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Success factors for information logistics strategy — An empirical investigation

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ABSTRACT

Providing analytical information to all stakeholders in a timely manner remains, in the face of current challenges, a key issue in organizations. Information logistics (IL) extends present concepts of decision support like business intelligence by focusing on enterprise-wide information supply and the exploitation of synergies. The article investigates which factors play critical roles in the success of IL strategies. An empirical study by means of a causal analysis provides evidence for significant relationships between those factors and organizational performance. The study identifies comprehensiveness, flexibility, support, communication, IT strategy orientation, business/IT partnership, and project collaboration as influencing factors for IL strategy success. Not all success factors, however, validated in related strategy research can be confirmed in the IL context.

1. Introduction

Analytical information systems (AIS) represent an essential component of the enterprise application landscape. Current trends like compliance management, the need for cost reduction, and globalization demand increasingly the delivery of the right information to the right people at the right time for decision-making purposes. Up to now, concepts like business intelligence (BI) and data warehousing (DWH) have been dedicated to the systematic and purposeful analysis of an organization and its competitive environment. Therefore, they are of ongoing high relevance for an organization's information management [5,86]. Current studies confirm this observation. Luftman and Ben-Zvi, for example, have identified BI as the most important key issue for CIOs [61].

Increasingly, persons in charge of providing analytical information have to consider the entirety of decision support initiatives in a comprehensive and superior manner; as well as the long investment cycles and the infrastructure character of these projects. These requirements are in particular addressed by the information logistics (IL) approach [22,23]. IL is intended to serve as a conceptual foundation for supporting a large variety of decisions in an organization and across organizational boundaries, thereby focusing on the exploitation of synergies rather than on 'local' processes and user specific decision support. It can be seen as an extension to 'traditional' decision support approaches like BI and DWH.

Both the previous approaches and the new paradigm of IL require the overall, superior, and long range planning, implementation, and control of all related activities in order to reach the specified goals — by doing the right things (effectiveness) and doing things right (efficiency). In other words, a strategy (and according governance structures) is needed. Based on the IL understanding (cf. Section 2.1) and on Earl's definition of information technology (IT) strategy [24], IL strategy is understood as a concept to systematically pursue long-range, enterprise-wide, aggregate goals for IL in sync with IT strategy and business strategy [22]. It is widely accepted that a strategy is characterized by two perspectives [e.g. 67]. Introduced by Chandler [11], Ansoff [4], and Andrews [3], the distinction between strategy content and strategy process research represents a leading division of the discipline, with far-reaching implications even today [54]. The content-related perspective specifies the strategic positioning by defining goals. However, a workable strategy should by no means be limited to the mere statements on goals — it must also show concrete development paths and ways to achieve those goals. This perspective is addressed by the strategy process. Strategy process research deals primarily with the actions that lead to and support strategy [54]. The Harvard Business School, and in particular Andrews [3], developed a model of strategy process and introduced the influential two-stage distinction of strategy formulation and strategy implementation.

IL strategy aims at coordinating the diversity and multitude of 'local' goals (of different organizational units or functions), at harmonizing solution 'islands' technically and/or from a business point of view, and at aligning short-terms targets with long-term planning. It has to be permanently reviewed and be adapted if necessary to business strategy amendments, IT strategy updates, and technology innovations, since

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the business environment is quite volatile [22]. Many organizations are currently faced with implementing an IL strategy or BI strategy, respectively. According to Dinter and Winter [22], only 9.3% of the organizations have already implemented a dedicated IL/BI strategy, 43.7% are currently implementing, and 37.1% plan to implement such a strategy. These figures underline the need for methodological guidance when planning and implementing IL/BI strategies. Advice regarding the strategy content and regarding the strategy process (cf. above) is not enough; organizations also need assistance in determining which factors might influence the success of such an implementation. However, there have been very few contributions to IL/BI strategy from the scientific community (cf. Section 2.2). In particular, to the best of our knowledge there are no publications that address the success factors for IL/BI strategy explicitly and comprehensively. The paper at hand aims at closing this research gap and answering the following research question by means of empirical analyses:

> *What are the predominant critical success factors of IL strategy, i.e. which factors have significant impact on the success of an IL strategy within real-world organizations?*

The gain in insight with respect to this research question may be beneficial to both the scientific community and real-world organizations. The results also provide guidance which factors should be considered when thinking about analytics holistically, i.e. when broadening the perspective from single instances of BI projects to an enterprise IL strategy. Finally, we might — as a side-effect — gain insight if the IL concept contributes to organizational performance.

The remainder of this article is structured as follows: The second section provides an introduction to the concept of information logistics, an overview of the state of the art regarding IL/BI strategy, and an overview of success factors for various strategy research streams. In Section 3 the research model and its hypotheses are presented. The design and procedure of an empirical analysis that was conducted by means of structural equation modeling in order to address the research question is outlined in the forth section. Section 5 includes the results of the analysis, i.e. the success factors for IL strategy. These findings are interpreted and discussed, and the need for further research is identified in the sixth section, which concludes the article.

2. Conceptual foundations

2.1. Concept of information logistics

AIS projects might be driven by isolated and rather local information requirements resulting from 'local' tasks and/or roles and might be characterized by short-term considerations. The awareness and effort for synchronizing and integrating those independent project activities is limited. The IL concept aims at overcoming these deficits and extends the concepts of decision support like BI and DWH by emphasizing the enterprise-wide, synergy oriented information provision. In particular, IL supersedes isolated, process- and user-specific initiatives in favor of global solutions with a global maximum business value.

Abstracting from technically oriented differentiations of information supply (data warehouse systems, data marts, OLAP, etc.), and focusing on conceptual aspects, IL can be defined as the planning, implementation, and control of the entirety of cross-unit data flows as well as the storage and provision of such data [22]. It is characterized by:

- A broader focus that not only emphasizes IS (and corresponding IT) aspects, but also examines the strategic, organizational, and implementation aspects in an integrated way [2,17].
- Explicitly encompassing the basic functions of management (planning, implementing, and controlling) in contrast with traditional BI/DWH approaches which focus primarily on requirements and solutions engineering. As a consequence, IL also considers the continuous evolution of AIS and their operations.
- Specific organizational structures that ensure effective coordination among the participating organizational units in order to generate synergy effects and to make sure that enterprise-wide goals are attained. Consequently, IL has to be aligned with the organization's overall goals (i.e. the business strategy) and has to address business needs and interests.

The last characteristic describes the demand for a holistic approach which is similar to general logistics. It originates from the total system concept and its system theoretical principles, described e.g. in ref. [15]. It is based on two major assumptions: first, in complex systems the results of decisions and/or activities of subsystems affect the remaining subsystems and/or the overall system, respectively; i.e. the subsystems are not acting independently. The second issue addresses the synergy effects, as introduced e.g. in ref. [4]. The term 'synergy' is mainly used for the phenomenon if the whole is greater than the sum of the parts.

Both aspects are relevant in the context of IL as well and address the issue of a holistic enterprise-wide (or even cross-company) view instead of isolated projects. In an organizational context, synergies are created if the output of one organizational unit can be used as intermediate input for another one, or if organizational units bundle their competencies and thereby reduce costs or create added value [53]. Particularly the bundling of products, the combination of competencies, and the integration of (e.g. customer) knowledge necessitates data transfers between organizational units — this is the 'business case' (i.e. economic justification) of IL.

2.2. IL and BI strategy — state of the art

As already mentioned, we define IL strategy as a concept to systematically pursue long-range, enterprise-wide, aggregate goals for IL in sync with IT strategy and business strategy [22]. As the IL concept is quite new, there is very little scientific contribution explicitly addressing IL strategy [22]. More practical experiences and scientific publications can be found when regarding the related concepts of BI strategy (more often used) and DWH strategy (less often used and mainly technically oriented). Nevertheless, due to consistency reasons, we use the term 'IL strategy' for the remainder of the article. By analogy with the aforementioned IL definition, the IL strategy extends a BI strategy by pursuing IL-specific goals, in particular, generating synergy effects and enhancing cross-unit and cross-functional provision of analytical information in organizations.

Although a wide range of (also scientific) publications about IT strategy in general exists, not much has been contributed on the transfer of such concepts to BI and DWH — which is remarkable, taking the long tradition of BI and DWH research into account. Publications mainly focusing on the strategy (development) process (cf. Section 1) are mostly practitioner-oriented [e.g. 8,30,88]. They address methodologies for the IL strategy definition process and usually adapt the generic strategy development process by adding practice-oriented suggestions for the IL context. Many authors point out that IL strategy should be aligned with business strategy and that its goals have to be derived 'top down' [e.g. 48,59].

Other contributions focus on particular issues like DWH architecture [e.g. 10] or organizational issues [e.g. 26,93,95]. Several practitioner publications propose IL strategy components [e.g. 33,38,59]. Different artefact types are mixed and declared as strategy components, without any evidence of completeness or correctness. Finally, another class of contributions present findings about IL strategy by means of case studies and case examples [e.g. 63,88].

Publications that emphasize and detail the role of AIS to support the business strategy and the strategic management process [e.g. 78,85] do also not address the IL strategy in particular.

Very little attention has been paid so far to success factors for IL strategy [e.g. 30]. If mentioned at all, they constitute rather 'lessons learned', i.e. results from practical experiences which are not systematically derived and validated.

The literature overview makes evident that there is no common understanding of IL strategy (or BI or DWH strategy, respectively) so far. Various contributions focus on the strategy process or strategy content. Most publications address either specific issues related to IL strategy or are mainly practitioner-driven and therefore do not claim to be comprehensive or verified. In particular, we identified a lack of contributions regarding influencing factors for IL strategy success. This deficit is even enforced by a study [22] which evidences that most organizations are currently planning or implementing an IL strategy (cf. Section 1) and might need appropriate guidance. This line-up motivates our empirical study which will be presented in the remainder of the article.

2.3. Strategy success factors

Many contributions address and identify critical success factors for related strategy research streams. We conducted a comprehensive literature review and comprised three major streams for literature analysis about those factors:

- Strategic management in general [e.g. 4,11,54,64]
- Information systems (IS)/technology (IT)/management (IM) strategy [e.g. 24,80]
- Strategic information systems planning (SISP) [e.g. 55–57,71,81]

A more detailed enumeration and explanation of these concepts can be found e.g. in refs. [12,28,40]. Many authors emphasize the relevance of business/IT alignment when formulating and implementing a strategy on the IT side [e.g. 47,60,62,92]. Therefore we also took into consideration contributions that identify success factors for business/IT alignment. All references to previous work about success factors for the aforementioned strategy types we used for our research are listed in detail in Sections 3.1 and 3.2 (Table 1).

3. Research model and hypotheses

3.1. Hypothesis development

As noted in previous research [20], multiple, interrelated success dimensions (or 'success factors') which are themselves measured by multiple indicators are more likely to capture changes in performance than an all-encompassing scale item or set of financial measures [84]. This approach is widely used in strategy research about success factors. We also base our research on the assumption that the IL strategy success will be affected by several factors. According to Hair et al. those factors, also called constructs, and the underlying theory respectively (represented by the research model) can be based on ideas generated from one or more of three principal sources: 1) prior empirical research, 2) past experiences and actual behavior, attitudes, or other phenomena, and 3) other theories that provide a perspective for analysis [44, p. 710]. We used all three sources for our research, agreeing with Churchill that extensive literature review and expert opinions provide a sound foundation upon which a theoretical domain (or construct space) of complex variables can be formed [16]. From this theoretical domain, an operational basis for assessing the status and change in complex phenomena can be defined [84].

The theoretical framework of our research model is based on two previous well-known theories, namely the theory of Critical Success Factors (CSF) [77] and the theory of IS success [20,21]. The research model postulates that several critical success factors affect the IL strategy success positively, which again is related positively to organizational success. Coined first in 1961 by Daniel [18], the theory of critical success factors has been renewed by Rockart who defined CSF as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization" [77, p. 85]. Since then, the CSF theory has been widely used in IS research as well [e.g. 69]. We derived the critical success factors for IL strategies from expert interviews and from previous research. We conducted semi-structured interviews with BI experts during a workshop dedicated to IL/BI strategy. The participants had specific expertise in BI and in particular in IL (e.g. currently introducing the IL concept in their organization) and were employees on middle management level in rather large organizations from a wide range of industries. In a second step, we reviewed previous literature extensively, taking into account the results of related strategy research streams (cf. Section 2.3). It is common practice in related research to combine the perspectives of strategic management, IS strategy and SISP and to share results [e.g. 82,84]. We extend this approach to IL strategy, in particular since there is very little previous work available dedicated to the IL and BI context. The results of both, expert interviews and literature review, were consolidated and constitute the independent variables in our research model. We specified the factors on a granularity and abstraction level that makes sophisticated differentiations obsolete. The literature review also made evident that many success factors were validated in various strategy research streams concurrently. As the paper at hand is a primer in its topic, we preferred to cover a broad range of factors rather than detailing particular aspects. We had to limit and filter the factors we wanted to assess in the context of IL strategy in the face of the extensive literature. For example, Lederer and Sethi [57] identified in one publication 55 prescriptions (comparable to success factors) for SISP. With the dichotomic approach of considering practical experiences and a broad range of previous research results we aimed at avoiding any bias.

The elements of the IS success model constitute the dependent variables in our research model. Measuring the 'quality' and therefore success of actual IL strategy goals (i.e. the concrete strategy content) does not make sense in a generic research model as the goals are organization-specific and can thus only be assessed in the context of that organization. In their seminal work, DeLone and McLeon defined the success of IS by constructs like system quality, information quality, and net benefits [20,21]. These constructs were also used in an empirical investigation of the factors affecting data warehousing success in order to express the system success [94]. We adapted the constructs to the context of information logistics. These IL strategy success constructs and the critical success factors (cf. above) result in our research model as illustrated in Fig. 1. The model postulates that the presence of success factors (independents variables on the left side in the figure) would result in the IL strategy success and corresponding increased organizational performance (dependent variables on the right side).

The success factors address the strategy content as well as the strategy process (formulation and implementation). Regarding the strategy content, only generic criteria can be considered in our research model since organization-specific IL strategy goals cannot be assessed. The 'quality' of these goals, and the consequent success of the IL strategy, can only be evaluated in the organization's context. The factor 'comprehensiveness' (cf. below) can be assigned to strategy content, the factors 'flexibility', 'expertise', 'support', 'communication', and 'IT strategy orientation' to strategy process, and the factors 'business knowledge transfer', 'business/IT partnership', and 'project collaboration' to business/IT alignment. Following, we characterize the constructs in detail.

3.1.1. Comprehensiveness

This factor primarily summarizes aspects that distinguish a strategy from local oriented and short-term (project) planning in organizations, i.e. scope, extent of validity in a company's organization, and longer planning time horizon. Fredrickson and Mitchell define comprehensiveness as "the extent to which an organization attempts to be exhaustive or inclusive in making and integrating strategic decisions" [32, p. 402]. Janis and Mann [51] differentiate seven broad behaviours that illustrate comprehensiveness in strategic planning in

general. As already mentioned in Section 2.1, a major concern of IL is the holistic enterprise-wide view of all AIS in the organization which requires amongst others a comprehensive IL strategy.

Several publications identify comprehensiveness as a success factor for strategy [e.g. 31,65,73]. However, some empirical studies show that the relationship between comprehensiveness and organization performance is not clearly positive and depends on further influencing factors [32,65].

3.1.2. Flexibility

Earl considers, "IT strategy as an evolutionary process" [24, p. 114]. Consequently, strategy requires flexibility in two respects: first, changing circumstances and changing business needs might make a strategy adaptation useful and necessary. This is especially true for IL. Second, strategy goals achievement should be measured continuously. If necessary, the strategy should be adjusted according to the measurements results. The latter aspects correspond to the so-called strategic control [e.g. 39,42]. The recent literature on strategic management clearly advocates the establishment of some system of strategic controls to monitor strategic progress and ensure the implementation of strategic plans [39]. However, strategic control is not so common in practice — despite findings like "A strategy that cannot be evaluated in terms of whether or not it is being achieved is simply not a viable or even a useful strategy" [79]. Singh et al. [85] also argue that a well-defined strategic control system can improve the probability that the (organizational) strategies are implemented, despite the chaotic, unpredictable, and dynamic nature of an organization's environment.

3.1.3. Expertise

Given the complexity and relevance of strategies, several authors accentuate that appropriate expertise, especially in the strategy formulation phase, should assure (amongst others) the strategy success [e.g. 9,24,57,87]. The need for such expertise when formulating the IL strategy is further motivated by the high percentage of AIS projects that have failed in the past [34]. In addition, all relevant stakeholders, like the business users, should be involved to further increase the strategy quality and to ensure the latter acceptance of the systems (in our case: analytical information systems) [1,9,68]. Pinto and Prescott [68] recommend client communication, consultation, and active listening to all concerned parties and potential users of the project.

3.1.4. Support

Top management support and commitment is needed to address the superior scope of strategy and to supersede local and isolated interests in favor of a holistic overall view. It is particularly true in the context of IL, as the IL approach is mainly motivated by this claim (cf. Section 2.1). Empirical studies of the strategic IS development process uniformly suggest that a top-management champion is critical for strategic IS [e.g. 75,81].

Another facet of support is the provision of all needed resources (budget, human resources, know-how, time, etc.) to ensure the aforementioned comprehensiveness of strategy [e.g. 1,9,24,57,70].

3.1.5. Communication

Several authors [e.g. 1,45,68] emphasize the relevance of communicating the purpose of the strategy between (top) management and the employees, since the strategy affects many organizational levels and units and requires a universal commitment. It should involve two-way communication that permits and solicits questions from affected employees about the formulated strategy, issues to be considered, or potential problems that might occur [1]. In addition, communication includes clearly explaining what new responsibilities, tasks, and duties need to be performed by the affected employees [1].

Communication also includes marketing of the strategy [9,45] — as Hambrick and Cannella accentuate: "Sell the strategy to everyone who matters — upward, downward, across, and outward" [45, p. 278].

3.1.6. IT strategy orientation

Regarding an organization's strategies as a multi-level hierarchy [cf. 89], the IL strategy can be seen as a functional partial strategy of the IT strategy — which leads to the demand for adequate alignment between IL and IT strategy. As emphasized by MAIS and AIMS [63], IT's participation in creating business strategies requires effective IT governance processes. Analogously, we consider effective IL governance structures that are compliant with the superior IS/IT governance structures as a further prerequisite for the success of an IL strategy.

3.1.7. Business knowledge transfer

Numerous researchers have indicated that IT alignment with business strategy is vital to achieve expected results [e.g. 47,80,84,89,90]. Premkumar and King [70] emphasize also the relevance of IS/business integration, i.e. the integration of IS plans with their business plans to ensure that their information systems are in alignment with the business strategy of the organization. IL aims at providing the right (analytical) information to the right people and at supporting business needs — which requires an analogous 'business/IL alignment'. Consequently, the factors 'business knowledge transfer', 'business/IT partnership', and 'project collaboration' summarize different aspects of business/IT (IL) alignment. In literature, several terms like business awareness [75], cooperation [84], or internal consistency [46] address this topic.

Business knowledge transfer not only includes the fact that IT needs know-how about the business and the corporate strategy, but also that it should be involved in the definition of business-related strategies. Luftman and Kempaiah [61] rank "Build business skills in IT" in position 3 of the top-10 management concerns.

3.1.8. Business/IT partnership

Luftman et al. [62] identified enablers and inhibitors of business/IT alignment in a multi-year study. Among the most frequently identified enablers is business/IT partnership. Moreover, Segars and Grover [84] emphasize the partnership between IS and user groups (i.e. business) as essential. Facets of such a partnership include cooperation and communication. In addition, according to Teo and Ang [90] top management's trust in the IT department is a prerequisite for the allocation of appropriate resources in IS planning. Given such confidence, they state "the role of the IS department is more likely to be elevated from a supporting role to a more strategic role" [90, p. 179].

3.1.9. Project collaboration

Related to business/IT partnership is the need for IT and business units to collaborate in joint projects and with shared responsibility [62,74,76]. In addition, IT projects should be prioritized mainly according to business needs [62,90]. This requirement becomes relevant in particular for IL projects as the IL concept emphasizes the need of a holistic enterprise-wide and business-oriented view of all IL related activities (cf. Section 2.1).

We will test in a causal model (cf. Section 5) if and to what extent the aforementioned factors influence the IL strategy success. As elaborated above the IL strategy success can also not be measured directly and unidimensionally and will be described, based on the IS success theory, by the following constructs:

3.1.10. System quality

DeLone and McLean [20] developed a comprehensive overview of empirical success measures of system quality. In our case, this construct summarizes rather technically oriented beneficial outcomes of IL. As elaborated in ref. [20] and later confirmed in several studies, system quality has a positive impact on organizational performance (net benefits, see below).

3.1.11. Adequate information supply

'Adequate Information supply' summarizes in our context the aspects that ensure providing the right analytical information to the right people in the right place at the right time. This includes not only information quality (cf. [20]), but also IL-relevant aspects like cross-unit and cross-functional supply of analytical information in organizations [22,23].

3.1.12. Effective use of IL

In accordance to DeLone and McLean [21] we grouped the ultimate high level 'impact' measures on the organizational level into a single impact or benefit category called 'effective use of IL'. Besides net benefits, such as cost reduction and increased business value, we added an item that addresses the inherent goal of IL, i.e. creating synergies by overcoming partial interests in favor of superior points of view [22,23].

3.1.13. Research model

All hypotheses forming the basis of the causal analysis are depicted in the research model in Fig. 1. Our assumption is that each success factor (left side in Fig. 1) is positively related to the system quality of the IL systems (analytical information systems) and to the provision of analytical information by IL, i.e. adequate information supply. Arguments for these assumptions can be found in the construct descriptions above and in the references used for the operationalization of the constructs (cf. Section 3.2 and Table 1). This leads to 9×2 hypotheses (indicated as H1a, H1b, H2a,…, H9a, H9b). For example hypothesis H1a is formulated as follows: "The level of comprehensiveness of an IL strategy is positively related to the system quality of the IL systems". The remaining hypotheses can be formulated analogously. In addition, the research model includes the following hypotheses:

H10. The system quality of the IL systems is positively related to the adequate supply of analytical information by IL.

H11. The system quality of the IL systems is positively related to the effective use of IL.

H12. The supply of analytical information by IL is positively related to the effective use of IL.

In order to validate these hypotheses, a causal analysis (confirmatory factor analysis) is conducted. The hypotheses are operationalized (cf. the following Section 3.2) and transferred into a structural equation model (SEM). The directed paths that connect the variables of the structural model represent causal relationships. SEM is a particular approach to multivariate data analysis allowing for the formulation, calculation, and testing of causal effects between variables that are incapable of direct observation and measurement [83]. In order to reproduce these so-called latent variables (LVs), measurement models are used that relate each LV with one or more quantifiable indicator variable(s). By means of SEM, the entire structural model consisting of both LVs and indicator variables is tested. Each LV in the research model is represented by a set of indicators. In the following section these indicator variables are derived.

3.2. Operationalization of constructs

In order to test the aforementioned hypotheses, the constructs have to be operationalized by items which can be measured. According to Hair such scales can either be derived from previous research or new construct measures can be developed when a research is studying something that does not have a rich history of previous research [44]. In our case, the CSF items are grounded in previous research and theory and were developed based on items from literature. Similar to the development of the constructs we also included expert opinions. They did not result in any additional scales to the ones derived by literature. This procedure prevented us from including any potential bias due to our understanding and anticipation of IL strategy when operationalizing the critical success factors. Regarding the measures for the IL strategy success, we followed Hair's approach and added some further items to take into account the IL characteristics. Table 1 contains the constructs used in the study and lists their respective measurement items. For each item the corresponding reference literature is added as well.

The aforementioned items are the basis for the survey we conducted (cf. following section). We followed the decision rules for determining whether the constructs are formative or reflective according to Jarvis et al. [52] to avoid misspecifications in the measurement model. We came to the conclusion that all constructs are reflective which has later been confirmed by empirical analysis results.

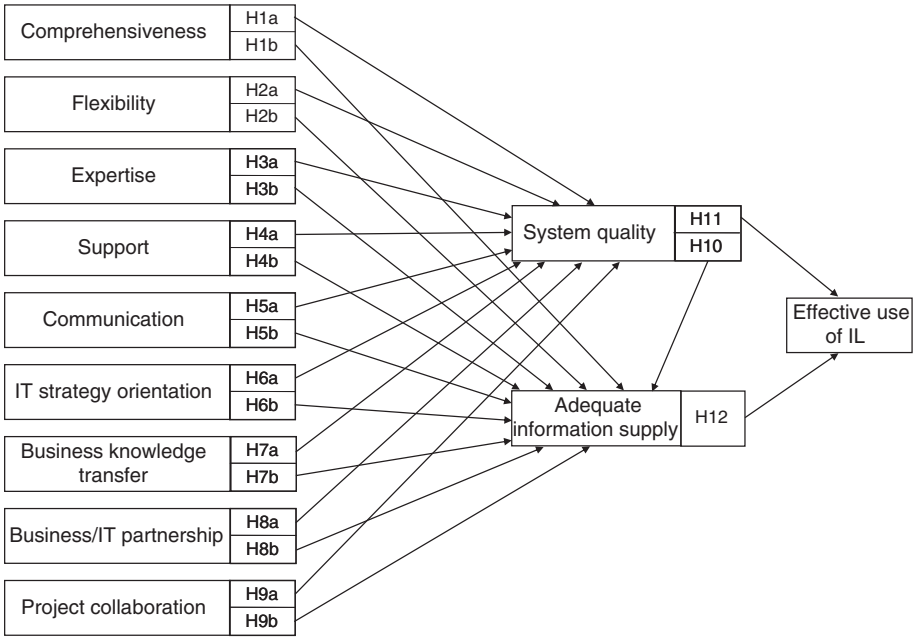

Fig. 1. Research model.

Table 1
Operationalization of constructs.

Construct	Construct type	Item	Description	References
Comprehensiveness (COMP)	Reflective	COMP1	Comprehensive focus of the IL strategy	[31,43,65,73]
		COMP2	Enterprise-wide validity of the IL strategy	[31,65]
		COMP3	Long horizon of the IL strategy (three to five years)	[20, p. 113], [70]
		COMP4	Vision as the starting point for the IL strategy	[46,62,68,74]
		COMP5	Top down derivation of IL strategy goals (starting point: vision)	[6,57]
Flexibility (FLEX)	Reflective	FLEX1	Continuous measurement of IL strategy goals achievement	[39,42,57,68,85]
		FLEX2	Adjustment of IL strategy depending on measurement results	[64, p. 11], [39,85]
		FLEX3	Dynamic revisions due to new circumstances	[24, p. 114], [92, p. 125], [57,68]
Expertise (EXP)	Reflective	EXP1	Involvement of all relevant stakeholder for the definition of the IL strategy	[1,7,9,30,35,68,73], [87, p. 5]
		EXP2	Definition of the IL strategy by experienced experts	[7,9,57], [24, p. 115], [87, p. 5]
Support (SUP)	Reflective	SUP1	Top management support for the IL strategy	[9,35,57,62,68,70,72,73,81,90], [24, p. 115]
		SUP2	Sufficient budget and resources to formulate and implement the IL strategy	[1,7,9,57,70,72], [24, p. 115], [87, p. 6]
Communication (COMM)	Reflective	COMM1	Knowledge about IL strategy content and goals in the organization	[1,7,9,70]
		COMM2	Stakeholder-oriented communication of the IL strategy in the organization	[1,7,45,68,70,73,74]
IT strategy orientation (ITSO)	Reflective	ITSO1	Derivation of the IL strategy as a partial strategy of the IS / IT strategy	Own contribution
		ITSO2	Compliance of IL strategy with IS / IT strategy	Own contribution
		ITSO3	Compliance of IL governance with IS / IT governance	Own contribution
Business knowledge transfer (BKNT)	Reflective	BKNT1	Knowledge of the IT department about the corporate strategy	[47,62,90]
		BKNT2	Business and process knowledge of the IT department	[62,73,76,90]
		BKNT3	Involvement of the IT department for the definition of the corporate strategy	[57,62,74,90], [92, p. 125]
Business/IT partnership (PART)	Reflective	PART1	Cooperative relationship between IT and business	[35,62,90]
		PART2	Top management trusts in IT and its decisions	[74,90]
		PART3	Continuous communication between IT and business executives	[62,70,74,76]
Project collaboration (COLL)	Reflective	COLL1	Joint project management and realization by business and IT	[74,76]
		COLL2	Shared responsibility of business and IT people for the economic and technical success of IT projects	[62], [92, p. 125]
		COLL3	Business adequate prioritization of IT projects	[9,62,90]
System quality (QUAL)	Reflective	QUAL1	Standardization of the system landscape	Developed based on [20,94]
		QUAL2	Mandatory standards and guidelines regarding developing and operating the IL	Developed based on [20]
Adequate information supply (ISUP)	Reflective	ISUP1	Information supply for any decision in the organization	[22,23], Developed based on [20,50,94]
		ISUP2	Information supply in organizational units in which the information did not emerge	[22,23]
		ISUP3	Mature data quality management for the IL	[20,94]
		ISUP4	Harmonization of relevant business terms	Developed based on [20,94]
Effective use of IL (EUIL)	Reflective	EUIL1	Contribution to increase the business value in the organization	[20,50]
		EUIL2	Contribution to reduce costs in the organization	[20,50]
		EUIL3	Synergies in the IL, i.e. superior points of view instead of partial and isolated interests	[22,23]

4. Research methodology

4.1. Data collection

Since established knowledge on IL and BI strategy — in particular with respect to success factors — is scarce, we have chosen to conduct an empirical analysis. Prior to the survey, a pre-test was carried out. The face and content validity of the survey was assessed qualitatively, as is typical of the approach adopted in prior research [25]. The questionnaire was revised by experts from both the scientific community and the entrepreneurial world in terms of completeness, comprehensibility, and significance. In particular, the consistency of measurement items with the corresponding construct was assessed. The pilot resulted in the iterative incorporation of several rather small changes to the questionnaire, like rewording of items. After the pilot, data for the empirical analysis was collected by means of a written survey that was conducted at a practitioner conference on data warehousing and business intelligence held in Switzerland. The conference was attended by 226 specialists and executives with primarily large and medium-sized companies in the German-speaking area. The questionnaire used for the survey was designed to answer the research question (cf. Section 1), i.e. to identify the success factors of IL strategy. The items of the questionnaire included, amongst others, the items as derived in Section 3.2. The respondents were asked to indicate their agreement with several statements, reflecting the aforementioned measurement items, on a five-tiered Likert scale (1 to 5).

The statements were formulated as prescriptions — an approach that is also used in related research (e.g. [57]). We wanted to consider also responses from BI experts whose organizations were at the time of the survey in realization or planning stages for an IL/BI strategy. We also wanted to avoid any (potentially biased) limitations about the attendees.

The conference, which takes place on a regular basis, is mainly attended by experienced practitioners. Many of them have already attended the event for several years. In addition, conference presentations mainly address advanced topics, and that consequently attracts mostly experienced attendees. It therefore seems reasonable to assume that substantial insight into the research question can be gained based on this empirical basis. Besides the items presented in this paper, we asked for some statistics (company size, industry, etc.) and about the implementation level of IL strategy [22].

There was a dedicated time slot during the event to fill in the questionnaire. The objectives, structure, terminology, and in particular the concept of information logistics used in the written survey were explained to the attendees. A total of 160 questionnaires were completed and returned. This corresponds to a return rate of approximately 70.8%. If a data set was incomplete or apparently inconsistent

(checked by control questions), the questionnaire was discarded. One hundred thirty one duly completed questionnaires were used as foundation for the analysis, resulting in an overall return rate of about 58.2%. The data set is considered to constitute an adequate basis for an empirical analysis.

Respondents of the survey were employees from organizations in the German-speaking area. Large and medium-sized organizations accounted for the largest share: 22.1% of all organizations have 1000–5000 employees, 45.0% more than 5000 employees.

4.2. Research design

The structural equation model has been tested using Partial Least Squares (PLS) method [13], a SEM technique that is appropriate for assessing complex predictive models. In contrast to ovariance-based approaches like LISREL or AMOS, PLS makes no distributional assumptions and has fewer demands in sample size and scales [13,36,49]. The data set fulfils these requirements. PLS is particularly suitable if a more explorative analysis is preferred. This is true in our case since there is no strong theoretical foundation on the actual impact of the factors on the IL strategy success. The component-based, structured equation modeling tool PLS Graph version 3.00 [13] was used for the analysis.

5. Data analyses and results

5.1. Measurement model

The measurement model was tested for various validity and reliability properties [16] in order to assess whether the hypotheses fit the empirical data or not. Validity measures the degree to which a scale accurately measures the constructs under investigation, and reliability measures the stability of the scale. Three types of validity were evaluated: content validity, convergent validity, and discriminant validity. Content validity was assured by a comprehensive literature review when determining the measurement items (cf. Section 3.2). In addition, senior practitioners were interviewed and pre-tests were conducted to ensure that the model reflects the reality of the measured domain.

Convergent validity describes the extent to which indicators measuring a construct converge together and measure that single construct (so-called unidimensionality [37]). Convergent validity is adequate when constructs have an average variance extracted (AVE) of at least 0.5 [29]. It indicates that each of the factors explains more than 0.5 of the variation in the observed variables. All constructs (except 'comprehensiveness' and 'adequate information supply', which fall slightly below this threshold, however have acceptable composite reliability values, cf. below) in our measurement model exceed that value (cf. Table 3). Moreover, items should load above 0.5 on their corresponding factors [44]. In our case, all measurement items — except item FLEX3, have significant loadings above that threshold. Consequently, item FLEX3 was dropped and not included in the remaining analyses. Table 2 lists the factor loadings and corresponding t-statistics. All loadings (except EXP2) are significant at the 0.001 level. The significance tests were conducted using the bootstrap routine with 1000 samples [13].

In addition, we assessed convergent validity by examining composite reliability (CR) and average variance extracted (AVE) from the measures [13]. The composite reliability for all measures (except EXP) varies between 0.77 and 0.86, i.e. well above the acceptable limit of 0.70 [13,66]. The construct 'Expertise' (EXP) will be dropped anyway in the following section due to its low path coefficients (cf. Section 5.2). Table 3 depicts the CR values for all constructs in the second column.

Discriminant validity describes the degree to which the indicators of theoretically distinct concepts are unique from each other [16]. It is confirmed when the AVE of each construct is greater than the variance shared between the construct and other constructs in the model [14].

Table 2
Factor loadings.

Construct	Item	Means	Std. Dev.	Loading	*t*-Statistics
Comprehensiveness	COMP1	4.35	0.67	0.69	9.73
	COMP2	4.37	0.72	0.68	8.65
	COMP3	4.39	0.76	0.62	9.38
	COMP4	4.37	0.68	0.70	9.21
	COMP5	4.22	0.69	0.74	11.83
Flexibility	FLEX1	4.10	0.71	0.84	18.65
	FLEX2	3.77	0.79	0.85	13.29
	FLEX3 (*)	4.18	0.86	0.40	2.69
Expertise	EXP1	4.47	0.79	0.85	3.83
	EXP2	4.15	0.81	0.59	2.11
Support	SUP1	4.80	0.49	0.82	9.26
	SUP2	4.34	0.73	0.81	11.18
Communication	COMM1	4.38	0.78	0.85	20.35
	COMM2	4.39	0.75	0.77	9.35
IT strategy orientation	ITSO1	3.77	1.03	0.61	5.65
	ITSO2	4.14	0.86	0.92	46.22
	ITSO3	3.98	0.85	0.81	15.25
Business knowledge transfer	BKNT1	4.66	0.52	0.68	6.15
	BKNT2	4.40	0.68	0.75	5.99
	BKNT3	3.82	1.03	0.77	8.75
Business/IT partnership	PART1	4.59	0.70	0.73	8.26
	PART2	4.53	0.56	0.84	16.43
	PART3	4.64	0.53	0.81	13.48
Project collaboration	COLL1	4.18	0.93	0.73	4.14
	COLL2	4.22	0.95	0.84	6.91
	COLL3	4.43	0.69	0.62	4.21
System quality	QUAL1	3.85	0.94	0.81	16.62
	QUAL2	4.27	0.74	0.88	29.04
Adequate information supply	ISUP1	4.33	0.78	0.63	7.22
	ISUP2	4.24	0.74	0.66	8.47
	ISUP3	4.45	0.66	0.71	10.82
	ISUP4	4.24	0.80	0.69	8.21
Effective use of IL	EUIL1	4.48	0.66	0.76	13.33
	EUIL2	4.11	0.87	0.72	6.65
	EUIL3	4.45	0.65	0.77	11.88

(*) Item dropped

Table 3 depicts the correlation matrix, with correlations among constructs and the square root of AVE on the diagonal for each reflective construct. The AVE for each construct is larger than the correlation of that construct with all other constructs of the model.

Finally, all measurement items load on their constructs as expected, i.e. have higher loadings on their assigned factors (grey marked in Table 4) than on any other construct [13,14,36]. Table 4 lists all cross loadings.

These results suggest that all constructs used in this analysis are acceptable and reliable.

5.2. Structural model

Due to the acceptable level of validity and reliability (cf. Section 5.1), the hypotheses were tested by PLS. The test of the structural model includes estimates of the path coefficients, which indicate the strengths of the relationships between the dependent and independent variables. In addition, the explanatory power of the structural model can be evaluated by looking at the squared multiple correlations (R^2 values), which represent the amount of variance explained by the independent variables. Therefore, the R^2 values and the path coefficients (loadings and corresponding t-values, i.e. significance) indicate how the data support the hypothesized model and explain the predictive power of the model. According to Gefen et al., no generalizable statement can be made about acceptable threshold values of R^2 [36]. Whether this determination coefficient is deemed acceptable or not rather depends on individual study. However, the larger R^2 is, the larger the percentage of variance explained [41]. Whereas Falk and Miller consider 0,1 as indication of substantive

Table 3
Correlation matrix.

Construct	CR	COMP	FLEX	EXP	SUP	COMM	ITSO	BKNT	PART	COLL	QUAL	ISUP	EUIL
COMP	0.82	0.69											
FLEX	0.86	0.37	0.87										
EXP	0.69	0.24	0.20	0.73									
SUP	0.80	0.38	0.29	0.33	0.82								
COMM	0.79	0.36	0.35	0.11	0.47	0.81							
ITSO	0.83	0.43	0.30	0.24	0.20	0.21	0.79						
BKNT	0.78	0.42	0.20	0.24	0.40	0.42	0.39	0.74					
PART	0.83	0.48	0.27	0.26	0.51	0.38	0.36	0.54	0.79				
COLL	0.77	0.19	0.23	0.14	0.28	0.23	0.28	0.26	0.44	0.73			
QUAL	0.83	0.40	0.45	0.12	0.42	0.39	0.35	0.29	0.27	0.09	0.85		
ISUP	0.77	0.53	0.44	0.14	0.49	0.52	0.41	0.34	0.50	0.35	0.50	0.67	
EUIL	0.79	0.41	0.34	0.18	0.28	0.28	0.16	0.19	0.26	0.20	0.34	0.48	0.75

explanatory power [27], Chin regards for example a value of 0,33 as moderate [13]. In our case, all R^2 values (0.379/0.547/0.242) exceed the 0.2 level (cf. Fig. 2), consequently we regard this quality criterion as fulfilled.

Only few recommendations exist for adequate path coefficients. According to Lohmueller [58, p. 60] path coefficients with values larger than 0.1 indicate that the corresponding hypotheses are supported. In addition, the path coefficients should be significant and directionally consistent with expectations. Jackknife and bootstrap procedures are used in PLS applications to obtain estimates for the standard errors of the parameters estimates, which are potentially subject to biases [13]. In general, both the jackknife and bootstrap standard errors should converge. However, since jackknife is viewed as less efficient than the more common bootstrap [13], the latter was used in testing the causal model. The bootstrapping approach was applied to estimate the significance (t-value) of the paths using 1000 samples which were drawn from the complete sample. The results confirm the majority of hypotheses — except the hypotheses H3a/b, H7a/b, H8a, and H9a which do not meet the quality criteria. Fig. 2 illustrates the results of the PLS analysis (path coefficients, their significance levels, and explained variance, i.e. R^2 values). Causal relationships (and factors) which could not be confirmed are marked with dashed lines.

In the following section we discuss the analysis results and their implications for research and practice.

6. Discussion and conclusion

6.1. Interpretation

The analysis results confirm the positive influence of most factors on IL strategy success. Several hypotheses, however, could not be supported. Interestingly, former research in related strategy streams evidenced similar observations for some of the rejected or not well supported hypotheses.

The factor 'comprehensiveness' influences rather marginally the factor 'system quality' (hypothesis H1a). This observation corresponds to Newkirk et al. and Fredrickson [65,31]. Fredrickson demonstrated that comprehensiveness, not unambiguously, relates positively to strategic decisions performance. Depending on the stability of the environment, the relationship is positive or negative [31,32]. Newkirk et al. [65] demonstrated a positive relationship between comprehensiveness and effectiveness in only one of five SISP planning phases (strategy implementation planning phase).

Similar results can be found in former contributions regarding the factor 'business knowledge transfer' and the corresponding hypotheses H7a and H7b, which are not supported in our research model. For example, Sabherwal and Chan [80] did not find a universally valid correlation between business/IS strategy alignment and business performance. It seems that organizations currently focus more on topics addressing the level of operation (factors 'business/IT partnership' and 'project collaboration') rather than on the strategic level (factor 'business knowledge transfer').

The other hypotheses that are not supported (H3a, H3b, H8a, H9a) differ from former research: The analysis results do not indicate a positive relationship between business/IT partnership and system quality (H8a), or between project collaboration and system quality (H9a), respectively. This observation might be explained by the fact that the influencing factors address more business and organizational topics, whereas system quality comprises more technical aspects.

Surprisingly, expertise could not be identified as a success factor for IL strategies (hypotheses H3a, H3b). Neglecting the involvement of all relevant stakeholders for the definition of the IL strategy might be attributed to a missing farsighted perspective of the IT/IL department. However, we did not find previous research with similar findings that the role of experienced experts is despised in organizations. One reason might be the specific context of IL and BI. In contrast to the formulation of corporate and IS/IT strategies the definition of an IL strategy is a quite new challenge for organizations. Consequently, appropriate know expertise might still be limited in organizations and therefore not contribute significantly to the IL strategy success.

Besides the causal relationships between success factors (left side in Fig. 2) and system quality and adequate information supply, respectively, positive relationships between system quality/adequate information supply and effective use of IL are also indicated. These correlations underline the relevance of an IL strategy as it has significant impact on an organization's performance (in our research model indicated by increasing business value and by cost reductions). Certainly, other factors which are not included in our research model also have impact on the effective use of IL — which is expressed by a rather low (but still acceptable) R^2 value (0.242) of this factor. Indeed, the rather high path coefficient between adequate information supply and effective use of IL emphasizes the relevance of enterprise-wide provision of information to all user groups.

The factors that are supported by the analysis results have a more significant impact either on system quality (flexibility, support, IT strategy orientation) or on adequate information supply (comprehensiveness, communication, business/IT partnership, project collaboration) but not on both concurrently. Summarizing, the results lead to the conclusion that all factors are relevant and therefore should be regarded when implementing an IL strategy.

6.2. Limitations of the study

Our findings should be interpreted in light of the study's limitations. As mentioned in Section 4.1, the analysis results are based on experts' prescriptions. As soon as more experiences in organizations about IL strategy might be available the results of our study should be checked and be revised if necessary. Furthermore, the survey was conducted with participants from predominantly German-speaking countries. In

Table 4
Cross loadings.

Item	COMP	FLEX	EXP	SUP	COMM	ITSO	BKNT	PART	COLL	QUAL	ISUP	EUIL
COMP1	0.69	0.27	0.14	0.23	0.21	0.37	0.28	0.33	0.12	0.26	0.35	0.27
COMP2	0.68	0.26	0.11	0.17	0.25	0.36	0.36	0.33	0.02	0.32	0.35	0.28
COMP3	0.62	0. 12	0.12	0.16	0.25	0.30	0.17	0.24	0.10	0.17	0.42	0.18
COMP4	0.70	0.27	0.20	0.39	0.28	0.20	0.43	0.37	0.23	0.29	0.35	0.35
COMP5	0.74	0.36	0.25	0.34	0.23	0.25	0.18	0.38	0.19	0.32	0.34	0.30
FLEX1	0.32	0.88	0.17	0.31	0.30	0.20	0.15	0.29	0.13	0.41	0.38	0.34
FLEX2	0.33	0.87	0.18	0.19	0.31	0.33	0.21	0.18	0.28	0.37	0.39	0.26
EXP1	0.24	0.16	0.85	0.25	0.05	0.25	0.21	0.36	0.18	0.10	0.13	0.15
EXP2	0.09	0.13	0.59	0.25	0.14	0.06	0.13	-0.06	0.00	0.08	0.07	0.11
SUP1	0.41	0.27	0.26	0.82	0.39	0.22	0.32	0.42	0.22	0.33	0. 42	0.26
SUP2	0.21	0.20	0.29	0.81	0.39	0.10	0.33	0.41	0.23	0.35	0.38	0.19
COMM1	0.35	0.28	0.05	0.43	0.85	0.27	0.40	0.40	0.26	0.35	0.46	0.27
COMM2	0.21	0.29	0.14	0.33	0.77	0.06	0.27	0.20	0.10	0.28	0.39	0.17
ITSO1	0.17	0.21	0.12	0.00	0.10	0.61	0.26	0.18	0.23	0.19	0.11	0.08
ITSO2	0.43	0.26	0.21	0.23	0.22	0.92	0.37	0.35	0.23	0.33	0.44	0.15
ITSO3	0.36	0.26	0.22	0.16	0.15	0.81	0.29	0.28	0.23	0.28	0.31	0.13
BKNT1	0.34	0.15	0.14	0.16	0.32	0.16	0.68	0.29	0.10	0.16	0.24	0.18
BKNT2	0.34	0.05	0.21	0.47	0.32	0.30	0.75	0.49	0.19	0.20	0.29	0.17
BKNT2	0.24	0.25	0.17	0.22	0.29	0.38	0.77	0.40	0.27	0.27	0.22	0.08
PART1	0.40	0.22	0.25	0.35	0.15	0.33	0.39	0.73	0.41	0.10	0.41	0.25
PART2	0.41	0.24	0.18	0.37	0.32	0.32	0.49	0.84	0.38	0.21	0.41	0.20
PART3	0.34	0.18	0.19	0. 49	0.41	0.20	0.40	0.81	0.27	0.32	0.37	0.17
COLL1	0.08	0.14	0.08	0.16	0.11	0.23	0.06	0.27	0.73	0.07	0.18	0.09
COLL2	0.13	0.16	0.09	0.15	0.17	0.29	0.21	0.33	0.84	0.09	0.29	0.08
COLL3	0.20	0.21	0.14	0.30	0.20	0.08	0.27	0.35	0.62	0.03	0.27	0.26
QUAL1	0.36	0.36	0.11	0.28	0.29	0.28	0.22	0.25	0.00	0.81	0.36	0.27
QUAL2	0.32	0.40	0.10	0.42	0.37	0.31	0.26	0.21	0.13	0.88	0.48	0.31
ISUP1	0.25	0.38	0.01	0.14	0.31	0.21	0.10	0.19	0.22	0.31	0.62	0.36
ISUP2	0.33	0.24	0.19	0.33	0.27	0.26	0.17	0.31	0.21	0.22	0.66	0.36
ISUP3	0.40	0.34	0.05	0.45	0.43	0.26	0.37	0.41	0.23	0.48	0.71	0.33
ISUP4	0.42	0.24	0.14	0.37	0.38	0.37	0.24	0.41	0.27	0.33	0.69	0.25
EUIL1	0.29	0.21	0.14	0.17	0.16	0.14	0.05	0.20	0.13	0.24	0.38	0.76
EUIL2	0.25	0.34	0.01	0.10	0.15	0.12	0.16	0.14	0.18	0.2 2	0.24	0.72
EUIL	0.35	0.25	0.21	0.31	0.29	0.11	0.22	0.22	0.15	0.30	0.42	0.77

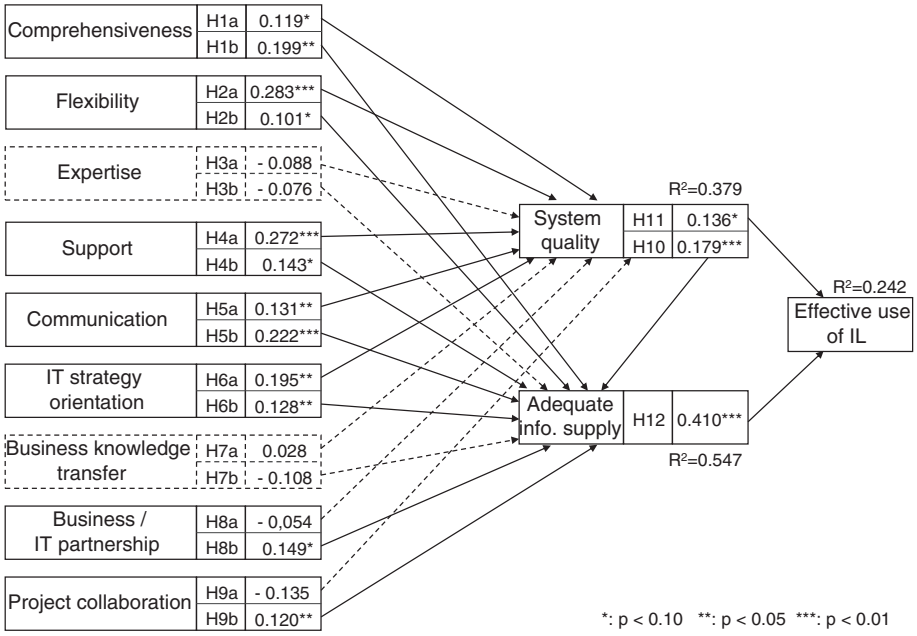

Fig. 2. Test results of the structural model.

our opinion, this limitation influences the analysis results rather marginally, if at all — as many related contributions, conducted in other regions, indicate similar results. Another possible limitation is that the respondents of the survey might not be representative. We regard this fact as not such relevant as long as the survey is based on experts' prescriptions. Along with a potential extension of the study and additional empirical analysis further criteria such as interrater reliability might be evaluated.

As already mentioned in Section 3.2, we consider the constructs of the structural model as reflective, based on content argumentation and empirical results. However, we are aware that some of the constructs might also be considered as formative due to a certain ambiguity.

Finally, it can be argued that the success factors derived in this study are not sufficiently detailed or do not cover all aspects. However, this study should be considered as a first step which will be extended and broken down in further research (cf. Section 6.3).

6.3. Implications for future research

The findings of the study might impact related work, like methodologies for the IL strategy process formulation and implementation. The identified critical success factors are currently serving in one of our follow-up research projects as guidance for what aspects should be considered when designing IL strategy artifacts.

Due to the wide range of related topics, not all possible success factors, especially not in detail, have been included in our research model. This is true for the factors which express IL strategy success (right side in Fig. 2) as well. They might be refined, e.g. by combining our research model with technology acceptance models like [19,91]. Consequently, extending and detailing the factors might be subject to further research. In addition, extended differentiation of factors, for example for strategy content and strategy process, might gain additional insights.

The IL concept is quite new; therefore experience in organizations is limited. Even BI strategies as more popular predecessors are often still in a preliminary realization stage in organizations. It seems promising, however, to repeat the same or a similar survey in a later stage in order to gain insights about state of the art when results will be based on long-term experiences for IL strategies.

Finally, qualitative data (resulting from case studies, etc.) might complement the empirical results.

6.4. Implications for practice

First of all, the findings emphasize the relevance of IL strategy due to its impacts on an organization's performance. The consequences are twofold: implementing analytical information systems requires a strategy and the IL concept can generate additional value for organizations. The latter conclusion is based on the observation that IL specific items (in particular ISUP2 and EUIL3; cf. Table 1) load significantly on the corresponding constructs. Therefore, the results emphasize especially the relevance of exploiting synergies as one of the main objectives of IL (cf. Section 2.1).

The influencing factors identified in the survey can serve as guidelines. The empirical analyses indicated that comprehensiveness, flexibility, support, communication and IT strategy orientation, business / IT partnership, and project collaboration positively relate to both system quality and adequate information supply. The underlying indicators might be used as a 'checklist' when formulating and implementing an IL strategy. Less relevant, but not to be neglected, are business/IT partnerships and project collaborations which positively influence system quality. Considering all factors in parallel represents a challenging task in practice. The results of the paper at hand might help in arguing for such a comprehensive approach in the long run.

6.5. Conclusions

The primary objective of this study was to increase our understanding of the key success factors for IL strategy. The results can be transferred to BI strategies as well since the IL approach can be seen as an extension to predecessor concepts like BI and data warehousing. Based on literature, nine constructs were identified as possible factors affecting IL strategy success. Seven of these nine factors were confirmed by the study, namely comprehensiveness, flexibility, support, communication, IT strategy orientation, business/IT partnership, and project collaboration.

The results emphasize the need to consider IL strategy formulation and implementation as a comprehensive, well defined and aligned process whose success depends on many factors. Taking these factors into account positively influences an organization's performance.

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