., 2016). Table 1 provides a brief description of these functional tasks and practices and their objectives.

Organizations need skilled and motivated individuals. HRM is thus concerned with finding, employing, retaining and developing a workforce that matches the demands of the organization. Long-term human resources demand based on internal forecasts and business-relevant insights and challenges is matched with supply opportunities (Noe et al., 2020). Organizations can fill jobs or staff teams either internally with existing personnel or from the external labor market through recruitment. External recruitment is necessary when open positions cannot be adequately staffed with existing personnel. Potential candidates from outside the organization need to be attracted, selected and hired. Certain aspects of this process, such as posting open positions and processing incoming
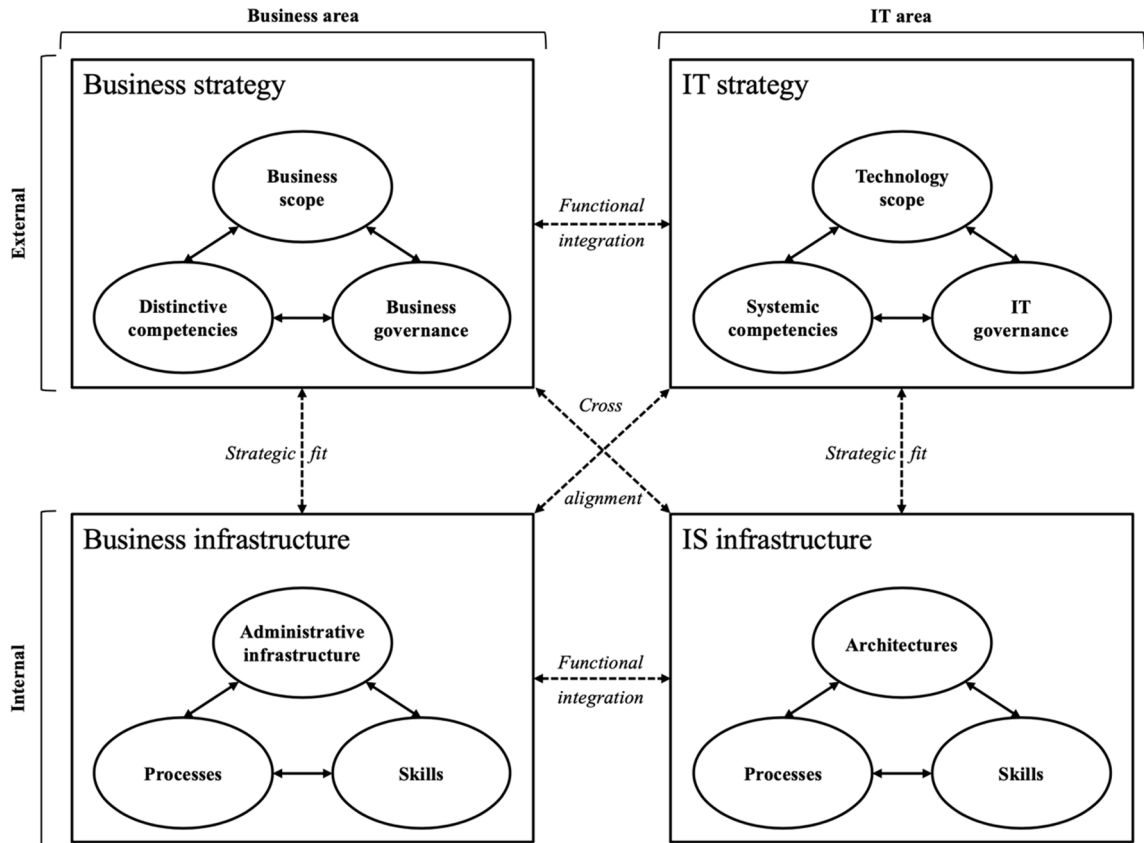
Fig. 1. The Strategic Alignment Model (adapted from Henderson and Venkatraman, 1993).

applications, can be standardized whereas other aspects, such as proactively reaching out to potential candidates, screening applications and offering jobs, require close integration with the organization's wider network (Wirtky et al., 2016). HRM motivates and develops individuals using various practices in order to support and facilitate their retention and career advancement within the organization. Specific practices help administrating and supporting these functional tasks (Noe et al., 2020).

In order to identify the HRM tasks and practices required to sustain strategic alignment effectively, the current role and contribution of the human resources involved in strategic alignment must first be understood.

The strategic alignment model

Strategic alignment has its roots in organization and strategic management literature in the 1980s, at a time when organizations began recognizing the value of IS in achieving high performance and maximum efficiency. In the late 80s and early 90s, the concept of strategic alignment was taken up in IS literature (Scott-Morton, 1991). In 1993, Henderson and Venkatraman built on strategic alignment concepts to develop the Strategic Alignment Model (SAM), which has remained one of the most utilized models in research as well as by organizations since that time (Avison et al., 2004; Renaud et al., 2016).

As illustrated in Fig. 1, SAM represents organizations as four domains in an action field spanning the two areas, business and IT, across two levels, external strategy and internal infrastructure. The four domains are thus business strategy and business infrastructure as well as IT strategy and IS infrastructure. Each of these four domains has three primary components which are related to one another within the domain.

- The business strategy determines how the organization is positioned and competes in the product/service marketplace. It comprises business scope (representing the choice of product/service-market offerings), distinctive competencies (in form of strategy attributes contributing to distinctive, comparative advantages over competitors), and business governance (representing the array of interfirm relationships).
- The business infrastructure, the business structure's composition and operative management, consists of the organization's administrative structure, central business processes ensuring the execution of business strategies, and the required business skills to execute these strategies.

Table 2

Literature review approach based on grounded theory (Wolfswinkel et al., 2013).

Step	Task	Application in this review
1 Definition	Define inclusion and exclusion criteria	Strategic alignment literature published 1990–2019
	Identify research fields	IS, business, organization
	Determine appropriate sources	Top IS journals, top business and organization journals for IS researchers, hybrid practitioner journals
	Choose search terms	'strategic alignment, 'alignment', 'IT-business alignment', 'business-IT alignment'
2 Search	Perform search	Search in electronic databases, including forward and backward searches
3 Selection	Refine sample	Final sample of 71 articles
4 Analysis	Open coding	Identification of first order concepts, second order themes and aggregated dimensions related to human resources
	Axial coding	Refinement of aggregated dimensions
	Selective coding	Relation of dimensions to each other
5 Presentation	Structure content	Present results and derive several propositions and future research directions

- The IT strategy specifies how the organization is positioned and competes in the IT marketplace. It includes IT scope (which is the choice of applied information technologies), systemic competencies (in form of IT strategy attributes contributing to systemic advantages over competitors), and IT governance (which is the selection and use of tasks to achieve IT competencies).
- The IS infrastructure comprises the portfolio and configuration of the technical structure related to the IS architecture, central IS processes operating the IS infrastructure, and the required IS skills to manage and operate the IS infrastructure.

The model also illustrates the alignment between the domains. The two domains within each area (business strategy and business infrastructure; IT strategy and IS infrastructure) are aligned via strategic fit, which is defined as the fit between the organization's external position and its internal arrangement, with regard to business or IT (Henderson and Venkatraman, 1993). The two domains at each level (business strategy and IT strategy; business infrastructure and IS infrastructure) are aligned via functional integration, based on an organization's need to integrate its business strategy with IT strategy as well as the business infrastructure with IS infrastructure. These connections are complemented by cross alignment between the domains. By improving these alignments, organizations can advance their overall performance (Henderson and Venkatraman, 1993).

Human resources in the context of strategic alignment

In the strategic alignment model, human resource-related integration is less consistent and more distributed. First, human resources are mentioned explicitly in the context of the skills required to develop business and IT infrastructure (Henderson and Venkatraman, 1993). They are seen as a knowledge resource required to bridge business and IT processes, business administration and IT architectures, and to adjust them as circumstances change. Second, human resources are referred to weakly in terms of roles, responsibilities or relationships (Rockart et al., 1996). This weak reference raises the question of whether human resources are adequately considered, given their key role in achieving overall organizational objectives by executing tasks and activities needed to realize the organization's business strategy and create value (Baets, 1992). Research published shortly after the development of the strategic alignment concept for IS research argues for considering the contribution of involved personnel when considering value creation through IT usage (Baets, 1992). More recent research into strategic alignment and value creation reiterates the need to invest not only in technological resources, but in personnel as well (Boddy and Paton, 2005; Bresnahan et al., 2002; Kappelman et al., 2019). While HRM was traditionally seen as one of many responsibilities of the HR department the days of considering HRM as a cost-causing part of business that predominantly involves administrative tasks are long gone. An increasing number of organizations now regard HRM as a strategic, interdisciplinary and cross-departmental function that directly contributes to profit increase, albeit often without giving it decision-making authority, embedding it strategically or investing adequately in its personnel (Ulrich, 1997). Prior research thus recommends investing in individuals and considering human resources as contributors to effective strategic alignment (Baets, 1992; Brown and Magill, 1998). To adequately investigate how human resources and HRM sustain strategic alignment, the roles and contributions of the human resources identified in alignment literature must be first understood.

Grounded theory review approach

In order to reveal the impact of HRM on strategic alignment, we pursue a grounded theory approach to reviewing a broad and representative sample of prior research. Although grounded theory is generally considered a meta-theory of inductive research design, review guidelines (e.g. the *Grounded Theory Literature Review Method* by Wolfswinkel et al. (2013)) adopting its intent and approach have recently been developed. Taking a grounded theory approach to review literature provides the unique opportunity of developing new perspectives on well-established research fields (Sousa and Hendriks, 2006). Furthermore, this approach provides a more systematized review process and more rigorous outcomes than other review approaches (Wolfswinkel et al., 2013). Prior research on strategic alignment has already successfully used grounded theory to review literature in order to develop new perspectives, e.g. by revealing explanations for the disparity between the intended contribution of strategic alignment and the practical consequences of its

Table 3

Overview of selected research articles by publication outlets.

Publication outlet	Outlet category	Article count
Academy of Management Journal (B, O)	Academic journals	–
Academy of Management Review (B, O)		–
Administrative Science Quarterly (B, O)		–
Decision Support Systems (IS)		1
European Journal of Information Systems (IS)		4
Information & Management (IS)		7
Information Systems Journal (IS)		4
Information Systems Research (IS)		5
International Journal of Electronic Commerce (IS)		–
Journal of the Association for Information Systems (IS)		–
Journal of Information Technology (IS)		9
Journal of Management Information Systems (IS)		7
Journal of Marketing (B)		–
Journal of Strategic Information Systems (IS)		7
Management Science (B, O)		–
MIS Quarterly (IS)		9
Organization Science (B, O)		2
Organizational Behavior and Human Decision Processes (O)		–
Strategic Management Journal (B)		1
The DATA BASE for Advances in Information Systems (IS)		1
California Management Review (B)	Hybrid practitioner journals	3
Harvard Business Review (B)		1
IBM Systems Journal (IS)		2
MIS Quarterly Executive (IS)		5
Sloan Management Review (B)		3
Total selected articles		**71**

Note: Letters in brackets indicate the scientific discipline from which the journal stem from; B = business, IS = information systems, O = organization.

application in the organizational context (Renaud et al., 2016). Methodologically, we follow the systematic five-step procedure of the grounded theory literature review method (Wolfswinkel et al. (2013), as illustrated in Table 2.

First, we defined the scope of the review in order to identify a strong sample of articles. To be included in the sample, the article either had to focus or list strategic alignment as a distinct research topic. As strategic alignment has its roots in IS, business and organization research (Henderson and Venkatraman, 1993), the review focuses on these research fields, complying with recommendations to include sources outside the IS field (Webster and Watson, 2002). Based on this focus, we identified appropriate outlets containing major contributions in highly respected journals in the fields. In IS, we limited our search to the eleven major IS outlets identified by Lowry et al. (2013, see Table 2). In business and organization, we included the *Top Business Journals for IS Researchers* and *Top Organization Journals for IS Researchers* identified by Lowry et al. (2004). We further extended the source list by adding so-called boundary-spanning or hybrid practitioner journals. Such journals publish articles that explicitly provide knowledge for practitioners on the basis of research results (Wiener et al., 2018). After eliminating double listings, our sample consisted of 21 outlets, nearly all of which were also selected by prior reviews of strategic alignment literature (Chan and Reich, 2007; Gerow et al., 2014; Renaud et al., 2016, see Table 2). We considered research published in 1990 or later because the concept of strategic alignment was first taken up in IS research in 1990 (Renaud et al., 2016; Scott-Morton, 1991). We are aware that the concept first appeared in strategic management literature in the mid- to late-1980s, but we determined that vast majority of significant relevant research findings were published in or after 1990.

Second, we searched for relevant articles published in the outlets identified using multiple electronic databases covering the outlets, including *Business Source Ultimate*[1] and *Scopus*[2] as well as in each journal's online archive. Following the lead of prior reviews of alignment literature (Chan and Reich, 2007; Gerow et al., 2016), we chose general search terms that we would expect to be mentioned in the articles' title, abstract or keywords (see Table 2). In case that abstract or keywords were not available, we extended the search area to the full text.

Third, we selected articles relevant to our review. After filtering out doubles, the initial sample contained 373 articles, which we screened in two groups of two authors each. First, both groups screened all articles based on title and abstract, and then based on full text. The focus of full text screening was to identify articles that explicitly mention human resources[3] in the context of strategic alignment. Articles that marginally refer to human resources, for example in terms of the organization size as measured by the headcount, were excluded, whereas articles concretely addressing behaviors or activities of human resources or distinct practices to manage them were included. Next, the two groups compared their selection lists and agreed on a sample of 60 articles. In a third step, we performed a forward and backward search of citations and screened the resulting articles as in step one, resulting in 11 additional

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[1] Via EBSCOhost.
[2] https://www.scopus.com/.
[3] Including various synonyms such as 'personnel', 'employees', 'professionals', and 'staff' among others

1st order concepts (examples) 2nd order themes Aggregate dimensions

1st order concepts (examples)	2nd order themes	Aggregate dimensions
CEO, CIO, top managers, top management team, top management, top executives, top level	Top-level management roles	Involved roles
Senior business managers, senior business executives, senior IT managers, head IT manager, senior managers	Middle-level management roles	
Business managers, line executives, line managers, business management, IT managers, IT executives	Lower-level management roles	
Business personnel, business staff, business people, IT personnel, IT experts, IS professionals, IT staff	Non-management roles	
Build partnerships, develop relationships, collaborate, communicate, coordinate	Partnering behavior	Alignment behavior
Share competence, share knowledge, share understanding, share responsibility, share vision	Sharing behavior	
Business knowledge, business understanding, business capabilities, customer understanding	Business competence	Alignment competence
Cross-functional experience, cross-functional skills, cross-domain knowledge, hybrid skills	Cross competence	
IT knowledge, IS knowledge, IS skills, IT expertise, IT experience, IT understanding, IT capability	IT competence	
Interpersonal skills, leadership skills, negotiation skills, people management skills, problem-solving skill	Area-unspecific competence	
Agility, awareness, commitment, identification, loyalty, openness to ideas	Individual attitude	Alignment culture
Community, empowerment, involvement, leadership, interest, respect, tolerance, trust, support	Interpersonal attitude	
Job analysis, job profiling, competence profiling, HR controlling, identification, position creation	Planning	HRM functional tasks
Composition, staffing, forming, internal recruitment, attraction, recruitment, hiring, selection	Resourcing	
Performance measurement, feedback, development programs, training, seminars, workshops, coaching, mentoring, job transition, job rotation, hands-on experience, on-the-job experience, secondments	Developing	
Compensation, incentivation, bonus, rewards, talent management, promotion, lateral movement, retention	Motivating	
Formal interaction, meetings, steering committees, reporting, informal interaction, networks, joint work	Uniting	
Controlling, measurement, evaluation, information, scheduling, personnel policies, behavior formalization	Administrating	

Fig. 2. Data structure.

articles and a final sample of 71 articles (see Table 3).

Fourth, we analyzed the articles in our sample, extracting 154 passages related to human resources (predominantly from the results, discussion and implications sections) and coded them using the open, axial and selective coding process recommended by
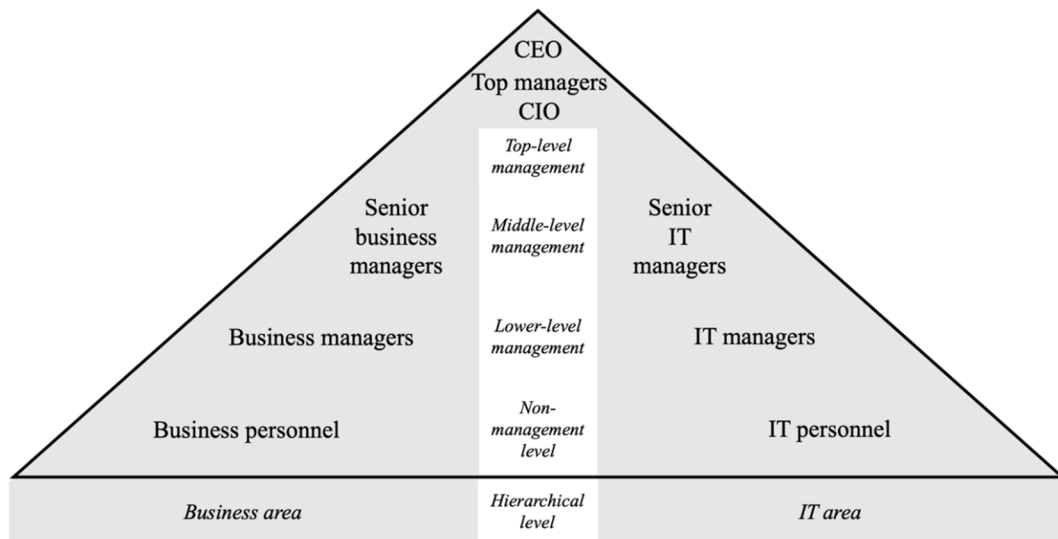
Fig. 3. Assignment of roles involved in strategic alignment to traditional organizational hierarchical levels.

Wolfswinkel et al. (2013). In the open coding process, each extracted passage was coded by all authors in the course of an internal coding workshop according to the procedure proposed in prior grounded theory research (Gioia et al., 2013). We performed open coding by marking first order, informant-centric concepts related to human resources in the context of strategic alignment in each extract and developed a comprehensive compendium of these concepts. In order to identify and expound relevant HRM practices as well as their impact, we refered to their definitions in prior research (Noe et al., 2020; Wirtky et al., 2016) and searched for corresponding indications of these definitions in the text excerpts. We then established our data structure according to Gioia et al. (2013) by organizing the first order concepts into second order, theory-centric themes, and by distilling those into aggregated dimensions (see Fig. 2). During this procedure, five distinct dimensions related to human resources in the context of strategic alignment were identified. In the axial coding process, we refined the aggregated dimensions by compiling second order themes and their relations within the dimensions. Finally, in the selective coding process, we determined the dimensions' and the affiliated themes' relations to each other and mapped these connections.

In a fifth and final step, we present our findings in the remainder of this article.

Sustaining strategic alignment through human resource management

The first objective of our research is to identify relevant concepts explaining the connection of strategic alignment, human resources and HRM. We derived these during open and axial coding of text excerpts drawn from the selected articles (see Tables A1-A6; Tables A1-A7 are included in Appendix A). We reveal the connections between the concepts by using selective coding (see Table A.7). We begin by identifying human resources who are evidently involved in strategic alignment endeavors on account of their organizational roles. Subsequently, we present these roles' contribution to strategic alignment in three dimensions: alignment behavior, alignment competence and alignment culture. We further identify tasks within the scope of an additional dimension referring to the HRM function that impact the contribution of human resources to effective strategic alignment. We frame our insights from the synthesis of findings as propositions in the following subsections.

Identifying the roles involved in strategic alignment

As we aim to reveal how HRM can sustain effective strategic alignment, we initially require an understanding of the organizational roles involved in strategic alignment and the respective tasks. The selected articles differ somewhat with regard to the names of involved organizational roles. Many articles are unspecific in their naming of roles, referring generally to the 'business' or the 'IT' including various diversifications such as the business and IT domain(s), function(s), division(s) and unit(s), among others (e.g. Baets, 1992; Dulipovici and Robey, 2013; Schlosser et al., 2015; Willcoxson and Chatham, 2004). Those roles involved in strategic alignment and explicitly specified in a large number of articles (e.g. Bassellier et al., 2003; Preston and Karahanna, 2009a; Wu et al., 2015; Yayla and Hu, 2012) were then assigned to organizations' hierarchical levels (see Fig. 3):

In top-down order, we begin with the organization's top-level management, where the strategic alignment research mentions the Chief Executive Officer (CEO), the top managers, and the Chief Information Officer (CIO). Whereas the positions of the CEO and the top managers are long established in organizational history, the CIO as a member of top-level management represents a reform in most organizations (Karahanna and Preston, 2013). Besides the overall management of the organization, top-level management is involved in strategic alignment and value creation as it determines the alignment of the business and the IS strategy (Chan, 2002; Reich and
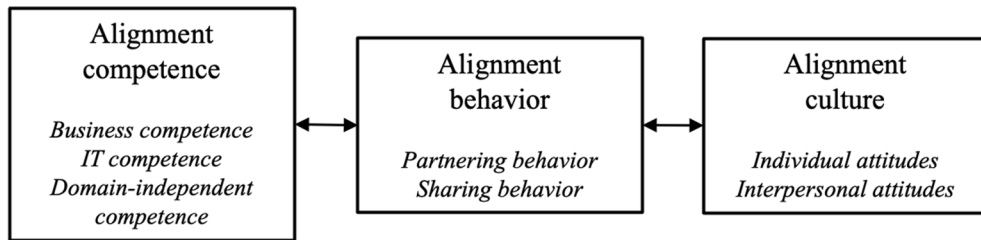
Fig. 4. Contribution of involved roles to strategic alignment.

Table 4
Overview of alignment behavior manifestations.

Behavior manifestation	Description	Exemplary concepts
Partnering behavior	Behavior that is characterized by close and partnering relationships of individuals involved in strategic alignment.	Build partnerships, develop relationships, communicate, collaborate, coordinate
Sharing behavior	Behavior that builds on mutual exchange between involved individuals.	Share knowledge, share language, share understanding, share responsibility, share vision

Benbasat, 2000). Proceeding to the organization's middle-level management, we see a distinct assignment of the involved roles to the business and IT area, the senior business managers and senior IT managers (Karpovsky and Galliers, 2015; Luftman and Brier, 1999; Luftman and Kempaiah, 2007). One hierarchical level below that, on the lower-level management level, prior research names the business managers and the IT managers as relevant actors. They devise strategic alignment structures and processes as well as set goals and directions in their respective business or IT division (Feeny and Willcocks, 1998). The lowest hierarchical level in the organization, the non-management workforce level, comprises all non-management personnel from business and IT. In the context of strategic alignment, business and IT personnel possess distinct competencies and apply them to perform processes, develop various solutions, and execute the determined strategy (Baets, 1992; Henderson and Venkatraman, 1993; Kaplan and Norton, 2004). Many articles only mention the personnel in general and do not specify whether they belong to the business or IT division (see Table A.1 for a detailed overview of all identified roles and synonyms, their allocation to the hierarchical levels, and the references). Since all human resources actively involved in strategic alignment should be managed to achieve sustainable strategic alignment from a human resource perspective, we propose:

Proposition 1. (:)   *Individuals in roles from all hierarchical levels of the organization are involved in strategic alignment.*

The contribution of roles involved in strategic alignment

To enhance strategic alignment, each individual involved must contribute to it within the scope of his or her assigned role. HRM traditionally addresses the management of all involved human resources in terms of fulfilling the roles assigned to them. We therefore outline three types of contribution from the involved roles that we identified in the selected articles in order to provide a starting point for HRM to sustain strategic alignment (see Fig. 4).

Alignment behavior

Our review indicates that the way different roles from business and IT behave towards each other has a strong impact on strategic alignment. This behavior, which we label alignment behavior in the following, manifests as partnering and sharing and is characterized by several related concepts (see Table 4 below and Table A.2 for a detailed overview).

Partnering in this context refers to building strong partnering relationships (Feeny and Willcocks, 1998; Guillemette and Paré, 2012; Luftman and Kempaiah, 2007). Prior research reveals that such relationships contribute to strategic alignment (Bassellier and Benbasat, 2004; Benbya and McKelvey, 2006; Chan and Reich, 2007; Karpovsky and Galliers, 2015) across hierarchical levels and areas (Baets, 1992; see also Table A.2). Partnering behavior is further characterized by involved roles continuously communicating with each other, which contributes to strategic alignment (Benbya and McKelvey, 2006; Chen, 2010; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Reich and Benbasat, 2000; Wagner and Weitzel, 2012; Wong et al., 2012), and strengthens the necessary relationships (Karpovsky and Galliers, 2015). In turn, established relationships encourage communication between the individuals in involved roles (Feeny and Willcocks, 1998; Luftman and Brier, 1999; Wagner and Weitzel, 2012), which is why communication occurs across hierarchies and functions. Two further characteristics describing partnering behavior and thus impacting strategic alignment are collaboration and coordination (Benbya and McKelvey, 2006; Schlosser et al., 2015), which occur across functions, for example when business and IT personnel collaborate (Valorinta, 2011) and business and IT managers coordinate.

Alignment behavior also includes sharing behavior between individuals. Strategic alignment benefits from individuals sharing their competencies in terms of knowledge, skills or experiences (Chan and Reich, 2007; Reich and Benbasat, 2000; Zhou et al., 2018), their language (Benbya and McKelvey, 2006), and their understanding across hierarchical levels and functions (Preston and Karahanna,

Table 5
Overview of alignment competence manifestations.

Competence manifestation	Description	Exemplary concepts
Business competence	Specific competence that is necessary for performing tasks in the business domain.	Business knowledge, business understanding, customer understanding, market understanding
IT competence	Specific competence that is required for executing tasks in the IT domain.	IT knowledge, IT skills, IS skills, technical skills, IS knowledge, IT experience, technical capabilities, IT expertise
Domain-independent competence	Additional competence that involved individuals should possess regardless of their affiliation to the business and IT domain.	Interpersonal skills, negotiation skills, people management skills, managerial skills, leadership skills, project management skills

2009a; Wu et al., 2015). Individuals on the management level further contribute to strategic alignment by sharing a common vision as well as sharing the related responsibilities, risks and rewards (Chan and Reich, 2007; Luftman and Brier, 1999; Preston and Karahanna, 2009b). The characteristics of sharing behavior across roles are interrelated. For example, sharing a common language facilitates sharing competencies and understanding (Bassellier et al., 2003; Preston and Karahanna, 2009a; Wagner et al., 2014), sharing competencies enables the development of shared understanding and vision (Preston and Karahanna, 2009a, 2009b), and shared understanding mediates the sharing of language (Preston and Karahanna, 2009a).

Partnering and sharing are another closely linked part of alignment behavior. Building partnering relationships indicates the sharing of responsibilities (Luftman and Brier, 1999; Luftman and Kempaiah, 2007), competencies (Peppard and Ward, 2004; Reich and Kaarst-Brown, 2003), and a common vision (Feeny and Willcocks, 1998). In turn, the sharing of competencies and a common understanding are achieved through communication (Wagner and Weitzel, 2012; Wu et al., 2015). We provide a more detailed overview of these linkages in Tables A.6 and A.7. Since our results suggest that partnering and sharing behavior directly influence strategic alignment, we propose:

Proposition 2. (:)   *Individuals in involved roles contribute to strategic alignment through alignment behavior in terms of partnering and sharing.*

Alignment competence

For strategic alignment to succeed, individuals in involved roles must possess specific skills in order to complete their tasks and fulfil their roles (Henderson and Venkatraman, 1993). Our literature analysis suggests that the intellectual capital required for strategic alignment goes beyond particular skills and includes a large body of knowledge, experiences, capabilities, and expertise, which we label alignment competence (see Table 5 below and Table A.3 for a detailed overview).

Early research identifies business competence among business personnel and distinct IT competencies among IT personnel as the necessary alignment competencies (O'Connor, 1993). However, the demands on the roles involved in strategic alignment have changed fundamentally in recent years. It is no longer sufficient for business personnel to have comprehensive business competence (including an understanding of markets and customers); IT managers and IT personnel now need these competencies as well (e.g. Cumps et al., 2009; Milovich, 2015; Reich and Benbasat, 2000). Likewise, business personnel (Aral and Weill, 2007; Benbya and McKelvey, 2006; Feeny and Willcocks, 1998), business managers (Broadbent and Weill, 1993; Kearns and Sabherwal, 2006), and top management now need IT competence (Brown, 1994; Kearns and Sabherwal, 2006; Preston and Karahanna, 2009a). The availability of combined business and IT competencies in human resources across functions and hierarchical levels (Aral and Weill, 2007; Wagner and Weitzel, 2012; Zhou et al., 2018) enables the planning and management of IT resources (Duncan, 1995), facilitates strategic alignment (Li et al., 2016; Zhou et al., 2018) and leads to competitive advantage (Fink and Neumann, 2009). Additional area-independent competencies required by individuals involved in strategic alignment include project management (Reich and Kaarst-Brown, 2003), leadership (Chatman et al., 2005; Luftman et al., 1993), negotiation (Ross et al., 1996), problem-solving (Jacks et al., 2018), and interpersonal skills (Lee et al., 1995). A detailed overview of all identified competencies including the involved roles that should possess them is available in Table A.3. Since the competencies required by human resources in both the business and IT areas across all hierarchical levels have changed, we propose:

Proposition 3. (:)   *Individuals in roles at all levels contribute to strategic alignment through their alignment competence in terms of business, IT and domain-independent competencies.*

Our literature analysis also shows that alignment behavior impacts this competence. Prior research reveals that through sharing behavior, business personnel acquire IT competence and IT personnel gain business competence (Wagner et al., 2014; Wagner and Weitzel, 2012). A certain level of competence in both IT and business is needed for performing alignment behavior. For example, the CIO's business competence and the top management's IT competence enable them to communicate and develop a shared understanding (Preston and Karahanna, 2009a). Furthermore, IT managers' business competence and business managers' IT competence foster their partnering behavior in terms of building strong, partnering relationships (Bassellier et al., 2003; Bassellier and Benbasat, 2004). Likewise, relationships between non-management personnel from business and IT benefit from cross-competencies as well (Milovich, 2015).

Alignment culture

In addition to alignment behavior and competence, culture also influences strategic alignment (Chan and Reich, 2007; Reich and

Table 6
Overview of alignment culture manifestations.

Culture manifestation	Description	Exemplary concepts
Individual attitudes	Involved individuals' own attitude in the context of strategic alignment.	Involvement, integration, participation, agility, adaptability, openness to ideas, development culture, commitment, awareness, identification, belonging, loyalty
Interpersonal attitudes	Individuals' attitude toward other persons involved in strategic alignment.	Interest, empowerment, community, respect, tolerance, trust, support, leadership
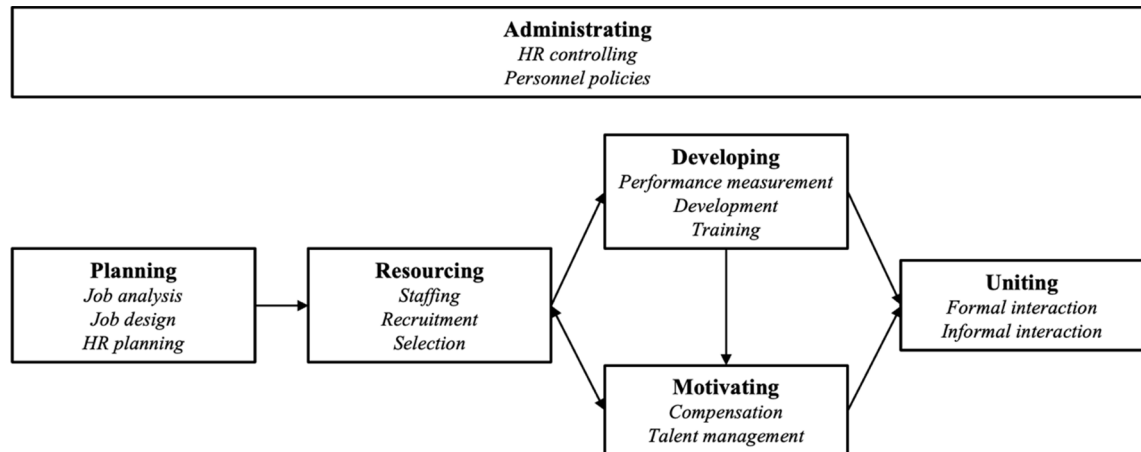
Fig. 5. Identified HRM functional tasks and practices related to strategic alignment (based on Noe et al., 2020; Wirtky et al., 2016).

Kaarst-Brown, 2003). This culture, which we label as alignment culture in the following, comprises values (Baets, 1992; Feeny and Willcocks, 1998; Jacks et al., 2018; Kaplan and Norton, 2004) and norms (Chan and Reich, 2007) to which the identified roles adhere in the context of strategic alignment (Luftman et al., 1993). By analyzing prior research, we identify two manifestations that characterize alignment culture (see Table 6 below and Table A.4 for more details).

The first manifestation covers individual attitudes: individuals' own attitudes towards strategic alignment, including involvement (Broadbent and Weill, 1993; Cumps et al., 2009; O'Connor, 1993), integration (Karpovsky and Galliers, 2015; Luftman et al., 1993), and participation (Benbya and McKelvey, 2006; Chan and Reich, 2007; Wu et al., 2015). It also includes awareness of new solutions or technologies that are applied to achieve strategic alignment (Kaplan and Norton, 2004; O'Connor, 1993; Reich and Benbasat, 2000). Strategic alignment further depends on the commitment that individuals, especially managers can muster (Aral and Weill, 2007; Baets, 1992; Broadbent and Weill, 1993; Reich and Benbasat, 1996; Reich and Kaarst-Brown, 2003; Roepke et al., 2000; Wong et al., 2012). Moreover, management support is essential in achieving planned alignment objectives (Boddy and Paton, 2005; Chan, 2002; Cumps et al., 2009; Schlosser et al., 2015; Wagner and Weitzel, 2012). In turn, loyalty to and affiliation with such objectives and plans among non-management personnel is also key (Reich and Kaarst-Brown, 2003; Wong et al., 2012). An agile culture, or agility, among individuals in involved roles benefits strategic alignment (Li et al., 2016; Liang et al., 2017; Zhou et al., 2018) and is characterized by the personnel's ability to react flexibly and adaptively to changes (Brown, 1997; Karpovsky and Galliers, 2015; Luftman et al., 1993). Such situations require that the involved roles are willing to develop further (Chatman et al., 2005; Jacks et al., 2018) and remain open to new ideas and experimentation (Boddy and Paton, 2005; Luftman and Brier, 1999; Ross et al., 1996; Tai et al., 2019).

The second manifestation refers to interpersonal attitudes related to strategic alignment. Leadership plays an important role here (Feeny and Willcocks, 1998; Kaplan and Norton, 2004). Leaders guide and empower those they lead and thus set the stage for achieving strategic alignment (Luftman et al., 1993; Luftman and Brier, 1999). Furthermore, leadership makes the community in terms of a team-based environment needed for strategic alignment work (Chan and Reich, 2007), and for example benefits the achievement of agility (Li et al., 2016). To create a culture of support for strategic alignment, all individuals involved must show interest (Bassellier et al., 2003; Preston and Karahanna, 2009a, 2009b), respect (Reich and Benbasat, 2000; Wagner and Weitzel, 2012), tolerance (Jacks et al., 2018), and trust (e.g. Feeny and Willcocks, 1998; Karahanna and Preston, 2013; Wong et al., 2012).

We recognize that several attitudes enable strategic alignment, including the attitude of management and non-management personnel towards strategic alignment as well as how they engage with each other. We thus propose:

Proposition 4. (:) *Individuals in involved roles contribute to a culture in terms of individual and interpersonal attitudes that promote strategic alignment.*

Our literature analysis reveals significant interplay between culture and behavior in the context of strategic alignment. Strong communication and relationships between business and IT personnel enhances a culture of mutual trust, respect, and confidence

(Feeny and Willcocks, 1998; Wagner and Weitzel, 2012) and facilitates their commitment to strategic alignment (Broadbent and Weill, 1993; Reich and Kaarst-Brown, 2003). Similarly, coordination among managers (i.e. partnering) fosters agility (Liang et al., 2017). Sharing also consolidates cultural values (Baets, 1992). For example, shared understanding among leaders enhances agility (Liang et al., 2017), and sharing knowledge fosters mutual trust and respect (Reich and Benbasat, 2000; Wagner and Weitzel, 2012). Alignment behavior also impacts culture. For example, interpersonal aspects such as trust and respect influence communication and relationship building (Baker and Niederman, 2014; Luftman and Kempaiah, 2007; Wagner and Weitzel, 2012; Wong et al., 2012), and involvement promotes relationship building and collaboration between business and IT (Benbya and McKelvey, 2006; Broadbent and Weill, 1993; Karpovsky and Galliers, 2015). At the top management level, common interests between the CIO and top managers facilitates shared understanding (Preston and Karahanna, 2009a), whereas trust and respect among non-management business and IT personnel enables competency sharing (Wagner et al., 2014; Wagner and Weitzel, 2012).

Identifying tasks, practices and responsibilities to manage human resources. Our literature analysis reveals a number of functional tasks and practices associated with managing the roles involved in strategic alignment (see Fig. 5). In categorizing these, we refer to the definitions of HRM functional tasks and practices of Wirtky et al. (2016) and NOE et al (2020) and also consider the linkages between them. We provide a detailed overview of all identified tasks and practices including the related concepts, responsibilities and references in Table A.5.

Planning

The HRM functional task of planning involves determining how many employees with what skills the organization requires for its operations (Wirtky et al., 2016). Prior alignment literature mentions the planning of personnel in connection with strategic alignment (Jordan, 1994). Three distinct practices are applied to this end: job analysis in terms of profiling competencies and jobs (Kaplan and Norton, 2004), job design through specializing jobs and creating job positions (Bergeron et al., 2004; Jordan, 1994) and the identification of required competencies and jobs (Kaplan and Norton, 2004). Profiling competencies and jobs involves identifying jobs and competencies critical to enhancing the organizations' processes and success (Kaplan and Norton, 2004). One way to profile and identify such competencies and jobs is for HR personnel to interview managers. Job positions are created in response to the organization's need for additional personnel (Bergeron et al., 2004). Although the HRM functional task of planning does not impact human resources' alignment behavior or culture, it identifies alignment competencies, which is essential for further tasks. We therefore propose:

Proposition 5a. (:)   *Planning practices sustain strategic alignment by identifying alignment competencies.*

Resourcing

Resourcing is the task of meeting the demand for human resources and filling positions (Armstrong and Taylor, 2020). Three resourcing practices are addressed in previous alignment research: staffing positions with internal employees, recruitment of external candidates and selecting suitable individuals for roles. Besides staffing, resourcing includes attracting new human resources based on prior planning (Kaplan and Norton, 2004) and then recruiting them (Boddy and Paton, 2005; Kaplan and Norton, 2004; Onita and Dhaliwal, 2011). Recruiting competent IT personnel is highly relevant in the context of strategic alignment (Kude et al., 2018; Reich and Benbasat, 2000; Reich and Kaarst-Brown, 2003; Roepke et al., 2000; Tai et al., 2019). Regardless of whether positions are occupied through internal staffing or external recruitment, selection practices are applied and entail ensuring a good fit between the job and the individual (Preston and Karahanna, 2009a; Schlosser et al., 2015) or ensuring that a team meets certain requirements in the context of staffing (Feeny and Willcocks, 1998; Johnston and Yetton, 1996; Li et al., 2016; Luftman and Brier, 1999; Milovich, 2015). Concerning the responsibility for such resourcing practices, some researchers argue that the IT organization or the organization in general should staff positions and select suitable individuals (Milovich, 2015; Preston and Karahanna, 2009a; Reich and Kaarst-Brown, 2003), while others argue that managers and leaders should have this responsibility (Feeny and Willcocks, 1998; Francalanci and Galal, 1998; Li et al., 2016). Prior research also views the organization as responsible for attracting personnel (Benbya and McKelvey, 2006; Cumps et al., 2009), whereas the responsibility for recruiting is split: HR managers recruit personnel in general (Kaplan and Norton, 2004) while IT personnel are often recruited by IT HRM or the IT department, function or unit (Kude et al., 2018; Tai et al., 2019), and the CEO hires the CIO (Karahanna and Preston, 2013).

Staffing and recruiting impact the behavior, competencies and culture of individuals in roles involved in strategic alignment. For example, hiring a CIO can enhance competency sharing and mutual understanding and generate top management interest in IT (Preston and Karahanna, 2009a; Wu et al., 2015). Staffing at the non-management workforce level also influences the level of alignment competence and knowledge (Li et al., 2016; Luftman and Brier, 1999). Recruiting directly influences whether the competencies required to sustain strategic alignment are present. The organization can recruit individuals with the required business and IT competencies and other needed skills to sustain strategic alignment (Kude et al., 2018; Onita and Dhaliwal, 2011; Tai et al., 2019). We thus see an impact of resourcing practices on strategic alignment and propose:

Proposition 5b. (:)   *Resourcing practices sustain strategic alignment by encouraging alignment behavior, providing alignment competence, and supporting an alignment culture.*

Developing

The development of human resources is critical for organizations and directly impacts strategic alignment. It is initially useful to

measure the performance of individuals involved, for example by using feedback assessments. Human resources from business and IT as well as managers can make use of such assessments in order to mutually review their achievements (Benbya and McKelvey, 2006; Benlian, 2013). Based on performance measurement, roles can be identified that need to be developed (Kaplan and Norton, 2004). Previous research identifies a range of development practices relevant to strategic alignment, including development programs, training (e.g. Jordan, 1994; Onita and Dhaliwal, 2011; Zhou et al., 2018), seminars and workshops (Brown, 1994; Rockart et al., 1996), team learning (Luftman et al., 1993), coaching and mentoring (Chatman et al., 2005), and forms of job transition such as job assignments or rotation (Brown, 1994). Individuals in roles at all hierarchical levels can benefit from development, from top and senior management (Preston and Karahanna, 2009b; Rockart et al., 1996) and the CIO (Preston and Karahanna, 2009a) to business and IT managers (Broadbent and Weill, 1993) and non-management business and IT personnel (e.g. Karpovsky and Galliers, 2015; Milovich, 2015; Schlosser et al., 2015; Wagner and Weitzel, 2012). Prior research does not assign responsibility for developing practices uniformly (see Table A.5).

Developing individuals in involved roles impacts their alignment behavior, competence and culture. Specifically, development programs and job transition enhance sharing behavior by enabling language and competence sharing (e.g. Chatman et al., 2005; Milovich, 2015; Wagner and Weitzel, 2012) and partnering behavior through stronger relationships (Broadbent and Weill, 1993; Feeny and Willcocks, 1998; Karpovsky and Galliers, 2015). Furthermore, such practices facilitate the development of competencies required for strategic alignment including business competence (Bassellier and Benbasat, 2004; Kude et al., 2018; Reich and Kaarst-Brown, 2003), IT competence (Bassellier et al., 2003; Ross et al., 1996), cross-competence (Chatman et al., 2005; Li et al., 2016; Zhou et al., 2018), and area-independent competence (Broadbent and Weill, 1993; Chatman et al., 2005; Luftman and Brier, 1999). Development practices also impact alignment culture by supporting workforce agility, leadership (Chatman et al., 2005), and interest (Bassellier et al., 2003; Preston and Karahanna, 2009a). We therefore propose:

Proposition 5c. (:)   *Development practices sustain strategic alignment by enhancing alignment behavior, developing alignment competence, and generating an alignment culture.*

Motivating

Once individuals are hired, they must be motivated and retained within the organization (Baker and Niederman, 2014; Cumps et al., 2009). Motivation practices influence strategic alignment in several ways. First, providing talent management through offering attractive career opportunities facilitates the recruitment of personnel with the competence needed to sustain strategic alignment (Reich and Kaarst-Brown, 2003) and offering compensations in terms of bonuses, benefits, rewards and perks fosters retention (Baker and Niederman, 2014). Prior research views management as responsible for offering such incentives (Boddy and Paton, 2005; Li et al., 2016). Career opportunities such as promotion or lateral movement (Chan, 2002; Johnston and Yetton, 1996; Reich and Kaarst-Brown, 2003) are key motivators for retaining highly sought IT personnel. In addition, development practices such as training also foster retention and motivation (Baker and Niederman, 2014). Motivating and retaining individuals in involved roles within the organization is critical to strategic alignment because it ensures the continuation of behaviors in terms of communication and culture (Baker and Niederman, 2014). We thus propose:

Proposition 5d. (:)   *Motivation practices sustain strategic alignment by guarding alignment competencies and preserving alignment behavior and culture.*

Administrating

The administration of human resources includes predominantly repetitive activities using IS tools. Prior alignment research mentions certain administrative tasks in the context of strategic alignment, for example HR controlling provides relevant information about working personnel (Peak et al., 2005) and scheduling (Beaumont and Walters, 1991); this information is needed to coordinate, measure and evaluate work practices (Chan and Reich, 2007; Jordan, 1994). Administrating also includes the development of specific policies to formalize personnel behavior (Jordan, 1994) and the acquisition and training of skills (Duncan, 1995). However, our axial and selective coding does not reveal a connection between administrating and alignment behavior, competence or culture.

Uniting

In addition to the above practices included in traditional HRM functions (Noe et al., 2020; Wirtky et al., 2016), we identify another functional task relevant to strategic alignment: the uniting of involved individuals. For example, bringing individuals from the business and IT area together results in more effective and harmonized processes (Kude et al., 2018). Individuals can be united by encouraging them to interact in formal work-related activities as well as informal social activities. Formal, work-related interaction, such as regular meetings or participation in steering committees (Brown and Magill, 1994; Luftman and Brier, 1999; Reich and Benbasat, 2000, 1996) can take place across all hierarchical levels of the organization ranging from the CIO and top management (Karahanna and Preston, 2013; Kearns and Sabherwal, 2006) and managers (Luftman and Brier, 1999; Preston and Karahanna, 2009a; Reich and Benbasat, 2000) to non-management business and IT personnel (Schlosser et al., 2015). Informal, social interaction generally takes place in internal networks (Chan, 2002; Kane and Borgatti, 2011; Karahanna and Preston, 2013), colocation (Schlosser et al., 2015), company-wide associations, or social clubs (Reich and Kaarst-Brown, 2003) involving individuals from all hierarchical levels. While prior research does not assign clear responsibility for organizing formal or informal interaction, the CEO or CIO may encourage interaction among managers (Preston and Karahanna, 2009a) and work-related interaction with top management (Karahanna and Preston, 2013), whereas managers and the organization generally drive formal and informal interaction among non-management personnel (Benlian, 2013; Chan, 2002).

Table 7
Avenues for future research.

Research aspect	Avenue for future research
Involved roles and contribution to strategic alignment	Examination of involved roles with regard to types of organization, units and jobs
	Investigation into alignment behavior of involved roles
	Elaboration of who needs what alignment competencies
	Refinement of the impact on alignment culture
	Measurement of alignment behavior, competence and culture
HRM functions and practices	Further elaboration of the impact of administrating tasks on strategic alignment
	Refinement of responsibilities for HRM practices that impact strategic alignment

The task of uniting directly influences strategic alignment by influencing behavior, competence, and culture. Both formal and informal interaction facilitate shared behavior and language (Schlosser et al., 2015; Wagner et al., 2014), competencies (Hirschheim and Sabherwal, 2001; Karahanna and Preston, 2013; Liang et al., 2017; Wagner and Weitzel, 2012), and understanding (Benlian, 2013; Liang et al., 2017). Formal interaction practices also stimulate strategic alignment-relevant partnering behavior, relationship building and collaboration (Schlosser et al., 2015; Tai et al., 2019) while informal interactions increase communication and coordination (Liang et al., 2017). Both formal and informal uniting tasks also impact the competence required for strategic alignment by promoting a mutual understanding of IT and business (e.g. Kearns and Sabherwal, 2006; Luftman and Brier, 1999; Schwarz and Hirschheim, 2003). They also contribute to an alignment culture and a positive work environment (Chan, 2002) by encouraging trust (Benlian, 2013; Karahanna and Preston, 2013; Preston and Karahanna, 2009b; Schlosser et al., 2015; Wagner et al., 2014), awareness (Reich and Benbasat, 2000), and empowerment (Chan, 2002). We thus propose:

Proposition 5e. (:)   *Uniting practices sustain strategic alignment by encouraging alignment behavior, promoting alignment competence, and generating an alignment culture.*

Summary of findings. Our research proceeds from the insight that strategic alignment research refers to human resources only weakly in terms of roles, responsibilities or relationships, even though they are crucial in creating business value (Melville et al., 2004). Our literature review finds that human resources in organizational roles at all hierarchical levels contribute to strategic alignment endeavors through their behavior, competencies and culture, which we call alignment behavior, alignment competencies, and alignment culture. In addition to traditional HRM functional tasks and practices identified by previous literature (Noe et al., 2020; Wirtky et al., 2016), we reveal an additional HRM task relevant to strategic alignment: uniting. To the extent elucidated in previous literature, we identify whether the HR department, management or the organization itself are generally responsible for such tasks. We thus synthesize knowledge from prior strategic alignment research and identify the relevant roles, how the individuals in these roles contribute to strategic alignment, and how HRM tasks support these roles to sustain strategic alignment. We find that HRM tasks often indirectly impact strategic alignment by enhancing the contribution of involved roles to alignment behavior, competence and culture.

Avenues for future research

In analyzing business, IT and organization research to show how HRM sustains strategic alignment, we identify several avenues for future research, which we structure based on our model (see Fig. 6 in Discussion) and summarize in Table 7 below.

Our literature review shows that lateral links between the business and IT areas across the organizational hierarchy can contribute to strategic alignment. Since most previous studies focus on strategic alignment in large organizations with hierarchical management levels, future research should investigate the role and contribution of human resources in sustaining strategic alignment in small and medium-sized enterprises or startups (Li et al., 2016; Street et al., 2017). Future research could also investigate how career development that involves promotion or a lateral career move impacts alignment behavior, competence and culture. More research is needed into the potentially different roles specific units and job types in the business and IT area play in strategic alignment.

Additional research is also needed into how organizations assign voluntary or mandatory responsibility for certain actions or behaviors that contribute to strategic alignment, building on previous research distinguishing between in-role behavior and extra-role behavior among employees (Ang and Slaughter, 2001; van Dyne and LePine, 1998). The findings of such research could help practitioners refine role descriptions and prevent role ambiguities and conflicts.

Future research should also identify the specific competencies required by specific roles at specific levels of the organizational hierarchy if strategic alignment is to be sustained; this needs to go further than the current the broad-stroked categorization of business- and IT-specific knowledge, skills and experiences.

Our literature analysis shows how the alignment culture of individuals in involved roles contributes to strategic alignment and encourages alignment behavior, but the identified HRM tasks influence alignment culture marginally compared to alignment behavior and alignment competence. Future research should investigate the impact of such tasks from an organizational culture perspective to identify further HRM practices that more powerfully influence alignment culture.

In order to measure the impact of HRM functional tasks and practices on strategic alignment, future research is required to develop additional measurement constructs and items. For measuring strategic alignment, previous research offers several survey options and validated constructs (e.g. Gerow et al., 2015; Wu et al., 2015). As we introduce new dimensions in this context, namely alignment
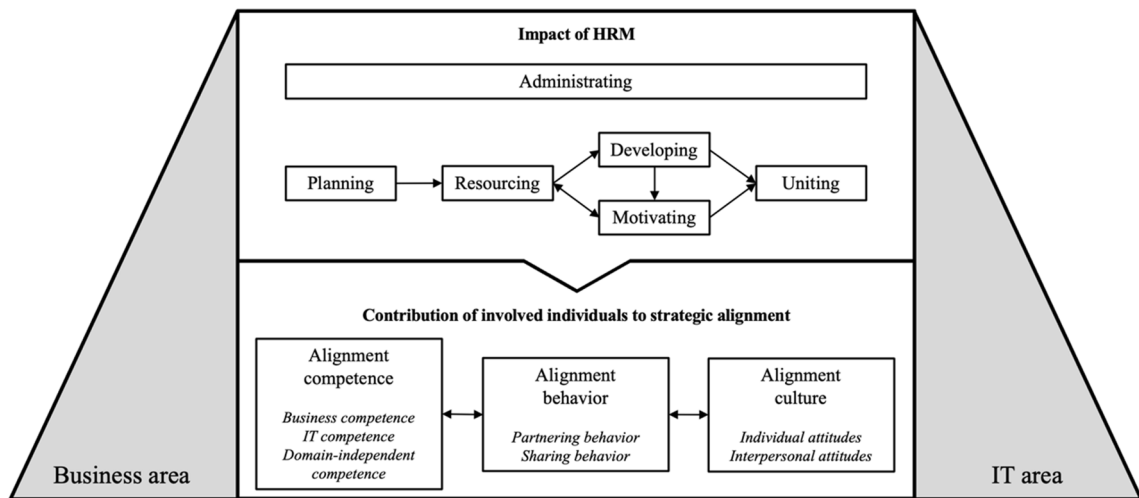
Fig. 6. Model deriving the impact of HRM on strategic alignment.

behavior, alignment competence and alignment culture, the main focus should be on conceptualizing and validating corresponding constructs. Our literature review highlights various themes and concepts associated with each of the three dimensions. It thus serves as a suitable basis for future research to develop and test detailed scales with promising measurement validity (Chan and Reich, 2007).

While our analysis shows that HRM planning, resourcing, developing, motivating and uniting practices distinctly influence strategic alignment in terms of alignment behavior, competencies and culture, future research should fill the research gap into how administrating practices, such as personnel policies or controlling, impact strategic alignment.

Whereas previous alignment research largely assigns responsibility for strategic alignment to top-level management (Schult and Wolff, 2012), our analysis indicates a lack of clarity about responsibility for the HRM tasks and practices that sustain strategic alignment. To gain more clarity on this question, future research could use a responsibility assignment matrix established in prior research (Project Management Institute, 2013).

Finally, following the lead of the *ACM Special Interest Group on Management Information Systems* on IT HRM, future research in this stream should adopt an operative focus, drawing on parallels between HRM and the operative management of business and IT human resources in the organization. Based on research on managing IT human resources (Ferratt et al., 2005) and other research streams, we expect that an in-depth investigation of actual applied implementations and practices will advance our understanding of HRM's role in sustaining strategic alignment.

Discussion and contributions

This literature review contributes to research in several ways. Traditional alignment models, such as the Strategic Alignment Model (Henderson and Venkatraman, 1993), view human resources in terms of the skills required for strategic alignment. Our study takes a grounded theory approach (Wolfswinkel et al., 2013) to systematically select and analyze 71 articles and identify how human resources contribute to sustaining strategic alignment and how HRM tasks influence these contributions. Building on fundamental research that touches on the role of human resources in strategic alignment (Baets, 1992; Henderson and Venkatraman, 1993), we look beyond HRM as merely a function in organizations and consider how HRM influences the human resources that fulfill the requirements of strategic alignment and sustain it effectively. The selected articles were analyzed and interpreted using the biased lens of strategic alignment that takes a strategic intent of HRM tasks and practices for granted.

We contribute to strategic alignment research by conceptualizing the impact of HRM in the context of strategic alignment. By consolidating concepts, themes and aggregated dimensions using a grounded theory approach (Gioia et al., 2013) we investigate how the relationships, roles and responsibilities of human resources from the business and IT domains influence strategic alignment. We identify three main contributions which we categorize as alignment behavior, alignment competence and alignment culture and we derive an integrated model of the impact of HRM on strategic alignment (see Fig. 6). Whereas prior research posits executives and managers as the most important stakeholders (Reich and Benbasat, 2000), our analysis shows how individuals from all levels of the workforce from the business and IT areas can contribute to sustaining strategic alignment in ways that go beyond assigned tasks.

In a second step, we analyzed the selected articles to identify HRM tasks associated with strategic alignment, structuring those practices according to the recognized functional tasks of administrating, planning, resourcing, developing, and motivating (Noe et al., 2020; Wirtky et al., 2016). Crucially, our analysis justifies the addition of a new HRM functional task that influences how IT and business human resources sustain strategic alignment: uniting.

In a third step, we analyzed the selected articles to identify responsibility for such HRM functional tasks. Previous research has discussed who bears responsibility for strategic alignment (Schult and Wolff, 2012) but less is known about who bears responsibility for HRM tasks and practices related to sustaining strategic alignment. Our review points to a possible shift of HRM responsibilities from

organizational HR departments to business and IT areas in line with the phenomenon of HRM transformation (Ulrich, 2009; Ulrich, 1997; Wright, 2011), but further research is needed to better understand this shift. We contribute to HRM literature by revealing that strategic alignment can be best supported with business and IT involvement in and responsibility for relevant HRM tasks in line with HRM transformation.

This literature analysis has implications for practitioners and executives. In order to better guide human resources to sustain strategic alignment, executives should consider the role of and responsibility for HRM tasks within their organization (Bresnahan et al., 2002; Wong et al., 2012). Our findings underscore the benefits of considering HRM beyond the scope of the HR department (Ulrich, 1997) to include its potential strategic role in achieving strategic alignment, organizational success and, ultimately, competitive advantage. Thus, these insights can guide executives in making and justifying human resource investment decisions.

Limitations

Our research is limited in several ways. First, although we aligned our article search publication date parameters with the adoption of the concept of strategic alignment in IS research (Avison et al., 2004; Renaud et al., 2016) and although we included all top IS, business and organizational journals relevant to IS research in keeping with previous literature reviews on strategic alignment (Avison et al., 2004; Chan and Reich, 2007; Gerow et al., 2014), we may have overlooked some relevant research. Second, by excluding papers that do not explicitly refer to human resources, we may have inadvertently excluded articles referring to human resources implicitly. Third, we relied on the strategic alignment model (Henderson and Venkatraman, 1993) as one of the most known and utilized concepts in research and practice (Renaud et al., 2016), but this choice may have caused us to inadvertently omit research focusing on other concepts tangential to strategic alignment.

Conclusion

The human resources function has long been treated as a part of business competing for scarce investment resources, and traditional IS research into the strategic alignment of business and IT has treated HR as a secondary function. This study considers the role of HRM tasks and practices in strategic alignment. Our analysis and synthesis of 71 relevant research articles from the research fields of IS, business and organization show how individuals in roles involved in strategic alignment contribute to sustaining it, and how HRM tasks and practices influence this contribution.

Acknowledgement

Appendix A. Open, axial and selective coding documentation

See Tables A1–A7.

Table A1
Open coding of involved roles dimension.

2nd order themes	1st order concepts	References
Top-level management	Chief Executive Officer (CEO)	Hirschheim and Sabherwal, 2001; Karahanna and Preston, 2013; Karpovsky and Galliers, 2015; Luftman and Brier, 1999; Preston and Karahanna, 2009a; Willcoxson and Chatham, 2004; Wu et al., 2015
	Chief Information Officer (CIO)	Brown and Magill, 1994; Chan and Reich, 2007; Cumps et al., 2009; Guillemette and Paré, 2012; Hirschheim and Sabherwal, 2001; Karahanna and Preston, 2013; Karpovsky and Galliers, 2015; Kearns and Sabherwal, 2006; Liang et al., 2017; Luftman and Brier, 1999; Milovich, 2015; Preston and Karahanna, 2009a, 2009b; Reich and Kaarst-Brown, 2003; Rockart et al., 1996; Willcoxson and Chatham, 2004; Wu et al., 2015
	Top managers *Top management team, top management, top executive(s), top level*	Baets, 1992; Brown, 1997; Brown, 1994; Karahanna and Preston, 2013; Karpovsky and Galliers, 2015; Kearns and Sabherwal, 2006; Liang et al., 2017; O'Connor, 1993; Preston and Karahanna, 2009a, 2009b; Rockart et al., 1996; Schlosser et al., 2015; Wagner and Weitzel, 2012; Wu et al., 2015; Yayla and Hu, 2012

Table A1 (*continued*)

2nd order themes	1st order concepts	References
Middle-level management	Senior business manager(s) *Senior business executive(s)*	Boddy and Paton, 2005; Broadbent and Weill, 1993; Karpovsky and Galliers, 2015; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Rockart et al., 1996(Zhou et al., 2018)
	Senior IT manager(s)*Head IT executive(s), head IT manager(s), senior IT management*	Karpovsky and Galliers, 2015; Luftman and Kempaiah, 2007; Reich and Benbasat, 2000; Rockart et al., 1996; Schwarz and Hirschheim, 2003; Zhou et al., 2018
	Senior manager(s) *Senior executive(s), senior management*	Aral and Weill, 2007; Boddy and Paton, 2005; Broadbent and Weill, 1993; Brown, 1994; Chan and Reich, 2007; Cumps et al., 2009; Luftman and Brier, 1999; Rockart et al., 1996
Lower-level management	Business manager(s)*Business management, line executive(s), line manager(s)*	Bassellier et al., 2003; Benbya and McKelvey, 2006; Broadbent and Weill, 1993; Brown and Magill, 1998; Chan and Reich, 2007; Hirschheim and Sabherwal, 2001; Jacks et al., 2018; Kearns and Sabherwal, 2006; Liang et al., 2017; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Milovich, 2015; Reich and Benbasat, 2000, 1996; Willcoxson and Chatham, 2004; Wu et al., 2015; Yayla and Hu, 2012; Zhou et al., 2018
	IT managers *IT executive(s), IS executive(s), IS manager(s), IT management*	Bassellier et al., 2003; Benbya and McKelvey, 2006; Broadbent and Weill, 1993; Chan and Reich, 2007; Feeny and Willcocks, 1998; Hirschheim and Sabherwal, 2001; Kearns and Sabherwal, 2006; Kude et al., 2018; Liang et al., 2017; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Milovich, 2015; Naidoo, 2016; Peak et al., 2005; Reich and Benbasat, 2000, 1996; Rockart et al., 1996; Roepke et al., 2000; Valorinta, 2011; Watson et al., 1997; Wu et al., 2015; Zhou et al., 2018
	Manager(s) *Executive(s), management*	Baker and Niederman, 2014; Bassellier et al., 2003; Bassellier and Benbasat, 2004; Benbya and McKelvey, 2006; Benlian, 2013; Boddy and Paton, 2005; Chan, 2002; Chatman et al., 2005; Cumps et al., 2009; Dulipovici and Robey, 2013; Francalanci and Galal, 1998; Hirschheim and Sabherwal, 2001; Kaplan and Norton, 2004; Karahanna and Preston, 2013; Karpovsky and Galliers, 2015; Li et al., 2016; Liang et al., 2017; Luftman et al., 1993; Luftman and Brier, 1999; Onita and Dhaliwal, 2011; Peak et al., 2005; Reich and Benbasat, 2000, 1996; Reich and Kaarst-Brown, 2003; Watson et al., 1997; Zhou et al., 2018
Non-management level	Business personnel *Business employee(s), business staff, business people, business expert (s), users, clients*	Aral and Weill, 2007; Bassellier and Benbasat, 2004; Broadbent and Weill, 1993; Chan and Reich, 2007; Feeny and Willcocks, 1998; Karpovsky and Galliers, 2015; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; O'Connor, 1993; Peppard and Ward, 2004; Reich and Kaarst-Brown, 2003; Schwarz and Hirschheim, 2003; Wagner et al., 2014; Wagner and Weitzel, 2012; Zhou et al., 2018
	IT personnel *IT employee(s), IS employees, IS personnel, IT expert(s), IT professional(s), IS professionals, IT staff, IS staff, IT people, IT talent (s), IT specialist(s), ICT employees*	Aral and Weill, 2007; Bassellier et al., 2003; Bassellier and Benbasat, 2004; Benbya and McKelvey, 2006; Benlian, 2013; Broadbent and Weill, 1993; Brown, 1997; Chan, 2002; Chan and Reich, 2007; Chen, 2010; Cumps et al., 2009; Duncan, 1995; Feeny and Willcocks, 1998; Fink and Neumann, 2009; Guillemette and Paré, 2012; Hirschheim and Sabherwal, 2001; Jacks et al., 2018; Johnston and Yetton, 1996; Karpovsky and Galliers, 2015; Kude et al., 2018; Lee et al., 1995; Levy et al., 2001; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Naidoo, 2016; O'Connor, 1993; Peppard and Ward, 2004; Reich and Benbasat, 2000; Reich and Kaarst-Brown, 2003; Rockart et al., 1996; Roepke et al., 2000; Ross et al., 1996; Schlosser et al., 2015; Schwarz and Hirschheim, 2003; Tai et al., 2019; Valorinta, 2011; Wagner et al., 2014; Wagner and Weitzel, 2012; Willcoxson and Chatham, 2004; Zhou et al., 2018
	Personnel *Employee(s), worker(s), workforce, staff, professionals, people, individual(s)*	Baets, 1992; Baker and Niederman, 2014; Benbya and McKelvey, 2006; Boddy and Paton, 2005; Chan, 2002; Chan and Reich, 2007; Chatman et al., 2005; Cumps et al., 2009; Francalanci and Galal, 1998; Jordan, 1994; Kane and Borgatti, 2011; Kaplan and Norton, 2004; Karpovsky and Galliers, 2015; Li et al., 2016; Luftman et al., 1993; Luftman and Brier, 1999; Milovich, 2015; Peak et al., 2005; Peppard and Ward, 2004; Ravishankar et al., 2011; Reich and Benbasat, 2000, 1996; Reich and Kaarst-Brown, 2003; Roepke et al., 2000; Wong et al., 2012; Yayla and Hu, 2012; Zhou et al., 2018
Level-unspecific	Business *Business domain, business function, business area(s), business level, business division(s), business unit(s), business department(s), business team(s), business group(s)*	Aral and Weill, 2007; Benbya and McKelvey, 2006; Boddy and Paton, 2005; Brown, 1997; Chan and Reich, 2007; Chen, 2010; Cumps et al., 2009; Feeny and Willcocks, 1998; Guillemette and Paré, 2012; Hirschheim and Sabherwal, 2001; Karpovsky and Galliers, 2015; Luftman et al., 1993; Luftman and Brier, 1999; Luftman and

Table A1 (*continued*)

2nd order themes	1st order concepts	References
	IT *IT domain, IT function, IS function, IS division(s), IT area(s), IT unit(s), IS unit(s), IT department(s), IS departments, IT group(s)*	Kempaiah, 2007; Milovich, 2015; Reich and Kaarst-Brown, 2003; Schlosser et al., 2015; Schwarz and Hirschheim, 2003; Tai et al., 2019; Valorinta, 2011; Wagner et al., 2014; Wagner and Weitzel, 2012; Willcoxson and Chatham, 2004; Zhou et al., 2018 Aral and Weill, 2007; Benbya and McKelvey, 2006; Broadbent and Weill, 1993; Chan and Reich, 2007; Chen, 2010; Cumps et al., 2009; Feeny and Willcocks, 1998; Fink and Neumann, 2009; Guillemette and Paré, 2012; Hirschheim and Sabherwal, 2001; Johnston and Yetton, 1996; Kude et al., 2018; Luftman et al., 1993; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Milovich, 2015; Reich and Kaarst-Brown, 2003; Schlosser et al., 2015; Tai et al., 2019; Valorinta, 2011; Wagner et al., 2014; Wagner and Weitzel, 2012; Willcoxson and Chatham, 2004; Zhou et al., 2018

Table A2

Open coding of alignment behavior dimension.

2nd order themes	1st order concepts	Individuals performing this behavior	References
Partnering behavior	Build partnerships *Develop partnerships, build relationships, develop relationships*	Business, IT	Benbya and McKelvey, 2006; Chen, 2010; Cumps et al., 2009; Feeny and Willcocks, 1998; Guillemette and Paré, 2012; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Reich and Kaarst-Brown, 2003; Schlosser et al., 2015; Zhou et al., 2018
		Business, IT staff	Benbya and McKelvey, 2006
		Business managers, IT personnel	Bassellier et al., 2003; Luftman and Brier, 1999
		Business managers, IT managers	Broadbent and Weill, 1993
		CIO, business	Cumps et al., 2009
		Business personnel, IT personnel	Bassellier and Benbasat, 2004; Peppard and Ward, 2004; Tai et al., 2019
		CIO, top management	Karahanna and Preston, 2013; Preston and Karahanna, 2009a, 2009b
		CEO, CIO	Karpovsky and Galliers, 2015
		Top management, business and IT personnel	Karpovsky and Galliers, 2015
		Managers	Chatman et al., 2005
	Collaborate	Business, IT	Chan and Reich, 2007; Schlosser et al., 2015; Valorinta, 2011; Zhou et al., 2018
		Business personnel, IT personnel	Valorinta, 2011
		Managers	Chatman et al., 2005
		Teams	Luftman et al., 1993
	Communicate	Managers	Chatman et al., 2005; Onita and Dhaliwal, 2011
		Functions	Baets, 1992
		Personnel	Baker and Niederman, 2014; Reich and Benbasat, 2000; Wong et al., 2012
		Teams	Luftman et al., 1993
		Business managers, IT managers	Liang et al., 2017; Luftman and Kempaiah, 2007; Reich and Benbasat, 2000; Wu et al., 2015
		Business, IT	Benbya and McKelvey, 2006; Chen, 2010; Cumps et al., 2009; Feeny and Willcocks, 1998; Wagner et al., 2014
		Management, business and IT personnel	O'Connor, 1993
		Business managers, IT personnel	Bassellier et al., 2003; Jacks et al., 2018
		CIO, top management	Preston and Karahanna, 2009a
		Business personnel, IT personnel	Chan and Reich, 2007; Wagner et al., 2014
		n.n.	Boddy and Paton, 2005; Broadbent and Weill, 1993; Karpovsky and Galliers, 2015; Levy et al., 2001; Powell and Dent-Micallef, 1997; Reich and Benbasat, 2000; Schlosser et al., 2015; Wagner and Weitzel, 2012; Willcoxson and Chatham, 2004
	Coordinate	Business managers, IT managers	Liang et al., 2017
		IT managers	Valorinta, 2011
		Business, IT	Benbya and McKelvey, 2006; Chan and Reich, 2007
		Managers	Onita and Dhaliwal, 2011
		CIO	Valorinta, 2011
		Personnel	

(*continued on next page*)

Table A2 (*continued*)

2nd order themes	1st order concepts	Individuals performing this behavior	References
Sharing behavior	Share competence *Share knowledge, integrate knowledge, exchange knowledge, share skills, share experiences, share meaning, share cognitions*		Chatman et al., 2005; Dulipovici and Robey, 2013; Kaplan and Norton, 2004; Luftman et al., 1993; Peppard and Ward, 2004; Reich and Benbasat, 2000; Wong et al., 2012
		CIO, top management	Karahanna and Preston, 2013; Preston and Karahanna, 2009a
		Business managers, IT managers	Chatman et al., 2005; Liang et al., 2017; Preston and Karahanna, 2009b; Reich and Benbasat, 2000; Wu et al., 2015
		Business personnel, IT personnel	Reich and Kaarst-Brown, 2003; Wagner and Weitzel, 2012; Zhou et al., 2018
		Business managers, IT personnel	Bassellier et al., 2003
		Business, IT	Chen, 2010; Kearns and Sabherwal, 2006; Milovich, 2015; Reich and Kaarst-Brown, 2003; Schlosser et al., 2015; Valorinta, 2011; Wagner et al., 2014
		CEO, CIO	Wu et al., 2015
	Share language	CIO, top management	Preston and Karahanna, 2009a, 2009b
		Managers	Chatman et al., 2005
		Business managers, IT personnel	Benbya and McKelvey, 2006
		Business, IT	Valorinta, 2011; Wagner et al., 2014; Willcoxson and Chatham, 2004
	Share responsibility	Business managers, IT managers	Chan and Reich, 2007; Luftman and Brier, 1999
	Share risks, share rewards	Business, IT	Chen, 2010; Luftman and Kempaiah, 2007
	Share understanding	Business, IT	Benbya and McKelvey, 2006; Chen, 2010; Cumps et al., 2009; Luftman and Brier, 1999
		CEO, CIO	Wu et al., 2015
		CIO, top management	Preston and Karahanna, 2009a
		Business managers, IT managers	Liang et al., 2017
		Business personnel, IT personnel	Benlian, 2013; Karpovsky and Galliers, 2015
		n.n.	Baets, 1992
	Share vision	Business and IT	Cumps et al., 2009
		Business managers, IT managers	Preston and Karahanna, 2009b
		Managers	Reich and Benbasat, 1996
		n.n.	Baets, 1992

n.n. not named.

Table A3

Open coding of alignment competence dimension.

2nd order themes	1st order concepts	Individuals possessing the competence	References
Business competence	Business knowledge	IT managers	Hirschheim and Sabherwal, 2001; Kude et al., 2018
		Business managers	Reich and Benbasat, 2000
		Managers	Luftman and Brier, 1999; O'Connor, 1993
		Business personnel	Reich and Kaarst-Brown, 2003
		IT personnel	Brown, 1997; Fink and Neumann, 2009; Kude et al., 2018; Milovich, 2015; Wagner and Weitzel, 2012; Zhou et al., 2018
		CIO	Preston and Karahanna, 2009a, 2009b
		IT	Kude et al., 2018
	Business understanding	IT	Cumps et al., 2009; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Wagner et al., 2014
		IT personnel	Bassellier and Benbasat, 2004; Broadbent and Weill, 1993; Duncan, 1995; Karpovsky and Galliers, 2015; Luftman and Kempaiah, 2007; O'Connor, 1993; Reich and Benbasat, 2000; Reich and Kaarst-Brown, 2003; Schlosser et al., 2015; Schwarz and Hirschheim, 2003; Tai et al., 2019
		Managers	Cumps et al., 2009
		IT managers	Reich and Benbasat, 1996
		n.n.	Brown, 1994
	Business competence	IT personnel	Bassellier and Benbasat, 2004
		Personnel	Zhou et al., 2018
	Business capabilities	n.n.	Luftman and Brier, 1999
	Business skills	IT managers	Broadbent and Weill, 1993
		IT personnel	Aral and Weill, 2007; Benbya and McKelvey, 2006; Cumps et al., 2009; Duncan, 1995
		IT	Fink and Neumann, 2009
	Customer understanding	Personnel	Chatman et al., 2005
	Market knowledge	IT personnel	Milovich, 2015; Wagner and Weitzel, 2012

(*continued on next page*)

Table A3 (*continued*)

2nd order themes	1st order concepts	Individuals possessing the competence	References
	Organization overview	IT personnel	Bassellier and Benbasat, 2004
	Organization units	IT personnel	Bassellier and Benbasat, 2004
	Organization responsibility	IT personnel	Bassellier and Benbasat, 2004
	IT-business integration	IT personnel	Bassellier and Benbasat, 2004
	Business functional knowledge	IT personnel	Lee et al., 1995
Cross competence	Cross-functional experience	Personnel	Chatman et al., 2005
	Cross-functional skills	IT personnel	Chen, 2010
		n.n.	Aral and Weill, 2007
	Cross-domain knowledge	IT personnel	Wagner and Weitzel, 2012
		Business personnel	Wagner and Weitzel, 2012
	Cross-domain competence	Personnel	Zhou et al., 2018
	Cross-dimensional competence	IT personnel	Milovich, 2015
	Cross-boundary knowledge	IT personnel	Milovich, 2015
	Hybrid skills	Managers	Li et al., 2016
IT competence	IT knowledge	Business managers	Bassellier et al., 2003; Brown and Magill, 1998; Hirschheim and Sabherwal, 2001; Reich and Benbasat, 2000
		Top managers	Kearns and Sabherwal, 2006
		IT personnel	Ross et al., 1996
		IT	Wagner et al., 2014
	IS knowledge	Business managers	Hirschheim and Sabherwal, 2001
		IT personnel	Duncan, 1995
		Top managers	Preston and Karahanna, 2009a
	Technical knowledge	n.n.	Fink and Neumann, 2009; Jacks et al., 2018; Peppard and Ward, 2004
	Technology knowledge	IT personnel	Lee et al., 1995
		Business managers	Bassellier et al., 2003
	IS skills	Business managers	Broadbent and Weill, 1993
		Personnel	Kane and Borgatti, 2011
		IT personnel	Levy et al., 2001
	ICT skills	IT personnel	Cumps et al., 2009
	IT skills	Business personnel	Aral and Weill, 2007; Benbya and McKelvey, 2006
	Technical skills	IT personnel	Aral and Weill, 2007; Benbya and McKelvey, 2006; Fink and Neumann, 2009; O'Connor, 1993
		n.n.	Peppard and Ward, 2004
	Technology skills	IT personnel	Lee et al., 1995; Tai et al., 2019
	IT expertise	n.n.	Brown, 1994
	Technical expertise	IT personnel	Reich and Kaarst-Brown, 2003
	ITC experience	n.n.	Aral and Weill, 2007
	IT experience	Business managers	Bassellier et al., 2003
	IT competence	Business managers	Bassellier et al., 2003
		Managers	Reich and Benbasat, 2000
		Personnel	Zhou et al., 2018
	IS understanding	Business managers	Broadbent and Weill, 1993
	IT understanding	Business	Luftman and Brier, 1999; Luftman and Kempaiah, 2007
		Senior business managers	Rockart et al., 1996
		Business managers	Broadbent and Weill, 1993; Jacks et al., 2018; Reich and Benbasat, 1996
		Top managers	Brown, 1994
		Business personnel	Feeny and Willcocks, 1998
	ICT understanding	Business	Cumps et al., 2009
		Managers	Cumps et al., 2009
	Technology capabilities	n.n.	Luftman and Brier, 1999
	IT capability	Business	Brown, 1997
	Analytical skills	IT personnel	O'Connor, 1993
	Informational skills	IT personnel	O'Connor, 1993
	Application knowledge	Business manager	Bassellier et al., 2003
	Systems development knowledge	Business manager	Bassellier et al., 2003
	IT management knowledge	Business manager	Bassellier et al., 2003
	Access to IT knowledge	Business manager	Bassellier et al., 2003
	Technical specialties knowledge	IT personnel	Lee et al., 1995
		IT personnel	Lee et al., 1995

Table A3 (*continued*)

2nd order themes	1st order concepts	Individuals possessing the competence	References
	Technology management knowledge		
Area-independent competence	Interpersonal skills	IT personnel	Bassellier and Benbasat, 2004; Lee et al., 1995; Luftman and Brier, 1999; Ross et al., 1996
	Communication skills	IT personnel	Bassellier and Benbasat, 2004
	Networking skills	IT personnel	Bassellier and Benbasat, 2004
	Leadership skills	Managers	Chatman et al., 2005; Luftman et al., 1993
		IT personnel	Bassellier and Benbasat, 2004
	Managerial skills	IT personnel	Fink and Neumann, 2009; Lee et al., 1995; Tai et al., 2019
		n.n.	Aral and Weill, 2007; Bergeron et al., 2004
	Negotiation skills	IT personnel	Ross et al., 1996
	People management skills	IT managers	Watson et al., 1997
		IT personnel	Luftman and Brier, 1999
	Problem-solving skills	IT personnel	Jacks et al., 2018; Ross et al., 1996
	Project management skills	Senior business managers	Broadbent and Weill, 1993
		Business personnel	Reich and Kaarst-Brown, 2003
		IT personnel	Luftman and Brier, 1999; Reich and Kaarst-Brown, 2003
Unspecified competence	Knowledge	Personnel	Kaplan and Norton, 2004; Luftman et al., 1993; Peppard and Ward, 2004; Wong et al., 2012
		IT personnel	Guillemette and Paré, 2012
	Skills	Personnel	Chen, 2010; Kaplan and Norton, 2004
		IT personnel	Duncan, 1995; Guillemette and Paré, 2012; Levy et al., 2001
		n.n.	Luftman and Brier, 1999
	Experience	IT managers	Watson et al., 1997
		Personnel	Kane and Borgatti, 2011; Peppard and Ward, 2004
	Expertise	IT managers	Watson et al., 1997
		Personnel	Peppard and Ward, 2004
	Competence	Personnel	Roepke et al., 2000

n.n. not named.

Table A4
Open coding of alignment culture dimension.

2nd order themes	1st order concepts	References
Individual attitude	Agility *Changeability, adaptability, flexibility*	Brown, 1997; Chatman et al., 2005; Karpovsky and Galliers, 2015; Li et al., 2016; Liang et al., 2017; Luftman et al., 1993; Luftman and Kempaiah, 2007; Powell and Dent-Micallef, 1997; Zhou et al., 2018
	Involvement *Integration, participation*	Benbya and McKelvey, 2006; Boddy and Paton, 2005; Broadbent and Weill, 1993; Chan and Reich, 2007; Cumps et al., 2009; Karpovsky and Galliers, 2015; Luftman et al., 1993; Luftman and Brier, 1999; O'Connor, 1993; Wu et al., 2015
	Awareness	Kaplan and Norton, 2004; O'Connor, 1993; Reich and Benbasat, 2000
	Commitment	Aral and Weill, 2007; Baets, 1992; Benbya and McKelvey, 2006; Broadbent and Weill, 1993; Chatman et al., 2005; Luftman and Brier, 1999; O'Connor, 1993; Powell and Dent-Micallef, 1997; Reich and Benbasat, 1996; Reich and Kaarst-Brown, 2003; Roepke et al., 2000; Wong et al., 2012
	Development culture	Chatman et al., 2005; Jacks et al., 2018
	Identification	Wong et al., 2012
	Loyalty	Reich and Kaarst-Brown, 2003
	Openness to ideas *Experimentation*	Boddy and Paton, 2005; Luftman and Brier, 1999; Ross et al., 1996; Tai et al., 2019
Interpersonal attitude	Community *Team-based environment*	Chan and Reich, 2007; Luftman and Brier, 1999; Schlosser et al., 2015
	Empowerment	Luftman et al., 1993; Luftman and Brier, 1999
	Leadership	Baker and Niederman, 2014; Bassellier et al., 2003; Brown and Magill, 1994; Chan, 2002; Chatman et al., 2005; Cumps et al., 2009; Feeny and Willcocks, 1998; Kaplan and Norton, 2004; Li et al., 2016; Luftman et al., 1993; Luftman and Brier, 1999; Roepke et al., 2000; Ross et al., 1996
	Mutual interest	Bassellier et al., 2003; Preston and Karahanna, 2009a, 2009b
	Respect	Jacks et al., 2018; Reich and Benbasat, 2000; Wagner and Weitzel, 2012
	Support	Boddy and Paton, 2005; Chan, 2002; Cumps et al., 2009; Kearns and Sabherwal, 2006; Luftman and Brier, 1999; Schlosser et al., 2015; Wagner and Weitzel, 2012
	Tolerance	Jacks et al., 2018
	Trust	Feeny and Willcocks, 1998; Karahanna and Preston, 2013; Luftman and Kempaiah, 2007; Preston and Karahanna, 2009a, 2009b; Reich and Benbasat, 2000; Schlosser et al., 2015; Wagner et al., 2014; Wagner and Weitzel, 2012; Wong et al., 2012

Table A5
Coding of HRM functional tasks dimension.

2nd order themes	1st order concepts	Addressed individuals	References	Responsibility for task
Administrating and supporting	Controlling *Measurement, evaluation, scheduling, information*	Personnel	Beaumont and Walters, 1991; Chan and Reich, 2007; Jordan, 1994; Peak et al., 2005	IT managers (Peak et al., 2005)
	Personnel policies *Formalization of behavior*	Personnel	Duncan, 1995; Jordan, 1994; Reich and Kaarst-Brown, 2003	n.n.
Planning	Job analysis *Job profiling, competence profiling,*	Personnel	Kaplan and Norton, 2004	HR Manager (Kaplan and Norton, 2004)
	Job design *Position creation, job specialization, define scope of activities*	Personnel	Bergeron et al., 2004; Jordan, 1994; Onita and Dhaliwal, 2011	Managers (Onita and Dhaliwal, 2011)
	HR planning *Identification*	Personnel	Jordan, 1994; Kaplan and Norton, 2004	HR Manager (Kaplan and Norton, 2004)
Resourcing	Staffing *Composition, forming, internal recruitment*	Managers	Luftman and Brier, 1999	n.n.
		Personnel	Baker and Niederman, 2014; Francalanci and Galal, 1998; Johnston and Yetton, 1996; Kude et al., 2018	Managers (Francalanci and Galal, 1998; Kude et al., 2018)
	Recruitment *Attracting, recruiting, hiring*	Personnel	Benbya and McKelvey, 2006; Boddy and Paton, 2005; Chen, 2010; Cumps et al., 2009; Kaplan and Norton, 2004; Onita and Dhaliwal, 2011	HR Manager (Kaplan and Norton, 2004) Organization (Benbya and McKelvey, 2006; Cumps et al., 2009)
		CIO	Karahanna and Preston, 2013	CEO (Karahanna and Preston, 2013)
		IT personnel	Kude et al., 2018; Reich and Benbasat, 2000; Reich and Kaarst-Brown, 2003; Roepke et al., 2000; Tai et al., 2019	IT HRM (Kude et al., 2018) IT department (Tai et al., 2019)
	Selection	IT personnel	Johnston and Yetton, 1996; Lee et al., 1995	n.n.
		Personnel	Feeny and Willcocks, 1998; Jordan, 1994; Li et al., 2016; Milovich, 2015; Reich and Kaarst-Brown, 2003	IT leaders (Feeny and Willcocks, 1998) Leaders (Li et al., 2016) IT organization (Milovich, 2015) Organization (Reich and Kaarst-Brown, 2003)
		Top management	Preston and Karahanna, 2009a; Schlosser et al., 2015	Organization (Preston and Karahanna, 2009a)
Developing	Performance measurement *Feedback assessments*	Personnel	Chatman et al., 2005; Johnston and Yetton, 1996; Kaplan and Norton, 2004	n.n.
		Business personnel	Benbya and McKelvey, 2006; Benlian, 2013	IT personnel, managers (Benlian, 2013)
		IT personnel	Benbya and McKelvey, 2006; Benlian, 2013	Business personnel, managers (Benlian, 2013)
		Managers	Benbya and McKelvey, 2006	n.n.
	Development *Development programs, education programs, seminars, team learning, workshops, job rotation, job assignments, secondments, role shifting, job transitions, coaching, mentoring, hands-on experience, on-the-job experience*	Personnel	Beaumont and Walters, 1991; Brown, 1994; Chatman et al., 2005; Feeny and Willcocks, 1998; Jordan, 1994; Kaplan and Norton, 2004; Luftman et al., 1993; Luftman and Kempaiah, 2007; Milovich, 2015; Zhou et al., 2018	Managers (Zhou et al., 2018) Management (Luftman and Kempaiah, 2007) CIO (Milovich, 2015) Organization (Chatman et al., 2005) HR manager (Kaplan and Norton, 2004)
		Top management	Brown, 1994; Preston and Karahanna, 2009a, 2009b	CIO (Preston and Karahanna, 2009a, 2009b)
		Senior managers	Rockart et al., 1996	n.n.
		CIO	Preston and Karahanna, 2009a	Organization (Preston and Karahanna, 2009a)
		Managers	Beaumont and Walters, 1991; Chatman et al., 2005; Reich and Benbasat, 2000	n.n.
		Business managers	Bassellier et al., 2003; Broadbent and Weill, 1993	n.n.
		IT managers	Broadbent and Weill, 1993; Chan and Reich, 2007	CEO (Chan and Reich, 2007)
		Business personnel	Broadbent and Weill, 1993; Luftman and Brier, 1999; Schlosser et al., 2015	n.n.
		IT personnel	Bassellier and Benbasat, 2004; Broadbent and Weill, 1993; Brown and Magill, 1994; Duncan, 1995; Johnston and Yetton, 1996; Kude et al., 2018; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Reich and Benbasat,	Organization (Bassellier and Benbasat, 2004; Roepke et al., 2000)

Table A5 (*continued*)

2nd order themes	1st order concepts	Addressed individuals	References	Responsibility for task
			2000; Reich and Kaarst-Brown, 2003; Roepke et al., 2000; Ross et al., 1996; Wagner and Weitzel, 2012	
	Training *Joint training, cross training*	Personnel	Baker and Niederman, 2014; Brown, 1994; Jordan, 1994; Onita and Dhaliwal, 2011; Zhou et al., 2018	Organization (Onita and Dhaliwal, 2011)
		Business personnel	Boddy and Paton, 2005; Karpovsky and Galliers, 2015; Luftman and Brier, 1999; Reich and Kaarst-Brown, 2003; Schlosser et al., 2015; Wagner and Weitzel, 2012	n.n.
		IT personnel	Bassellier and Benbasat, 2004; Brown and Magill, 1994; Duncan, 1995; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Reich and Kaarst-Brown, 2003; Ross et al., 1996	Organization (Bassellier and Benbasat, 2004) IT HRM (Kude et al., 2018)
		Managers	Chatman et al., 2005; Reich and Benbasat, 2000	n.n.
Motivating	Compensation *Pay, bonus, rewards, incentivation*	Personnel	Baker and Niederman, 2014; Boddy and Paton, 2005; Johnston and Yetton, 1996; Kaplan and Norton, 2004; Li et al., 2016; Reich and Benbasat, 2000; Schlosser et al., 2015	Managers (Boddy and Paton, 2005) Management (Li et al., 2016)
	Talent management *Retention, promotion, lateral movement, career crossover*	IT personnel	Chan, 2002; Johnston and Yetton, 1996; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Naidoo, 2016; Reich and Kaarst-Brown, 2003; Roepke et al., 2000; Tai et al., 2019	IT department (Tai et al., 2019) Management (Luftman and Kempaiah, 2007)
		Business personnel	Luftman and Brier, 1999; Luftman and Kempaiah, 2007	Management (Luftman and Kempaiah, 2007)
		Personnel	Baker and Niederman, 2014; Chen, 2010; Cumps et al., 2009; Luftman and Kempaiah, 2007	Organization (Cumps et al., 2009)
Uniting	Formal interaction *Meetings, steering committees, liaison units, reporting*	Managers	Broadbent and Weill, 1993; Chan and Reich, 2007; Luftman and Brier, 1999; Preston and Karahanna, 2009a; Reich and Benbasat, 2000	CIO (Preston and Karahanna, 2009a)
		Top management and CIO	Karahanna and Preston, 2013; Kearns and Sabherwal, 2006; Rockart et al., 1996	CEO (Karahanna and Preston, 2013) CIO (Karahanna and Preston, 2013)
		CEO, CIO	Broadbent and Weill, 1993; Preston and Karahanna, 2009a	n.n.
		Personnel	Chan, 2002; Jordan, 1994	Managers (Chan, 2002)
		Business and IT	Brown and Magill, 1994; Schlosser et al., 2015; Wagner et al., 2014; Wagner and Weitzel, 2012	n.n.
		Business and IT personnel	Benlian, 2013	Managers (Benlian, 2013)
	Informal interaction *Internal networks, joint work, colocation, company-wide associations, social clubs, communities*	Managers	Chatman et al., 2005; Preston and Karahanna, 2009a	n.n.
		Top management and CIO	Karahanna and Preston, 2013	n.n.
		CIO and managers	Liang et al., 2017	Organization (Liang et al., 2017)
		Business and IT personnel	Benlian, 2013; Jacks et al., 2018; Reich and Kaarst-Brown, 2003; Schlosser et al., 2015; Wagner and Weitzel, 2012	Managers (Benlian, 2013) Organization (Reich and Kaarst-Brown, 2003)
		Personnel	Chan, 2002; Jordan, 1994; Kane and Borgatti, 2011	Managers (Chan, 2002)
	n.s.	Business and IT personnel	Broadbent and Weill, 1993; Schwarz and Hirschheim, 2003; Tai et al., 2019; Wagner and Weitzel, 2012	IT organization (Schwarz and Hirschheim, 2003)
		Personnel	Baker and Niederman, 2014; Chan and Reich, 2007; Dulipovici and Robey, 2013; Kane and Borgatti, 2011	Organization (Baker and Niederman, 2014)
		IT personnel, personnel	Bassellier and Benbasat, 2004	n.n.

n.s. not specified; n.n. not named.

Table A6

Overview of axial coding of relations between concepts and 2nd order themes within dimensions.

Conditional 2nd order theme (concept)	Affected 2nd order theme (concept)	Reference(s)
Alignment behavior dimension		
Partnering behavior (Build partnerships)	Sharing behavior (Share responsibilities)	Luftman and Brier, 1999; Luftman and Kempaiah, 2007
Partnering behavior (Build partnerships)	Sharing behavior (Share competence)	Peppard and Ward, 2004; Reich and Kaarst-Brown, 2003; Wagner and Weitzel, 2012
Partnering behavior (Build partnerships)	Sharing behavior (Share vision)	Chen, 2010; Feeny and Willcocks, 1998
Partnering behavior (Communicate)	Sharing behavior (Share competence)	Chen, 2010; Wagner and Weitzel, 2012; Wu et al., 2015
Partnering behavior (Communicate)	Sharing behavior (Share understanding)	Wu et al., 2015
Sharing behavior (Share competencies)	Partnering behavior (Communicate)	Bassellier et al., 2003; Wong et al., 2012
Sharing behavior (Share language)	Partnering behavior (Communicate)	Bassellier et al., 2003; Chatman et al., 2005; Karpovsky and Galliers, 2015; Willcoxson and Chatham, 2004
Sharing behavior (Share competence)	Partnering behavior (Coordinate)	Wagner and Weitzel, 2012
Alignment competence dimension		
Business competence (Business knowledge)	Cross competence (Cross-domain competence)	Aral and Weill, 2007; Wagner and Weitzel, 2012; Zhou et al., 2018
IT competence (IT usage)	Cross competence (Cross-domain competence)	Aral and Weill, 2007; Wagner and Weitzel, 2012; Zhou et al., 2018
Alignment culture dimension		
Interpersonal attitude (Leadership)	Individual attitude (Agility)	Li et al., 2016
Individual attitude (Agility)	Interpersonal attitude (Leadership)	Li et al., 2016
HRM functional tasks and practices		
Developing	Uniting	Chatman et al., 2005
Planning	Resourcing	Kaplan and Norton, 2004
Planning	Developing	Kaplan and Norton, 2004
Developing (Development/Job transitions)	Motivating (Compensation/Incentivation)	Li et al., 2016
Developing (Development)	Motivation (Talent Management/Retention)	Baker and Niederman, 2014
Motivating (Compensation/Bonus)	Motivation (Talent Management/Retention)	Baker and Niederman, 2014
Motivating (Talent Management/Career alternatives)	Resourcing (Recruitment)	Reich and Kaarst-Brown, 2003

Table A7

Overview of selective coding of relations between dimensions.

Conditional dimension (2nd order theme/concept)	Affected dimension (2nd order theme/concept)	Reference(s)
Alignment behavior (Sharing behavior/ Share knowledge)	Alignment competence (Business competence/ Business understanding)	Wagner et al., 2014; Wagner and Weitzel, 2012
Alignment behavior (Sharing behavior/ Share knowledge)	Alignment competence (IT competence/ IT understanding)	Wagner et al., 2014; Wagner and Weitzel, 2012
Alignment competence (Area-independent competence/ People management skills)	Alignment behavior (Partnering behavior/ Endure relationships)	Luftman and Brier, 1999
Alignment competence (Unspecified competence/ Knowledge)	Alignment behavior (Partnering behavior/ Communicate)	Wong et al., 2012
Alignment competence (Unspecified competence/ Knowledge)	Alignment behavior (Partnering behavior/ Develop partnerships)	Bassellier and Benbasat, 2004
Alignment competence (IT competence/ n.s.)	Alignment behavior (Partnering behavior/ Build partnerships)	Bassellier et al., 2003
Alignment competence (IT competence/ n.s.)	Alignment behavior (Sharing behavior/ Share knowledge)	Bassellier et al., 2003
Alignment competence (IT competence/ n.s.)	Alignment behavior (Sharing behavior/ Share understanding)	Preston and Karahanna, 2009a
Alignment competence (IT competence/IT knowledge)	Alignment behavior (Partnering behavior/ Communicate)	Bassellier et al., 2003
Alignment competence (Business competence/ n.s.)	Alignment behavior (Sharing behavior/ Share understanding)	Preston and Karahanna, 2009a
Alignment competence (Business competence/ n.s.)	Alignment behavior (Partnering behavior/ Communicate)	Preston and Karahanna, 2009a
Alignment competence (Business competence/ n.s.)	Alignment behavior (Partnering behavior/ Partnership)	Bassellier and Benbasat, 2004
Alignment competence (Cross competence/ Cross-domain competence)	Alignment behavior (Partnering behavior/ Foster relationships)	Milovich, 2015
Alignment behavior (Partnering behavior/ Communicate)	Alignment culture (Individual attitude/ Commitment)	Broadbent and Weill, 1993
Alignment behavior (Partnering behavior/ Partnerships)	Alignment culture (Individual attitude/ Commitment)	Reich and Kaarst-Brown, 2003
Alignment behavior (Partnering behavior/ Coordinate)	Alignment culture (Individual attitude/ Agility)	Liang et al., 2017
Alignment behavior (Partnering behavior/ Communicate)	Alignment culture (Interpersonal attitude/ Trust)	Wagner and Weitzel, 2012
Alignment behavior (Partnering behavior/ Communicate)	Alignment culture (Interpersonal attitude/ Respect)	Wagner and Weitzel, 2012
Alignment behavior (Partnering behavior/ Build partnerships)	Alignment culture (Interpersonal attitude/ Confidence)	Feeny and Willcocks, 1998
	Alignment culture (Individual attitude/ Agility)	Liang et al., 2017

(continued on next page)

Table A7 (*continued*)

Conditional dimension (2nd order theme/concept)	Affected dimension (2nd order theme/concept)	Reference(s)
Alignment behavior (Sharing behavior/ Share understanding)		
Alignment behavior (Sharing behavior/ Share knowledge)	Alignment culture (Interpersonal attitude/ Respect)	Reich and Benbasat, 2000; Wagner and Weitzel, 2012
Alignment behavior (Sharing behavior/ Share knowledge)	Alignment culture (Interpersonal attitude/ Trust)	Reich and Benbasat, 2000; Wagner and Weitzel, 2012
Alignment culture (Interpersonal attitude/ Trust)	Alignment behavior (Partnering behavior/ Communicate)	Wagner and Weitzel, 2012; Wong et al., 2012
Alignment culture (Interpersonal attitude/ Respect)	Alignment behavior (Partnering behavior/ Communicate)	Wagner and Weitzel, 2012
Alignment culture (Individual attitude/ Involvement)	Alignment behavior (Partnering behavior/ Partnership)	Broadbent and Weill, 1993; Karpovsky and Galliers, 2015
Alignment culture (Individual attitude/ Involvement)	Alignment behavior (Partnering behavior/ Collaborate)	Benbya and McKelvey, 2006
Alignment culture (Interpersonal attitude/ Trust)	Alignment behavior (Partnering behavior/ Partnership)	Luftman and Kempaiah, 2007
Alignment culture (Interpersonal attitude/ Interest)	Alignment behavior (Sharing behavior/ Share understanding)	Preston and Karahanna, 2009a
Alignment culture (Interpersonal attitude/ Trust)	Alignment behavior (Sharing behavior/ Share knowledge)	Wagner et al., 2014; Wagner and Weitzel, 2012
Alignment culture (Interpersonal attitude/ Respect)	Alignment behavior (Sharing behavior/ Share knowledge)	Wagner and Weitzel, 2012
Alignment culture (Interpersonal attitude/ Support)	Alignment behavior (Sharing behavior/ Share knowledge)	Kearns and Sabherwal, 2006
HRM task (Developing/ Development/ Programs)	Alignment behavior (Sharing behavior/ Share knowledge)	Chatman et al., 2005; Luftman et al., 1993; Reich and Benbasat, 2000; Wagner and Weitzel, 2012
HRM task (Developing/ Development/ Programs)	Alignment behavior (Sharing behavior/ Share language)	Chatman et al., 2005
HRM task (Developing/ Development/ Job transfers)	Alignment behavior (Sharing behavior/ Share knowledge)	Milovich, 2015; Reich and Benbasat, 2000; Wagner and Weitzel, 2012
HRM task (Developing/ Development/ Job transfers)	Alignment behavior (Sharing behavior/ Share language)	Milovich, 2015
HRM task (Developing/ Development/ Job transfers)	Alignment behavior (Partnering behavior)	Broadbent and Weill, 1993
HRM task (Developing/ Training)	Alignment behavior (Partnering behavior)	Feeny and Willcocks, 1998; Karpovsky and Galliers, 2015
HRM task (Uniting/ Informal interaction)	Alignment behavior (Sharing behavior/ Share knowledge)	Hirschheim and Sabherwal, 2001; Liang et al., 2017; Schlosser et al., 2015
HRM task (Uniting/ Formal interaction)	Alignment behavior (Sharing behavior/ Share knowledge)	Karahanna and Preston, 2013; Wagner and Weitzel, 2012
HRM task (Uniting/ Formal interaction)	Alignment behavior (Sharing behavior/ Share understanding)	Luftman and Brier, 1999; Preston and Karahanna, 2009a; Wu et al., 2015
HRM task (Uniting/ Informal interaction)	Alignment behavior (Sharing behavior/ Share understanding)	Benlian, 2013; Liang et al., 2017
HRM task (Uniting/ Informal interaction)	Alignment behavior (Sharing behavior/ Share language)	Schlosser et al., 2015
HRM task (Uniting/ Formal interaction)	Alignment behavior (Sharing behavior/ Share language)	Wagner et al., 2014
HRM task (Uniting/ Informal interaction)	Alignment behavior (Sharing behavior/ Share cognition)	Karahanna and Preston, 2013
HRM task (Uniting/ Formal interaction)	Alignment behavior (Sharing behavior/ Share cognition)	Karahanna and Preston, 2013
HRM task (Uniting/ Formal interaction)	Alignment behavior (Partnering behavior/ Develop relationships)	Schlosser et al., 2015; Tai et al., 2019
HRM task (Uniting/ Formal interaction)	Alignment behavior (Partnering behavior/ Collaborate)	Schlosser et al., 2015
HRM task (Uniting/ n.s.)	Alignment behavior (Partnering behavior/ Communicate)	Liang et al., 2017
HRM task (Uniting/ Informal interaction)	Alignment behavior (Partnering behavior/ Coordinate)	Liang et al., 2017
HRM task (Resourcing/ Staffing)	Alignment behavior (Sharing behavior/ Share understanding)	Preston and Karahanna, 2009a; Wu et al., 2015
HRM task (Resourcing/ Staffing)	Alignment behavior (Sharing behavior/ Share knowledge)	Wu et al., 2015
HRM task (Developing/ Development/ Programs)	Alignment competence (IT competence/ process capabilities)	Chatman et al., 2005
HRM task (Developing/ Development/ Programs)	Alignment competence (IT competence/ IT understanding)	Bassellier et al., 2003; Broadbent and Weill, 1993; Brown, 1994; Luftman and Brier, 1999; Milovich, 2015; Preston and Karahanna, 2009b; Reich and Benbasat, 2000; Ross et al., 1996
HRM task (Developing/ Development/ Programs)	Alignment competence (Area-independent competence/ Leadership skills)	Chatman et al., 2005
HRM task (Developing/ Development/ Programs)	Alignment competence (Area-independent competence/ Interpersonal skills)	Luftman and Brier, 1999
HRM task (Developing/ Development/ Programs)	Alignment competence (Area-independent competence/ Project management skills)	Broadbent and Weill, 1993
HRM task (Developing/ Development/ Programs)	Alignment competence (Business competence/ Customer understanding)	Chatman et al., 2005
HRM task (Developing/ Development/ Programs)		

Table A7 (*continued*)

Conditional dimension (2nd order theme/concept)	Affected dimension (2nd order theme/concept)	Reference(s)
	Alignment competence (Business competence/ Business understanding)	Bassellier and Benbasat, 2004; Broadbent and Weill, 1993; Brown, 1994; Kude et al., 2018; Luftman and Brier, 1999; Luftman and Kempaiah, 2007; Preston and Karahanna, 2009b; Reich and Kaarst-Brown, 2003
HRM task (Developing/ Development/ Programs)	Alignment competence (Cross competence/ Cross-functional competencies)	Chatman et al., 2005; Zhou et al., 2018
HRM task (Developing/ Development/ Job transitions)	Alignment competence (Cross competence/ Hybrid skills)	Li et al., 2016
HRM task (Developing/ Development/ Programs)	Alignment competence (Unspecified competence/ Skills)	Duncan, 1995; Onita and Dhaliwal, 2011
HRM task (Uniting/ Formal interaction)	Alignment competence (IT competence/ IT understanding)	Kearns and Sabherwal, 2006; Luftman and Brier, 1999; Preston and Karahanna, 2009a
HRM task (Uniting/ Informal interaction)	Alignment competence (IT competence/ IT understanding)	Schlosser et al., 2015
HRM task (Uniting/ Formal interaction)	Alignment competence (Business competence/ Business understanding)	Luftman and Brier, 1999; Reich and Kaarst-Brown, 2003; Schwarz and Hirschheim, 2003
HRM task (Uniting/ Informal interaction)	Alignment competence (Business competence/ Business understanding)	Luftman and Kempaiah, 2007; Schlosser et al., 2015
HRM task (Resourcing/ Staffing)	Alignment competence (IT competence/ Technical competencies)	Luftman and Brier, 1999
HRM task (Resourcing/ Staffing.)	Alignment competence (Unspecified competence/ Skills)	Li et al., 2016
HRM task (Resourcing/ Recruitment)	Alignment competence (Unspecified competence/ Skills)	Onita and Dhaliwal, 2011
HRM task (Resourcing/ Recruitment)	Alignment competence (Business competence/ Business understanding)	Kude et al., 2018; Tai et al., 2019
HRM task (Resourcing/ Recruitment)	Alignment competence (IT competence/ IT skills)	Tai et al., 2019
HRM task (Resourcing/ Recruitment/ Attraction)	Alignment competence (IT competence/ IT competencies)	Benbya and McKelvey, 2006
HRM task (Developing/ Development/ Programs)	Alignment culture (Individual attitude/ Development culture)	Chatman et al., 2005
HRM task (Developing/ Development/ Programs)	Alignment culture (Individual attitude/ Agility)	Chatman et al., 2005
HRM task (Developing/ Development/ Programs)	Alignment culture (Individual attitude/ Leadership)	Chatman et al., 2005
HRM task (Developing/ Development/ Programs)	Alignment culture (Interpersonal attitude/ Interest)	Bassellier et al., 2003; Preston and Karahanna, 2009a
HRM task (Resourcing/ Selection)	Alignment culture (Interpersonal attitude/ Interest)	Preston and Karahanna, 2009a
HRM task (Uniting/ Informal interaction)	Alignment culture (Interpersonal attitude/Trust)	Benlian, 2013; Karahanna and Preston, 2013; Preston and Karahanna, 2009b; Schlosser et al., 2015
HRM task (Uniting/ Formal interaction)	Alignment culture (Interpersonal attitude/Trust)	Karahanna and Preston, 2013; Preston and Karahanna, 2009b; Wagner et al., 2014
HRM task (Uniting/ Formal presentations)	Alignment culture (Individual attitude/ Awareness)	Reich and Benbasat, 2000
HRM task (Uniting/ Informal networks)	Alignment culture (Interpersonal attitude/ Empowerment)	Chan, 2002
HRM task (Uniting/ Informal networks)	Alignment culture (Interpersonal attitude/ Positive work environment	Chan, 2002

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