Business intelligence in communication management: A framework for data-driven listening and internal consulting

Received
30nd September 2023
Revised
07th June 2024
Accepted
22nd July 2024

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Abstract

Frame of the research: *Providing insights on public opinions, social developments and relevant stakeholders is an important strategic contribution of communication in management. This sheds light on listening and internal consulting in communication management research and practice - how communicators can integrate these tasks into their daily work and how they can use them to support executives in their business decisions.*

Objectives: *This article explores how communication professionals can use business intelligence (BI) methods based on digital technologies to incorporate communication insights into managerial decision-making processes.*

Methodology: *An interdisciplinary literature analysis was performed to develop a novel conceptual framework. This was validated in a qualitative interview study.*

Findings*: To utilize information from external and internal sources for internal consulting, communicators need to process data, translate them into relevant information for decision-making, and make them accessible to decision-makers in organizations. The framework shows how this can be achieved through a BI process that covers all phases as well as the necessary technologies and applications, from cleansing and merging data to accessing aggregated information.*

Managerial implications: *The outlined process enables communicators to act as internal consultants and ensures that managerial decisions can consider communication-related opportunities and risks.*

Limitations*: The framework could not be tested in a large-scale study so far, as integrating BI in communication management is still an emerging practice. Future studies should also examine the prerequisites and practices of communicators performing an advisory role drawing on BI insights.*

Originality of the paper*: This article contributes to the body of knowledge by systematically introducing BI to communication management. It also adds to current debates on the digitalization of the field and new roles for communication practitioners.*

Key words: *advising; business intelligence; communication management; corporate communications; internal consulting*

1. Introduction

Business leaders must consider a wide range of circumstances and impacts when making managerial decisions. Typical starting points are analyses of the company and its environment. In addition to direct

relationships with customers, suppliers and competitors, the socio-cultural, political, and social environment in which the company is embedded plays a decisive role (Daft, 2016). Stakeholder theory and corporate communications theories alike argue that companies have to align their mission and vision with "what the environment will allow or encourage it to do" (Cornelissen, 2023, p. 117) in order to build and secure legitimacy and acceptance.

Communication departments and practitioners take on this task. This requires an integration of insights from stakeholder networks and public opinion monitoring into corporate decision-making processes - a task that can be accomplished by communication professionals enacting the role as internal consultants and advisers (Grunig *et al.*, 2002; Fieseler *et al.*, 2015; Volk *et al.*, 2017; Zerfass and Franke, 2013). Empirical research across Europe shows that role is expected to become increasingly important in the coming years (Zerfass *et al.*, 2021) - a development that can be welcomed by communicators, as it strengthens the strategic influence of communication departments and thus improves their positioning (Brockhaus and Zerfass, 2022). More generally spoken, the communication function of companies and other organizations has not only an *outbound dimension,* which encompasses the consistent, transparent and effective positioning of the organization in its environment and the alignment of communication messages with the organizational strategy, but also an *inbound dimension.* This is characterized by incorporating stakeholder expectations, relevant developments in the societal environment, and potential communicative risks in managerial decision making by consulting top management and other executives in decision-making processes (Invernizzi and Romenti, 2015; Volk *et al.*, 2017).

However, it is largely unclear how this can be done in a globalized and data-driven environment, where the communication between organizations and their stakeholders is increasingly shifting to digital channels (Luoma-aho and Badham, 2023) and a plethora of available data makes it increasingly difficult to identify relevant information. This article closes this gap by introducing the debate on business intelligence (BI) (Baars and Kemper, 2021; Olszak, 2016) to communication management research. It takes companies and corporate communication activities as an example, but the considerations are also relevant for the communication of other types of organizations like non-profits, associations or governmental entities.

BI is a well-established conception in the business administration and information systems discourses and has been neglected so far in the emerging debate on the digitalization of communication management (A.W. Page Society, 2021; Brockhaus *et al.*, 2023). Digital technologies can be used to convey communication messages (outbound), but also to collect and analyze data (inbound). This enables practitioners to plan communication strategies, but also provides valuable insights that can be used by other corporate functions and for the definition of corporate strategies. To this end, the relevant information must be identified, processed, and shared. While previous work in communication science deals exclusively with the use of digital technologies in sub-areas such as social media and Big Data

analytics (Stieglitz *et al.*, 2018; Wiencierz and Röttger, 2019), the design of a comprehensive BI process for communication management is missing. If communication practitioners assume the role of internal advisors and want to exploit this potential, they can support the company's bottom line by providing insights into the concerns, demands and interests of stakeholders.

The process of creating internal consulting services in communication management has not been explored in depth to date. Therefore, this article examines the process of creating internal communication consulting services first, before focusing on the deployment of BI in this context. It addresses the following overarching research question:

RQ: How can communication practitioners leverage data-driven business intelligence to support managerial decision-making processes?

To answer this question, two sub-questions need to be answered:

RQ1: How can communication practitioners advise internal clients and what added value do they generate for internal clients?
RQ2: How can business intelligence based on digital applications, processes and products be used for internal consulting services by communication practitioners?

This article contributes to the body of knowledge by systematically introducing BI to communication management. It illustrates how digital technologies can be applied in a value-adding way in communication departments. Additionally, the research elaborates on the process and function of internal communication consulting and extends the inbound dimension of corporate communications (corporate listening) by linking it to internal consulting services.

2. Theoretical background

2.1 The inbound dimension of corporate communications

Companies are embedded in their environment and their success is thus dependent on the interests and intentions of their stakeholders. They need to nurture relationships with them to maintain their "social license to operate" (Van Riel and Fombrun, 2007, p. 25). Maintaining stakeholder relations and securing reputation is often defined as a key task of corporate communications: "Corporate communication is a management function that offers a framework for the effective coordination of all internal and external communication with the overall purpose of establishing and maintaining favourable reputations with stakeholder groups upon which the organization is dependent" (Cornelissen, 2023, p. 5).

More generally, *corporate communications* "encompasses all communication activities enacted by or on behalf of a business" (Zerfass and Link, 2022, p. 239) and contributes to the internal and external

coordination of actions and to the alignment of interests between companies and their stakeholders (ibid.). Communication departments are business units specializing in the management, controlling and implementation of communications activities within and across the company (Cornelissen, 2023, pp. 28-36). Close integration into the overall organization is necessary to perform the related tasks (Tench *et al.*, 2017, p. 61). Communication departments are staffed with communication professionals who carry out communication activities themselves, support and empower other corporate actors in communication-related tasks, and offer them internal advice on business decisions.

This means that corporate communications can contribute to value creation in quite different ways, e.g., by enabling operations, building intangibles, ensuring flexibility, and adjusting strategy (Falkheimer and Heide, 2023, pp. 201-209; Zerfass and Viertmann, 2017). In addition to managing and executing communication activities, communication professionals thus contribute to value creation by advising internal clients on public opinion and societal developments and contributing insights from media monitoring and stakeholder relationships to managerial decision-making processes (Volk *et al.*, 2017, p. 18).

This broad range of contributions show that the potential mandate of communication departments and professionals does not only include an *outbound dimension* (corporate messaging, conveyance, speaking). It must be conceptually supplemented by an *inbound dimension* (corporate listening, perception, listening) (Borner and Zerfass, 2018, p. 4). This includes the identification of communicative stimuli, for example in the form of topics or expectations in various public arenas, the interests of stakeholders, as well as their interpretation and integration into decision-making processes of companies, business units, or functions (Borner and Zerfass, 2018). The relevance of the inbound dimension can be described by structuration theory. Following this approach, companies as profit-oriented organizations are recursively and reflexively embedded in social relations (Falkheimer, 2009; Giddens, 1984). As social actors, they are involved in the duality of structuration by themselves producing and reproducing the structures on which they are based (Ortmann *et al.*, 2000, p. 19). Recursive interaction leads to an interactive relationship between companies and their stakeholders, whose specific activities can run counter to each other and require coordination of interests and activities (Borner and Zerfass, 2018).

Thus, influencing decision-making processes (Macnamara, 2014), in addition to building relationships and influencing stakeholder opinions and behavior (Van Riel and Fombrun, 2007) is an important strategic contribution of communication in management. Companies aiming to integrate stimuli from their environment to align their mission and vision with "what the environment will allow or encourage it to do" (Cornelissen, 2023, p. 117) need to establish an inbound communication process which includes data collection and evaluation as well as internal consultation.

2.2 Internal consulting by communication practitioners

Advising has been highlighted as an essential task of communication managers by several communication researchers (Fieseler *et al.*, 2015; Grunig *et al.*, 2002; Hamrefors, 2009; Moss *et al.*, 2005; Volk *et al.*, 2017; Zerfass *et al.*, 2021). This has been picked up in current systematizations of communicator roles (Volk *et al.*, 2017). The *Communication Manager Role Grid* comprises eight roles, which were summarized into five roles in later research (Volk *et al.*, 2017; Zerfass *et al.*, 2021, p. 47). Accordingly, communication practitioners can assume the roles of communicator, ambassador, manager, coach, and advisor. The coach and advisor roles are inbound roles that focus on supporting top executives, middle managers, or other members of the organization (Volk *et al.*, 2017). The advisor should have strong knowledge of public debates and developments in societal spheres with strategic relevance, and contribute this into decision-making processes. This helps to identify business opportunities and secure the "license to operate" (Zerfass *et al.*, 2021, pp. 47-69). A review of the advisor role reveals that it is firmly embedded in the communicator's role set (Grunig *et al.*, 2002; Moss *et al.*, 2005; Volk *et al.*, 2017), but the literature rarely elaborates on how communicators in organizations can perform this role. Only occasionally has this role been explored in more depth and the various manifestations specified (Zerfass and Franke, 2013). Thus, to theoretically ground and describe internal consulting by communicators, insights from management consulting must be considered.

Management consulting is formalized and professional consulting based on expertise and knowledge of consulting methods and operational models (Schlüter, 2009, p. 16). Management consulting includes "any form of providing help on the content, process or structure of a task or series of tasks, where the consultant is not actually responsible for doing the task itself but is helping those who are" (Steele, 1975, S. 2-3). The core of a consulting service is the provision of information to support the management of the company (Kubr, 2002, p.17). This knowledge consists of factual knowledge, knowledge of the interrelationships of reality, technological knowledge, and values and norms, and can be related both to the solution of problems and to the implementation of processes (Bamberger and Wrona, 2012, p. 6). In addition to external consulting organization, consulting can also be provided by in-house consulting units and by functional department, such as the communication department, concerning topics within their respective functional area (Zerfass and Franke, 2013, p. 122). In practice and theory, two forms of management consulting are distinguished: expert and process consulting (Kubr, 2002, pp. 70-72). Management consulting fundamentally starts with the idea that an expert gives advice based on his or her expert knowledge and experience and develops concrete solutions to client problems. The second type of consulting is not directly aimed at giving advice but focuses on providing structures and processes to solve a specific problem and support the client's decision-making ability in a broader sense (Kubr, 2002, p. 72).

Based on the extensive role sets of communication practitioners, Zerfass and Franke (2013, p. 128) describe *internal communication*

consulting as internal expert and process consulting by the communication department. Internal communication consulting refers on the one hand to the communicative dimension of corporate actions. The focus is on communicative actions and problems of executives or employees across the organization, which might be supported by providing media training, giving guidance for social media activities, or content support (Schick, 2007, p. 17) - the coaching aspect. Internal communication consulting can also focus on corporate actions of all kinds which are somehow influenced by or influence public opinion building, reputation, expectations, and shared constructions of reality - the advising aspect. For example, investment decisions, decisions to close production sites or to expand business areas can have a wide range of cognitive, affective, and behavioral effects on relevant stakeholders (Franke, 2013, p. 104). It can be assumed that internal consultants generate their needed knowledge by performing their other main tasks (Weiss, 2003, p. 3). However, research does not unveil how they can generate the specific knowledge for different consulting objects. Proving specific and relevant expertise is necessary to be recognized as an internal consultant (Zerfass and Franke, 2013, p. 123). The existing literature is lacking ideas on how this evidence can be provided. If one considers internal communication consulting as part of the inbound dimension of communication management, then this is based on insights about public opinions, societal developments, and stakeholders.

2.3 Data-driven corporate communications and business intelligence

While communication processes are increasingly shifting to digital channels, communication management is also increasingly becoming digitalized and based on data (Brockhaus *et al.*, 2023). Digitalization as the "sociotechnical process of applying digitizing techniques to broader social and institutional contexts that render digital technologies infrastructural" (Tilson *et al.*, 2010, S. 749) has a strong influence on the way companies interact with their stakeholders and has fundamentally changed the goal setting, development, and evaluation of communication activities (Weiner and Kochar, 2016, p. 17). This is evident in the establishment of digital technologies in corporate communications (Communication Technology, or CommTech for short). Following the term MarTech from marketing, *CommTech* as an umbrella term includes digital technologies, tools, and services that can be used in communication departments (A.W. Page Society, 2019; Brockhaus *et al.*, 2023). Brockhaus *et al.* (2023) draw on the value chain (Porter, 1985), to distinguish between primary and supporting activities, classifying consulting internal clients among the primary activities of the communications department.

Due to the increasing digitalization and datafication of corporate communications, first concepts for data generation from Big Data and social media data have already been introduced in the literature. Wiencierz and Röttger (2019) have developed a concept for processing and analyzing *Big Data* in corporate communications based on the Knowledge Discovery in Databases (KDD) approach, a model commonly used in business informatics that describes how large information assets can be used

efficiently and effectively while systematically uncovering insights (Fayyad *et al.*, 1996). Another aspect that has been researched for some time is *social media analytics*, i.e., the assessment of social media data (Stieglitz *et al.*, 2018; Zeng *et al.*, 2010, p. 14).

Business intelligence (BI), on the other hand, has not been discussed in corporate communications research and practice so far. The concept has been developed in business informatics and management research. BI applications are designed to use data assets more efficiently and effectively to make better business decisions (Leung *et al.*, 2013, p. 7) by providing decision makers with quick and convenient access to information. Intelligent decisions based on a comprehensive data and information base are required to ensure the success of the company (Munoz, 2018, p. 3; Olszak, 2016, p. 105). Evelson and Nicolson (2008) define Business Intelligence (BI) as a "set of methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information [that] allows business users to make informed business decisions with real-time data that can put a company ahead of its competitors" (n.d.).

One of the most cited definitions of BI compares the term to an "umbrella" that describes technologies as well as applications and processes for collecting, storing, accessing, and analyzing data (Adelman and Moss, 2000; Olszak, 2016, p. 107).

The *BI process* is usually broken down into data retrieval, reporting and analysis and distribution. First, data is cleansed of semantic and syntactic errors and integrated into a common data store before it is fed into reporting systems or used to generate information using mathematical-statistical and algorithmic models (Baars and Kemper, 2021, pp. 10-12). Finally, the results are visualized and delivered (Baars and Kemper, 2021, pp. 10-12). The value of BI lies in the provision of applicable knowledge to the user and thus crucially depends on the involvement in decision-making processes (Leung *et al.*, 2013, p. 8; Loshin, 2013, p. 7). Regarding consulting tasks, BI can be used to gain faster access to data and support decisions with a sound information base (Olszak, 2016, p. 119).

3. A framework for internal communication consulting based on business intelligence

The knowledge derived from the interdisciplinary literature analysis above was used to develop a conceptual framework for using business intelligence in internal communication consulting. After developing an initial version of the framework based on insights from corporate communications, consulting, and business information research, qualitative expert interviews were conducted to empirically validate the construct (Kuckartz and Rädiker, 2023). The interviewees were communication professionals working in the 500 largest companies in Europe's largest economy (Germany), sampled on basis of their specific expertise and experience either as data analysts working in corporate communication departments or as chief communication officers and communication business partners, who frequently advise internal stakeholders as part of

their daily job. Industry magazines and posts (e.g., on LinkedIn) were researched to identify those experts. 34 professionals were invited and 9 accepted to engage in the validation study in summer 2022 (26% response rate). The companies in the sample had an annual revenue between 4.2 and 279 billion Euros in 2022. Two interview guidelines with partly overlapping and partly differing questions for data analysts and communication practitioners in advising roles were used to conduct semi-structured interviews. The guidelines were informed by the literature analysis and the draft framework. The average duration of the interviews was 38 minutes; they were transcribed and analyzed with inductive content analysis using MAXQDA software by the lead author. The following sections present the conceptual framework and its theoretical foundations with minor terminological modifications suggested by the interviewees, who generally supported and confirmed the outline.

3.1 Providing internal consulting services in corporate communications

This section focuses on the provision of consulting and advising services by communicators. To this end, internal communication consulting is described from a functional and procedural perspective based on the literature reviewed. This addresses the question how communication practitioners advise internal clients and what added value they generate for them (RQ1).

a) Functional dimensions of internal consulting services by communicators

Considering the increasing popularity of the concept, it is first necessary to differentiate the various functions of internal communication consulting. The functional perspective of management or communication consulting is concerned with the tasks of consultants and the purpose of the consulting process (Kubr, 2002). Internal consulting by communicators differs from consulting in general in two dimensions. Compared to management consulting (either in-house or from external advisors), the subject matter is limited to consulting on the communication-related dimensions of managerial decisions. Compared to external communication consulting, the benefits of adding an impartial view are limited. Taking this into account, four functions of internal communication consulting can be systematized:

- *Knowledge transfer:* Sharing insights, interpretation, and expertise from communication experts with top management and other executives is the primary function of internal communication consulting (Lippold, 2019, p. 18). At the same time, internal consulting generates new knowledge in the communication department (Hoyer, 2000, p. 63).
- *Fostering interaction:* Performing internal consulting services strengthens interactions between communication practitioners and their internal clients, which supports an informal exchange of information across departmental boundaries (Leker *et al.*, 2007, p. 148). This fosters communication across the company and enables stimuli from within the company to be recognized and absorbed more quickly.

- *Organizational development:* Another potential outcome of internal consulting by communicators is influencing attitudes and initiating reflection of clients, which stimulates organizational development and change. This optimizes the overall problem-solving potential of organizations (Wohlgemuth, 1985, p. 82).
- *People development:* By acting as internal consultants, communication practitioners expand their skills and competencies (Hoyer, 2000, p. 61). They gain insights into many areas of the company, take on impulses from various internal actors, and deal with communicative implications of a wide range of managerial challenges (Leker *et al.*, 2007, p. 151).

The functions of fostering interaction, organizational development and people development represent rather indirect functions that are performed through the continuous execution of consulting services. The transfer of knowledge to improve problem solving and business decisions, on the other hand, can be understood as the core strategic contribution of internal consulting in management.

b) Processual view of internal consulting services by communicators

Consulting services are provided in an iterative process that can be divided into multiple phases. Those phases differ in terms of the methods and instruments needed and in terms of the necessary information and sources of information (Kubr, 2002, pp. 21-24):

- In the *briefing and goal definition phase,* the fundamental questions for the internal consulting process are clarified. This involves identifying and structuring the problem, clarifying mutual expectations, defining the problem and what expertise is needed (Kolb and Frohman, 1970, p. 55).
- The *analysis and problem-solving phase* begins with a diagnosis of the current situation and the definition of objectives. Subsequently, information is gathered and processed, a conceptual representation of the focal challenge is developed, alternative interpretations and solutions are identified, an action plan is developed, and results are presented (Elfgen and Klaile, 1987, pp. 67-68).
- The *evaluation of results and the collaboration* concludes the consulting process. The evaluation should refer exclusively to the advice given - and not to the implementation of solutions which might have been developed. It will also be necessary to assess the effectiveness and the efficiency of the consulting process (Hafner and Reineke, 1992, p. 70) and the interaction between communicators and their internal clients; not only summative at the end of the project, but also formative during the process (Kubr, 2002, p. 253).

c) Consulting instruments and data sources

The provision of consulting services is usually supported by management tools and more standardized consulting products. While consulting products are suitable for recurring and coherent challenges such as the transformation of existing business models, management tools, such as SWOT and stakeholder analyses, are suitable for more specific applications (Lippold, 2019, p. 32; Volk and Zerfass, 2021). The creation of

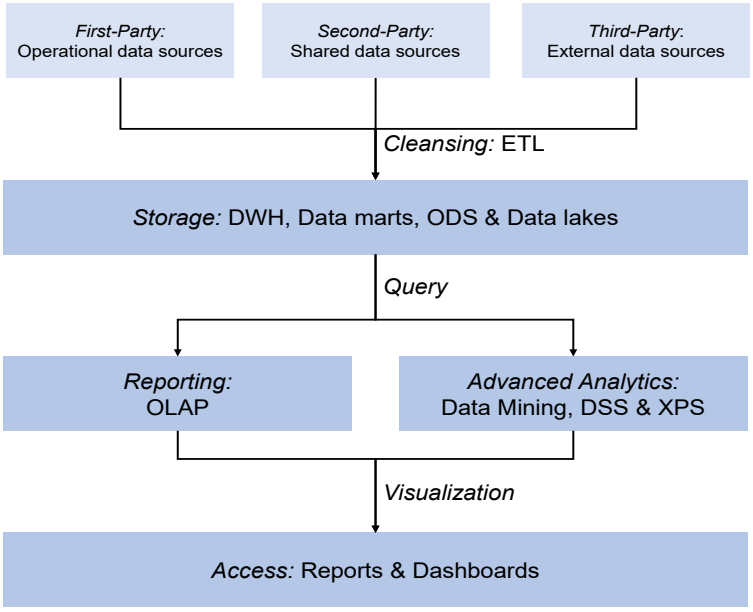
consulting services is usually situation-specific, but aligned with higher-level concepts, such as the stakeholder approach (Freeman, 1984).

The successful use of consulting instruments requires topic-related knowledge. Three forms of data sources for generating topic-related knowledge can be differentiated: Primary data, secondary data, and internal secondary data (Lippold, 2019, p. 265). *Primary data* are collected for the first time specifically for a particular challenge from predetermined sources, e.g., through interviews (Weiner, 2021, p. 66). *Secondary data* are based on existing material that has already been collected for other purposes and are associated with low costs (Weiner, 2021, p. 67). *Internal secondary data* are an important subset that is based on sources already available in the company (Lippold, 2019, p. 266). This is especially important for communicators acting as internal consultants, as they can use data collected through the inbound activities of organizational listening and issues management, including social media analytics, media monitoring, and stakeholder assessments.

3.2 Use of business intelligence for internal consulting in corporate communications

This section will conceptualize the consulting process in more detail by adding insights from the business information systems literature to identify and systematize digital applications, processes, and products that can be applied. This provides an answer to the question of how business intelligence may be used for internal consulting services by communication practitioners (RQ2).

Fig. 1: The three-stage business intelligence concept



Source: Authors elaboration

Based on the literature, a three-stage BI process can be identified consisting of data cleansing and storage, reporting and advanced analytics, and visualization and access (Fig. 1):

a) Data sources and data collection

For internal consulting by communicators, internal secondary data are especially useful. The sources of internal secondary data can be further differentiated into first-, second-, and third-party data (Tench *et al.*, 2017, p. 101; Weiner and Kochhar, 2016, p. 6). *First-party data* is data that a company owns and can control, e.g., information about consumers from a customer relationship management system, or information about journalists from a media relations database. *Second-party data* is shared with other companies or originates from other companies and is available for sharing, e.g., data generated through sponsored events (Weiner and Kochhar, 2016, p. 6). *Third-party data* are external data from various sources outside the company, generated by the company itself or by service providers, e.g., scientific studies or public opinion polls (Wiencierz *et al.*, 2017).

b) Data cleansing and storage

The process of transforming operational and external data into decision-oriented data is a first and crucial step in the BI process. It focuses on transferring data oriented to specific operational applications into topic-oriented data that meet the information needs of decision makers (Baars and Kemper, 2021, p. 24). It is often referred to as the ETL process, which comprises the substeps extraction, transformation, and loading, i.e., the extraction of data from heterogeneous sources, the transformation and adaptation of the data through reshaping and aggregation to the requirements of the system, and the loading of this data into the storage architecture (Vercellis, 2009, pp. 53-54). Since communication and enterprise data are scattered across many different operational and external systems, this substep is crucial (Sherman, 2014, pp. 8-11).

Data warehouses, data marts, operational data stores, and data lakes for Big Data can be distinguished as storage variants (Baars and Kemper, 2021, p. 24). A *data warehouse* (DWH) serves as consistent and uniform database for all types of decision support systems (Vercellis, 2009). A *data mart* represents a reduced data pool for certain classes of applications for a restricted group of users (Vercellis, 2009), which can use it to perform analytical evaluations. The filling, maintenance, and use of a DWH, on the other hand, should be carried out exclusively by IT departments (Baars and Kemper, 2021, p. 37). The data can either be transformed directly from the operational and external source systems into the data marts or first fed into a central, overarching core DWH. Data warehouses and data marts can be extended by an integrated, non-history-forming, *operational data store* (ODS). An ODS is used to provide up-to-date, transaction-oriented data from various source systems (Sherman, 2014, p. 138). In contrast to the DWH, data in the ODS is overwritten when necessary. In addition, a *data lake* is necessary for the processing of Big Data. As a counterpart to the DWH, it resembles an ODS and enables the direct storage of large volumes

of structured and unstructured data (Fang, 2015). The best possible data storage is possible through a combination of a data lake, DWH and, if necessary, data marts, since the latter remain the first choice for consistent storage of structured data (Baars and Kemper, 2021, p. 85).

c) Reporting and advanced analytics

The second step involves the reporting and analysis of the transformed and stored data. *Online analytical processing* (OLAP) can be used for fast and flexible ad hoc reporting (Chen *et al.*, 2012, p. 1166; Codd *et al.*, 1993). It allows users to view comparative metrics across multiple dimensions based on predefined criteria, which is why OLAP functions continue to be used despite the introduction of more advanced methods such as data mining (Loshin, 2013, p. 113; Olszak, 2016, p. 107). Based on the stored historical data, trends in stakeholder or competitor behavior can be identified and forecasts can be made (Olszak, 2016, p. 110).

Advanced analytics are used to predict future values (Baars and Kemper, 2021, p. 124). Central to advanced analytics is data mining, which describes the recognition of patterns in data with the goal of generating useful and previously unknown information (Vercellis, 2009, p. 77). Data mining can be defined as "data processing using sophisticated data search capabilities and statistical algorithms to discover patterns and correlations in large preexisting databases" (Princeton University's Word Net, n.d., n.d.). For this purpose, data mining makes use of various statistical methods as well as machine learning, focusing on algorithmic and mathematical models that have to be developed, maintained, and adapted (Baars and Kemper, 2021, p. 125). The data mining process can be designed according to the phase sequence of the CRISP-DM standard, which adds the understanding of the business objective and model as the crucial first step (Chapman *et al.*, 2000, p. 29; Piatetsky, 2014). The patterns uncovered by data mining and machine learning methods consist of a formalized description of relationships between two or more of the entities described in a dataset, such as data objects, their attributes, characteristics, and attribute values (Baars and Kemper, 2021, p. 127).

More sophisticated analyses such as sentiment analysis or opinion mining can be performed using advanced analytics (Baars and Kemper, 2021, pp. 10-12). Clustering, classification, association analysis, and sequence or time series analysis can be differentiated (Baars and Kemper, 2021, p. 127; Han and Kamber, 2006). The goal of grouping (also called segmentation or cluster analysis) is to decompose a given set into subsets. The objects within a subset should be as similar as possible, whereas the objects of different groups should be as heterogeneous as possible (Han and Kamber, 2006, p. 383). Cluster analyses can be used to identify previously unknown stakeholder relationships. Classification aims to divide the data into specific classes. Stakeholders are to be classified into different classes with regard to a variable based on their data (Han and Kamber, 2006, p 286). Opinion mining and sentiment analysis are classification methods relevant to internal communication consulting (Van Looy, 2016, p. 133). Association analysis involves working out relationships and dependencies between given objects or attributes and establishing association rules with

the goal to derive logical implications in the form of "Whoever is of opinion A is often also of opinion B" (Han and Kamber, 2006, p. 344). Data mining methods can also be used to predict an unknown characteristic based on past values. This method is particularly relevant for predicting trends (Han and Kamber, 2006, p. 490).

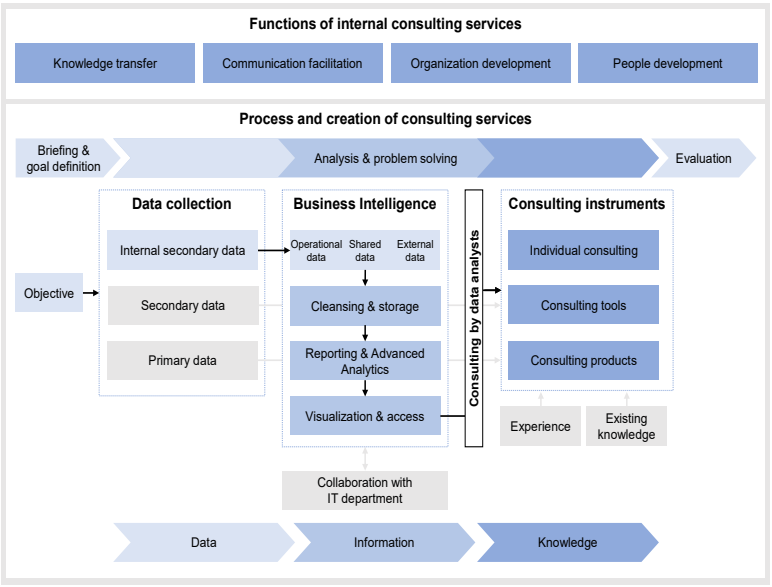
d) Visualization and access

The third step involves visualizing the acquired information using known guidelines and established components (Few, 2009) and providing the information in static presentations and PDFs or interactive dashboards (Zheng, 2018, p. 72). Without appropriate visualization, users can only absorb the information obtained to a limited extent (Zheng, 2018, p. 67). A major advantage of BI technologies is that they can depict the relationship between variables and conclusions in a self-explanatory way. Information design guidelines, such as the SUCCESS rules (Gerths and Hichert, 2013), aim to make information accessible efficiently and effectively, e.g., by demanding the avoidance of trivial, redundant, and embellishing elements (Few, 2009; Gerths and Hichert, 2013; Tufte, 2001). For more sophisticated data mining analyses, specialized visualization elements (visual analytics) like mosaic diagrams, bubble charts and scatterplots can facilitate the comprehension of the subject matter (Baars and Kemper, 2021, p. 300). Access to the results can be provided in the form of PowerPoint presentations or PDFs. These are suitable for immediate use by the user and offer the possibility of preparing the data for specific target groups (Baars and Kemper, 2021, p. 304). In addition, BI results can be presented in the form of dashboards and analysis tools which arrange the most important information on a screen and allow users to grasp it at a glance (Few, 2006, p. 34; Zheng, 2018, p. 72).

3.3 Summary and framework development

Internal consulting by communication practitioners can support management by highlighting the communicative dimension of business decisions and clarifying their communicative implications. This advice helps to optimize decision-making processes of clients such as top management and other executives. The framework shown in Fig. 2 depicts internal consulting in communication management as a process of leveraging BI applications to generate information from data and to enable knowledge transfer as the essential function of internal communication consulting. This answers the overarching question of how communication practitioners can leverage data-driven business intelligence to support managerial decision-making processes (RQ).

Fig. 2: Service provision through business intelligence in internal communication consulting



Source: Authors elaboration

First and foremost, internal consulting services by communicators serve the purpose of transferring knowledge from monitoring public opinions, social developments and relevant stakeholders to top management and other executives in the organization to support their decision-making. Communication practitioners acting as internal consultants may collect primary data themselves or integrate external secondary data. Many communication departments have access to valuable and company-specific data, but they are seldom able to leverage it to a full extent as they lack the needed processes and technologies. The framework shows that data from operational, shared, and external sources can be transformed into information using a business intelligence process that covers all process phases and the necessary technologies and applications, from cleansing and merging the data to accessing the aggregated information. Robust storage architectures are necessary to enable OLAP reporting and complex analyses using data mining methods. Finally, generated information must be visualized in static reports or dashboards in a targeted manner.

At the core of this process is a two-part consulting service. First, data analysts are needed that help communication practitioners to generate and provide relevant data and insights. For this, they must collaborate with IT specialists and external service providers regarding data collection as well as the setup and maintenance of the BI environment. They must define objectives, monitor processes on an ongoing basis, compare them with previous assumptions, and, above all, classify results and derive instructions for action. Second, based on the situational knowledge gained through the BI process, communication practitioners can create valuable internal

consulting services using consulting instruments in combination with their professional expertise, contextual and methodological knowledge, experience, and critical thinking (Weiner, 2021, p. 73). All interviewees emphasized both phases of the consulting processes. Data analysts stressed their advisory role within the communication department and the necessity of collaborating with IT specialists. Chief Communication Officers and Communication Business Partners, however, focused more on the complexity of advising other members of the organization that cannot solely be achieved by using data and digital tools - personal competencies, acceptance and relationships are important as well.

Today's data storage technologies as well as the power of analytical methods such as data-driven scenario techniques provide many opportunities. However, the importance of a precise framing of the information throughout internal consulting processes must not be underestimated. Any BI process requires early and realistic goal formulations, cross-departmental collaboration, and a culture of knowledge sharing. Another central prerequisite for a successful BI process is the establishment of data-conscious work routines among communication practitioners. This can be achieved by emphasizing the added value of working with data, providing training on how to use data in daily practice, and linking personal goals and incentives to data-based activities. Last but not least, a data-conscious culture in communication departments is needed to leverage the full potential of business intelligence in corporate communications.

4. Conclusion and implications

To deliver valuable advice to management in a deeply mediatized world, communication practitioners must draw on data-driven insights on public opinions, social developments and relevant stakeholders. The necessary information can be gathered in various ways. Business intelligence concepts support this by collecting and processing data using digital technologies to support decision-making. This can be combined with the experience, intuition, and existing knowledge of communication professionals to form a solid basis for an internal consulting process. It enables practitioners to bring the communicative dimension into managerial decision-making and align organizations with their "social context and with the most relevant expectations of most relevant stakeholders" (Invernizzi and Romenti, 2015, p. 218).

The framework presented in this article is based on a thorough analysis of interdisciplinary literature. Expert interviews with chief communication officers and data analysts from major companies in a leading business nation have confirmed its structure and helped to optimize the wording where needed. Nevertheless, a limitation of this research is that the framework has not been discussed in several countries and organizations of varying size. Moreover, the empirical application of the framework could not be tested so far, as integrating BI in communication management is still an emerging practice.

For future research, developing use cases and evaluating real-life applications through qualitative studies would be a worthwhile endeavor. This article also lays ground for a more detailed exploration of the internal consulting role in communication management. A deeper investigation of how and to which extent giving advice is practiced by communication practitioners to influence managerial decisions is needed. This includes questions about the competencies (knowledge, skills, personal attributes) of professionals (Tench *et al.*, 2017, pp. 135-152) and about future-proof business models for communication departments in the age of artificial intelligence (Zerfass and Link, 2024).

Last but not least, analyzing the use of BI processes beyond internal consulting may open up new avenues for research. Other tasks of practitioners such as measuring and evaluating corporate communications or governing a communication department also require data that can be provided by business intelligence. This can significantly change the entire management of communication departments - something that is rarely discussed in the academic debate on digitalization, which tends to focus on stakeholder communication and channels (Luoma-aho and Badham, 2023). When doing so, it has to be taken into account that corporate communications is neither exclusively concerned with big data streams nor with goals that can always be substantiated with quantifiable performance indicators. Strategic decisions are based on information and expertise, complemented by ambitious leaders who take personal responsibility for managing businesses in uncertain times.

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sinergie
italian journal of management

ISSN 0393-5108
ISSN 2785-549X
DOI 10.7433/s125.2024.03
pp. 41-60

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