Literature Review on the development of IT strategies over time

Seminar paper

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Abstract

To stay relevant in the market and secure competitive advantages, the importance of strategic technological alignment for various IT companies grows rapidly. As a result, IT strategy occupies a major position in many companies. Over the years, the topic has been picked up more and more frequently in literature, which has also led to different uses of terms, definitions, and content. This systematic literature review examines a total of 42 publications in the period from 1985 to 2021 to obtain a comprehensive overview starting from the beginning of strategic technological orientation in companies. The topic is structured by dividing it into three main categories: Understanding, Development of IT strategies and Outcomes. To provide a deeper insight, an additional distinction into nine sub-categories was made (Definitions, Terms, Importance over time, Link to business strategy, strategy plan, Implementation, Post-Implementation, Benefits, Challenges). Furthermore, an outlook for future research will be given.

Keywords: IT Strategy, Information Technology Strategy, Understanding of IT Strategy, Development of IT Strategy

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1   Introduction

The world is changing and one of the most important reasons for this change is the rapid development of new and improved technology. As a result a growing number of companies are inevitably confronted with the technological change and have to reconsider their business strategy (Bharadwaj et al., 2013). Although one might initially think that strategic alignment in information technology has only become relevant in the last 10 years, literature shows it became visible in companies as early as the late 1980s (Teubner, 2013). Earl (1993) represents one of the first authors to define IT strategy in more detail, highlighting its importance. His work and the definition it contains represents a universal definition for various other authors, who used it as a basis for further work (Earl, 1993). Nevertheless, confusion and ambiguity often arise in the field of IT strategy because the term is not uniformly and clearly defined, so that many different meanings and synonyms appear. The term IT strategy, as well as its interpretation, has nonetheless changed over the years (Atkins, 1994). However, as it becomes more relevant, there are also increasing challenges that companies must overcome in order to reap the potential benefits, such as increased performance and competitive advantage (Chen et al., 2010; Hidding, 2001; Iyamu and Batyashe, 2020; Sanders and Premus, 2005; Teubner, 2013; Yeh et al., 2012).

This literature review aims to provide a general understanding of the broad topic of IT strategy. For the review, I deliberately refrain from a temporal limitation, since the development of the meaning and understanding of IT strategy over the years is obvious. Both parallels, as well as differences should become apparent. The research questions to be answered over the course of the thesis are: *What is the progression of the literature on IT strategy over time? What can be understood by IT strategy? What output can result from the implementation of IT strategy?*

To answer these, the second chapter, "Literature Review", explains the methodological approach used for the review. In addition, an overview of the literature reviewed is presented at the end of this chapter in the form of a table.

The following chapter first begins with a quantitative analysis, followed by the qualitative analysis, which discusses literature categorised in the table in more detail. In the fourth chapter, the previously mentioned results are discussed. The thesis will end with a conclusion, which also contains an outlook on further research.

2   Literature Review

This seminar paper represents a systematic literature review in which the topic of IT strategy is addressed and examined. Over the course of this elaboration, the entirety of relevant literature was mapped using the forward and backward method (Webster & Watson, 2002). As mentioned above, the following chapter deals with the methodology of the literature review applied in this seminar paper. It can be divided into three subchapters. At the beginning, the review methodology and the search string for the literature review are explained in more detail. Following that, the selection criteria and the selection process will be discussed. Based on this, the final and categorised literature selection will be discussed in the last step.

2.1 Review method & selection process

The literature review and resulting search string is across all databases - IT strategy.

Initially, primary literature on the topic of IT strategy is collected, by using search terms in academic databases. The databases used for this purpose are EBSCO, IEEE Xplore, ACM Digital Library, AISeL, and Google Scholar. The terms used are "IT strategy", "IT strategies", "Information technology strategy", and "Information technology strategies". Searches are primarily conducted in the title, abstract, and keywords. To further narrow the search results, specified criteria for selecting relevant literature is used. Accordingly, we defined criteria for which literature is included and other criteria,

which in turn lead to exclusion of formerly included sources. One inclusion criterion includes narrowing the search by considering only peer-reviewed sources.

In addition, selected scientific journals that publish on the topic or similar topics are searched for the terms mentioned above.

Based on this, in the second step, papers that are cited by the authors in the relevant literature and appear to be relevant are included in the initial selection (reverse search).

For the third step, articles are explicitly searched in the databases that cite the relevant and central literature on IT strategy (Webster & Watson, 2002).

To further select the relevant documents to be reviewed in the literature analysis, four steps are performed. First, duplicates from the initial literature search are deleted from the databases so that each title is present only once. Then, additional works are sorted by title and keywords of the work. In the third step, the abstract of each work is checked for relevance. Finally, the full content is read through to decide on the relevance of the literature under investigation.

Thus, a figure of 42 publications, which are categorized and discussed below, is derived.

2.2   Selected Literature

For the presentation of the results, a table-format was chosen (table 1). It is used to categorise the 42 selected publications.

The table is divided as follows: In the three columns on the left, the literature studied in each case is presented by listing the author, title and year of publication.

The upper row of the representation represents the categorisation. Each studied literature is divided into the indicated categories: understanding, development of IT strategy and outcomes.

The first category serves to reflect a rough understanding of the topic of IT strategy and therefore includes definitions, terms and importance over time.

In the second category, the development of an IT strategy is presented and can again be divided into the areas of linkage with the corporate strategy, strategic plan, implementation, and follow-up.

The last category deals with the two subcategories: challenges and benefits.

Nr.	Author	Year	Understanding			Development of IT Strategy				Outcomes	
			Definitions	Terms	Importance over time	Link to business strategy	Strategyplan	Implementation	Post-Implementation	Benefits	Challenges
1	Albadvi, A.	2004									
2	Atkins, M. H.	1994	x	x	x	x				x	x
3	Baker, B.	1995				x	x				
4	Bartenschlager, J.	2011				x		x			
5	Bartenschlager, J., & Goeken, M.	2010		x				x	x		
6	Bartenschlager, J., & Goeken, M.	2009		x		x					x
7	Bharadwaj, A. et al.	2013	x			x					
8	Borremans, A. D. et al.	2018				x	x	x			
9	Boynton, A. C., & Zmud, R. W.	1987	x			x					
10	Brown, I. T.	2004					x	x			
11	Byrd, T. A. et al.	2006								x	
12	Cascio, W. F., & Montealegre, R.	2016									x
13	Chan, Y. E. et al.	1997		x		x			x		
14	Chan, Y. E., & Reich, B. H.	2007				x				x	x
15	Chen, D. Q. et al.	2010	x	x		x	x	x		x	
16	Cooper, R. B., & Zmud, R. W.	1990						x			
17	Earl, M. J.	1993					x				x
18	Earl, M. J.	1989		x	x	x	x				
19	Galliers, R. D.	1993	x	x						x	x
20	Gottschalk, P.	1999a		x			x	x	x		
21	Gottschalk, P.	1999b		x				x			
22	Hackney, R., & Little, S.	1999		x		x					x
23	Hidding, G. J.	2001		x						x	
24	Iyamu, T., & Batyashe, N. R.	2020	x					x		x	x
25	Lederer, A. L., & Sethi, V.	1988			x						
26	Lederer, A.L. & Salmela, H.	1996		x			x	x		x	x
27	Lee, J.-N., & Choi, B.	2014			x						x
28	Li, H., Yoo, S., & Kettinger, W. J.	2021									x
29	Mithas, S., & Rust, R. T.	2016								x	
30	Mocker, M., & Teubner, A.	2005	x	x							
31	Munkvold, B. E.	1999						x		x	x
32	Powell, T.C. & Micallef, A.D.	1997			x					x	
33	Ross, J. W., & Weill, P.	2002								x	
34	Salmela, H., & Spil, T. A.	2002		x		x					
35	Sanders, N.R. & Premus, R.	2005								x	
36	Shu, W. S.	2008					x				
37	Tai, L. A., & Phelps, R.	2000		x							
38	Teo, T. S., & Ang, J. S.	2001					x	x			
39	Teubner, R. A.	2013	x	x	x					x	
40	Valorinta, M.	2011				x				x	x
41	Waema, T. M., & Walsham, G.	1990		x		x	x	x			
42	Yeh, C. H., et al.	2012						x		x	

Table 1: Concept matrix of findings

3   Results

In the following, the results of the literature research, which were summarised in chapter "2.3 Selected Literature" with the help of the table, will be analysed in more detail. This is initially done with a quantitative study by graphically displaying and interpreting the distribution of publication years. This is followed by the qualitative analysis, i.e. by specifying the contents of the categories and the classified literature.

3.1   Quantitative Analysis

To get an improved overview of the literature included in this literature review, I have firstly shown the distribution of publication appearance (figure 1) and a listing of the journals used (table 2).

Figure 1 shows the intention of this paper. The aim is to provide an overview of the development of IT strategy over the years. The period considered in this literature review is 1987 to 2021, which was chosen because technology was first used strategically in companies in the 1980s. The distribution of the years of publication shows the maximum in 1999. In this paper, attention is paid to this year., specifically The work of Gottschalk, for example, created important foundations for the subject area of IT strategy, which are still referenced by authors today (Gottschalk, 1999a, 1999b).
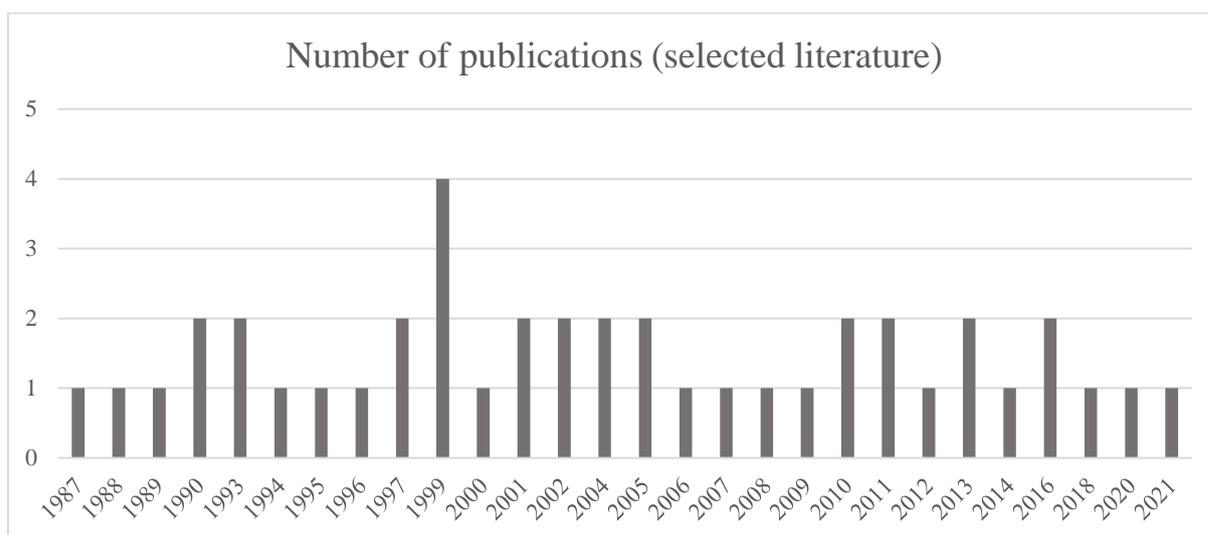

Figure 1: Number of publications (selected literature)

The following table shows the distribution of the literature selected. A total of 35 journals, one book, and 6 conference papers were included in the literature review. In total, literature from 18 different journals was examined. According to the rating in the context of VHB-JOURQUAL3 13 journals belong to the ranking group A+, 9 to A, 6 to B, 2 to C and 3 of them were not ranked.

Journal	Count	Proportion
Management Information Systems Quarterly (MISQ)	6	14,29%
The Journal of Strategic Information Systems	6	14,29%
European Journal of Information Systems	4	9,52%
Information & Management	3	7,14%
International Journal of Information Management	2	4,76%
Journal of Information technology	2	4,76%

European Journal of Operational Research	1	2,38%
Business & Information Systems Engineering	1	2,38%
Business Process Management Journal	1	2,38%
Harvard Business Review	1	2,38%
Information Resources Management Journal	1	2,38%
Journal of business logistics	1	2,38%
Journal of Contemporary Management	1	2,38%
Journal of Management Information Systems	1	2,38%
Longe Range Planning	1	2,38%
Management science	1	2,38%
Strategic management journal	1	2,38%
The Annual Review of Organizational Psychology and Organizational Behavior	1	2,38%
Others	7	16,67%
Sum	**42**	**100,00%**

Table 2: Distribution of the used paper

3.2 Qualitative Analysis

In the course of the analysis, the contents of the categorised literature are reproduced.

3.2.1 Understanding of IT Strategy

As already shown in the literature matrix, this category is divided into the subcategories "definitions" and "terms".

Terms

Before providing an overview of the prevailing definitions in the literature, the term IT strategy and its scope must first be explained in more detail. There is no general understanding in the literature of what is covered by the term IT strategy. For many authors, the terms IT strategy and information system strategy (IS strategy) are used as synonyms (Atkins, 1994; Bartenschlager and Goeken, 2010; Chan et al., 1997; Gottschalk, 1999b; Hackney and Little, 1999; Tai and Phelps, 2000; Teubner, 2013). The authors Lederer et al. (1996) and Gottschalk (1999b) do not differentiate the terms further and use both strategic information plan and IT strategy. The difference is not trivial. (Gottschalk 1999a; Lederer and Salmela, 1996). Bartenschalger et al. (2009) justifiably decide in favour of one term, namely IT strategy because in their view it is present in practice and science and is frequently used (Bartenschlager and Goeken, 2009).

In contrast to the authors Gottschalk (1999) and Teubner (2013), which are mentioned above, Earl (1989), Galliers (1993) and Waema et al. (1990) do not treat IS and IT strategy as synonyms, but information system strategy as part of IT strategy (Earl, 1989; Galliers, 1993; Waema and Walsham, 1990). Chen et al. Chen et al. circumvent this problem of different term usage in the literature, by defining the term they use, IS Strategy, in such a way that terms such as IT Strategy or Information Strategy are included (Chen et al., 2010). The term e-business strategy is mentioned as another and more recent synonym for IT strategy (Hidding, 2001; Salmela and Spil, 2002).

Definitions

Over the years, attempts have been made to define the term IT strategy more precisely. As previously pointed out, the definitions for various terms are shown.

Some authors list similar definitions in their papers. Thus, some of them define IT strategy as a detailed plan to achieve the defined goal of the company. However, this plan mainly refers to the achievement of the goal through the use of technologies or use of information systems (Chen et al., 2010; Galliers, 1993; Iyamu and Batyashe, 2020). This definition is also referred to as one of Teubner's (2013) four views on IS strategy. Other definitions or concepts include "IS strategy as basic (managerial) disposition towards IT, IS strategy as departmental plan, IS strategy as extended arm of business strategy" (Teubner, 2013, p.247). According to Mocker et al. (2005) and Atkins (1994) no precise definition for the term Information Strategy used in their journal is available from literature (Atkins, 1994; Mocker and Teubner, 2005). According to the understanding of Mocker et al., IT strategy solves the problem of which conditions are needed for information and communication activities (Mocker and Teubner, 2005). Appropriately, Boynton et al. (1987) also describe information technology planning as an activity that, on the one hand, identifies opportunities in the use of technologies, identifies requirements for them, and includes specific action plans (Boynton and Zmud, 1987). In the years that follow, especially the combination of IT and business is included in the definition: "IT strategy determines the planning and the transformation of strategic IT goals into IT governance structures, IT processes, applications and infrastructure by adjusting them to the business." (Bartenschlager and Goeken, 2009).

Importance over time

The understanding of the importance of an IT strategy differs in the literature over time. To illustrate the historical evolution, I have examined the work of Teubner (2013), who has created a graph showing the evolution of debates about IT/IS strategy in the literature. This includes the period from the 1960s to the 2000s. The selected period was divided into a total of four eras: data processing, management IS, strategic IS and e-business. The selected period was divided into a total of four eras: data processing, management IS, strategic IS and e-business. From the classification of the eras, it can be seen that the strategic idea with regard to information technology did not emerge until the 1980s, which can also be seen in the definitions already listed above (Teubner, 2013). The shift in strategic direction at this time is also reflected in other papers (Atkins, 1994). The first approaches of strategic interpretation of IT were made e.g., by Lederer et. al (1988) or Earl (1989) and thereupon often used in the literature in this context (Earl, 1989; Lederer and Sethi, 1988). This shift is also evident in the paper by Powell et al. (1997). This also shows the interest of companies and literature in the strategic orientation of IT. One reason for the change in thinking is the realization of the increase in success with the help of IT (Powell and Dent-Micallef, 1997). Today, the importance and strategic orientation of IT for companies can no longer be questioned: "Information Technology (IT) is playing a fundamental and key role in almost every business, and has reshaped the basics of business." (Lee and Choi, 2014, p.1).

3.2.2   Development of IT Strategy

This chapter is dedicated to the category of development of an IT strategy. These include the following steps, which are frequently mentioned in the literature: Link to business strategy, Strategy plan, Implementation and Measuring.

Link to business strategy

The general tone in the literature examined is that there is a connection between IT strategy and corporate strategy, or that they should be interdependent. Accordingly, when developing the IT strategy, care should be taken to ensure that it is compatible with and supports the goals of the corporate strategy. This view appears early in literature and persists over the years. (Atkins, 1994; Bartenschlager and Goeken, 2009; Bartenschlager, Jens, 2011; Bharadwaj et al., 2013; Borremans et al., 2018; Boynton and Zmud, 1987; Chan et al., 1997; Chan and Reich, 2007; Chen et al., 2010; Valorinta, 2011; Waema and Walsham, 1990). The combination of the two strategies is an indicator of better corporate performance (Baker, 1995; Bartenschlager and Goeken, 2009). Earl (1989) also adds that as the IT strategy

is developed and the business strategy should be questioned (Earl, 1989). Bharadwaj (2013) calls for a rethinking of IT strategy, citing the requirement to merge IT strategy and business strategy (Bharadwaj et al., 2013). The focus and goal of the company play a decisive role in the choice of IT strategy. Companies whose goal is market penetration will require a different design of IT strategy than, for example, companies with the primary goal of increasing profits. Therefore, IT strategies cannot be generalized. Nevertheless, for all companies, the lack of alignment between IT and business strategy can lead to missed opportunities and failure to achieve business goals (Atkins, 1994). A digital business strategy and thus a shift in focus should be the goal. Nevertheless, many companies face the challenge of putting this linkage into practice, since in many cases the coordination does not function optimally (Salmela and Spil, 2002). One of the reasons for this difficulty is that strategy is not a rigid construct and is therefore in a state of continuous change (Hackney and Little, 1999).

Strategy Plan

The process of IT strategy is often briefly mentioned in the prevailing literature, but in many cases not explained further. One element is the strategic plan, or often just referred to as planning or plan, which can be understood as the preliminary stage and preparation for implementation (Borremans et al., 2018; Brown, 2004; Chen et al., 2010; Lederer and Salmela, 1996; Teo and Ang, 2001; Waema and Walsham, 1990). In this phase, the transformation of the output into input takes place and thus defines the content of the strategic plan (Baker, 1995; Chen et al., 2010). Since, as mentioned at the beginning, the exact process is often not further described, the exact content cannot be universally determined. Chen (2010) explains a possible concept in which IT assets are first identified and then assigned. Such IT assets include everything that is valuable for the company (Chen et al., 2010). Similarly, according to Earl (1993), the strategic plan serves to allocate IT resources efficiently, supported by optimal IT governance and architecture (Earl, 1993). Earl (1989) further elaborates the components of the strategic plan. During planning, three questions "what", "how" and "where" need to be answered, which means that the strategic plan should be split into three plans: IS strategy, IT strategy and Information Management (IM) strategy (Earl, 1989). Shu (2008) also goes into more detail about the components, or process, of the strategy plan. The process consists of a total of seven phases: "Institutional Vision, IT Vision, Institutional IT Structures, Management Plans, Operational Plans, Plan Evolution, Evaluation" (Shu, 2008, p.138). Furthermore, the strategy plan provides the basis for an optimal and smooth implementation, which follows in the next step (Gottschalk, 1999a). Gottschalk describes it as follows: "There is a significant relationship between (plan) content characteristics and IT strategy implementation." (Gottschalk, 1999, p.115)

Implementation

The implementation process of the IT strategy represents an important point that can determine the success or failure of the strategy (Gottschalk, 1999a; Yeh et al., 2012). Even optimally developed strategies can be rendered obsolete by incorrect implementation (Gottschalk, 1999b). The implementation of the IT strategy is listed by many authors as the last or penultimate step in the description of the IT strategy development process (Borremans et al., 2018; Brown, 2004; Chen et al., 2010; Iyamu and Batyashe, 2020; Lederer and Salmela, 1996; Teo and Ang, 2001; Waema and Walsham, 1990). However, Gottschalk (1999b) lists to the prevailing literature at the time: "While the literature on strategic information technology planning treats implementation only as one of many phases, the literature on IT implementation lacks the gestalt perspective needed when plan implementation is to be studied." (Gottschalk, 1999a, p.363). The importance of the implementation of the IT strategy is already 25 years ago especially by Lederer et al. (1996). They show that IT strategy that is not implemented can lead, for example, to missed opportunities or wasted resources (Lederer and Salmela, 1996). But even in 2010, the importance and scope of implementation is still made clear by Bartenschlager (2010): "IT Strategies have to comprise a broad variety of aspects, since it is not just an act of implementing projects and systems. Instead, implementing an IT strategy demands an integrated view in planning numerous aspects" (Bartenschlager and Goeken, 2010). Bartenschlager (2011) establishes a 4-stage

model for the implementation of the IT strategy, consisting of pre-implementation, planning of the implementation, realisation of the implementation, completion of the implementation, and post-implementation. The first two steps deal with the preparation of the implementation by analysing the strategy and the environment or defining goals for the implementation process. The last three steps deal with implementation and control, documenting progress and lessons learned, as well as measuring success (Bartenschlager, Jens, 2011). Munkvold (1999) and Cooper (1990) describe a similar process. In addition, the instance of internal acceptance and staff training can be found in those of their described processes. Employees and, consequently, future users should understand the importance and handling of the technologies in order to be able to use them optimally (Cooper and Zmud, 1990; Munkvold, 1999).

Post-Implementation

As previously alluded to in the four steps of Bartenschlager (2011), the implementation process also includes reviewing or measuring the success of the implemented strategy (Bartenschlager, Jens, 2011). At the time around 1997, the measurement of IS/IT strategy was neglected. Only a few authors deal with this topic. Chan et al. already dealt with the measurement of already implemented IS/IT strategies in 1997. They developed a measurement instrument for the evaluation of IT/IS strategies (Chan et al., 1997). Gottschalk's (1999b) work addresses, among other things, the importance of measuring implementation. He points out not only the importance of effective implementation, but also the measurement and control of the implementation process. In the course of this, a matrix is presented that relates to the implementation of IT strategies. In this matrix, the time spent on implementation is recorded on the x-axis and the progress of implementation is recorded on the y-axis (Gottschalk, 1999b). Gottschalk (1999a) presents in another paper of his several factors to consider and measure to ensure successful implementation. These include, "resources required for implementation, user involvement during implementation, expected changes in the external environment, analysis of the organization, solutions to possible resistance during implementation, information technology to be implemented information technology to be implemented, relevance of the project to the business plan, responsibility for implementation, management support for implementation, a clear presentation of implementation issues" (Gottschalk, 1999a, p.369). The IT strategy implementation framework (ITSIF) discussed by Bartenschalger et al. is another monitoring tool designed to identify weaknesses in the IT strategy implementation process. This framework combines the areas of IT governance and enterprise architecture with the help of multi project management. It is not only used for monitoring and control, but also promotes a better understanding of the implementation process (Bartenschlager and Goeken, 2010).

3.2.3 Outcomes

The last category "Outcomes" includes the topics Benefits and Challenges.

Benefits

The breadth of literature dealing with the topic of IT strategy gives an idea of the importance of an effective IT strategy. As already briefly touched upon in the definitions category, an effectively implemented IT strategy achieves various benefits for companies. One significant aspect represents the increasing company performance and the competitiveness based on it (Chen et al., 2010; Galliers, 1993; Hidding, 2001; Iyamu and Batyashe, 2020; Sanders and Premus, 2005; Teubner, 2013; Valorinta, 2011; Yeh et al., 2012). A concretely elaborated IT strategy also has the advantage of making optimal use of internal resources, e.g. technologies (Munkvold, 1999). Cost reduction represents another possible benefit that can also be combined with the aspects mentioned above. The aim of IT strategies implemented in the company is to increase effectiveness. Higher effectiveness can result in lower costs, which in turn improves revenue and thus the company's performance (Byrd et al., 2006; Chan and Reich, 2007; Mithas and Rust, 2016). According to Atkins' empirical study, the benefit of

cost reduction was cited as the biggest reason for implementing IT strategy at the time around 1994 in many different companies whose goal was to penetrate the market (Atkins, 1994). The advantages mentioned are all designed for the long term (Powell and Dent-Micallef, 1997; Ross and Weill, 2002). Thus, a lack of IT strategy would lead to missed opportunities, underutilised resources, or even inefficient work (Lederer and Salmela, 1996). Nevertheless, the implementation of IT does not lead to the generation of all these benefits. In most cases, technology is also freely available to the competitors. The right decisions must be made, and an IT strategy optimally suited to the company must be developed in order to enjoy the benefits (Powell and Dent-Micallef, 1997).

Challenges

Just as IT strategy offers many benefits to organisations, it also faces significant challenges that need to be known and addressed. As previously alluded to, a challenge arises from the alignment of the IT strategy with the corporate strategy. Unpredictability and changing processes represent one of the biggest problems to be solved (Atkins, 1994; Cascio and Montealegre, 2016; Chan and Reich, 2007; Hackney and Little, 1999; Munkvold, 1999). Despite the constant change, using IT in such a way that the strategic potential is fully developed is one of the greatest difficulties that many companies face (Lee and Choi, 2014). Operationalising the IT strategy is another challenge. To ensure the efficiency and effectiveness of the IT strategy, it must be operationalised in practice. This is an important step that is time-consuming poses a challenge for adherence to the schedule (Cascio and Montealegre, 2016; Chan and Reich, 2007; Iyamu and Batyashe, 2020). Other obstacles may arise around personnel and management. The issue of resistance, lack of acceptance or lack of trust in technological change on the part of personnel are frequently encountered problems here (Chan and Reich, 2007; Earl, 1993; Munkvold, 1999). These problems often occur due to a lack of or unclear communication and information transfer, which may well also exist on the part of management (Lederer and Salmela, 1996; Valorinta, 2011). Indecision on the part of management or a lack of resources can delay, manipulate or even prevent the IT strategy development process (Chan and Reich, 2007; Earl, 1993). However, the environment can also negatively influence the implementation of the IT strategy and its effectiveness. An example of this is once again change, or more precisely technological change, or changes in legislation (Bartenschlager and Goeken, 2009). Another aspect and challenge that has become more prevalent in recent years and that many companies are facing is security vulnerabilities and related attacks. The technological orientation of a company also increases the risk of security breaches, e.g. triggered by hackers. This makes it all the more important for companies to identify and eliminate vulnerabilities both internally and externally (Li et al., 2021).

4   Discussion

The results of the literature review show the importance of IT strategy over time. The first approaches to defining IT strategy were made in 1993 and are still used today. Nevertheless, companies and thus their strategies (both IT strategy and corporate strategy) are in a constant state of change. As a result, the definition of terms and the scope of the subject area of IT strategy change over time. Thus, no uniform definition of IT strategy has been established to date, and numerous other terms cause confusion and an unclear demarcation.

In contrast, the general opinion in the literature is that IT strategy and corporate strategy represent inseparable, interdependent subject areas. The further process steps of the IT strategy mentioned in this paper represent points of reference. In general, the steps and recommendations for the IT strategy development process are kept short in the literature and are usually not explained in detail. This includes the creation of the strategy plan, which is repeatedly mentioned but not explained in more detail. Thus, this identified gap represents a potential topic area for future research. Best practices can be derived through empirical investigation at different companies. Another point that is not covered much in the literature and is therefore not considered in this thesis is the components of the IT strategy: What all counts as part of it? The prevailing literature is primarily concerned with the meaning, chron-

ological development, and alignment and implementation. The detailed description of the components is neglected.

The process of implementation, on the other hand, is remarkably frequently covered in the literature. Implementation concepts or frameworks are compiled, which are to guarantee an efficient conversion. In this course, the importance of the control and success measurement also becomes clear.

In addition to the gaps in literature, future research could address future trends in IT strategy. Furthermore, challenges related to the implementation of the IT strategy were mentioned again and again, but less how to react to them. For this purpose, IT managers from different companies could report on their experiences with the help of expert interviews.

Such limitations can also be found in my work. The process representation of the IT strategy represents a rather rough overview of the topic and could be split up in more detail. Furthermore, I included only (high-ranking) academic journals, conference papers and one book. Other document types, such as books, online sources, etc., were deliberately left out in order to focus on the most important sources. Another step I took as a further restriction is the selection of the language. In this literature review, you will find only English literature, all other languages were excluded. The last exclusion criterion is the search criteria "IT strategy", "IT strategies", "Information technology strategy", and "Information technology strategies". The inclusion of additional terms, e.g., "Information strategy", "Information System Strategy" which, as already mentioned, are partly used as synonyms, would expand the scope of prevailing literature.

5 Conclusion

The purpose of this literature review is to provide an understanding of the concept of IT strategy over time and to highlight reasons for implementing IT strategy. For the implementation of the goal I have set, I used a concept matrix to divide the results I have developed into the categories Understanding, Development and Outcome. To better understand the term IT strategy, one must be aware that there is no universal definition and different terms with different meanings prevail. In addition, the importance and orientation of IT strategy has changed over time. Four key steps have been identified for the IT strategy process that need to be considered: Link to business strategy, Strategy plan, Implementation and Measuring. The execution of these steps can lead to challenges that need to be overcome as an organisation to reap the benefits of IT strategy.

My goal with this literature review is to provide a basis for future research in the area of IT strategy. The steps of the development process of an IT strategy that I have pointed out can be taken up and added to for future research to explain a more comprehensive process. In summary, this thesis provides an overview of the topic area of IT strategy, but also has individual gaps that offer potential for future research.

References

Atkins, M., H., (1994). Information technology and information systems perspectives on business strategies. J. Strateg. Inf. Syst. 3, 123–135.

Baker, B., (1995). The role of feedback in assessing information systems planning effectiveness. J. Strateg. Inf. Syst. 4, 61–80.

Bartenschlager, ens, Goeken, M., (2010). IT strategy Implementation Framework - Bridging Enterprise Architecture and IT Governance, in: 16th Americas Conference on Information Systems 2010. Presented at the AMCIS 2010.

Bartenschlager, J., Goeken, M., (2009). Designing Artifacts of IT Strategy for Achieving Business/IT Alignment. Presented at the AMCIS.

Bartenschlager, Jens (Ed.), (2011). Implementing IT strategy-laying a foundation, GI-Jahrestagung. Ges. für Informatik, Bonn.

Bharadwaj, A., El Sawy, O.A., Pavlou, P.A., Venkatraman, N., (2013). Digital Business Strategy: Toward a Next Generation of Insights. *MIS Q.* 37, 471–482.

Borremans, A.D., Zaychenko, I.M., Iliashenko, O., Yu., (2018). Digital economy. IT strategy of the company development. MATEC Web Conf. 170, 01034.

Boynton, A.C., Zmud, R.W., (1987). Information Technology Planning in the 1990's: Directions for Practice and Research. *MIS Q.* 11, 59.

Brown, I.T., (2004). Testing and extending theory in strategic information systems planning through literature analysis. *Inf. Resour. Manag. J. IRMJ* 17, 20–48.

Byrd, A., Lewis, B.R., Bryan, R.W., (2006). The leveraging influence of strategic alignment on IT investment: An empirical examination. Inf. Manage. 43, 308–321.

Cascio, W.F., Montealegre, R., (2016). How Technology Is Changing Work and Organizations. *Annu. Rev. Organ. Psychol. Organ. Behav. 3, 349–375.*

Chan, Y.E., Huff, S.L., Copeland, D.G., (1997). Assessing realized information systems strategy. *J. Strateg. Inf. Syst.* 6, 273–298.

Chan, Y.E., Reich, B.H., (2007). IT alignment: what have we learned? *J. Inf. Technol.* 22, 297–315.

Chen, Mocker, Preston, Teubner, (2010). Information Systems Strategy: Reconceptualization, Measurement, and Implications. *MIS Q.* 34, 233.

Cooper, R.B., Zmud, R.W., (1990). Information Technology Implementation Research: A Technological Diffusion Approach. *Manag. Sci.* 36, 123–139.

Earl, M.J., (1993). Experiences in Strategic Information Systems Planning. *MIS Q.* 17, 1.

Earl, M.J., (1989). Management strategies for information technology, Business information technology series. Prentice Hall, New York.

Galliers, R.D., (1993). IT strategies: beyond competitive advantage. *J. Strateg. Inf. Syst.* 2, 283–291.

Gottschalk, P., (1999a). Implementation of formal plans: the case of information technology strategy. *Long Range Pla*nn. 32, 362–372.

Gottschalk, P., (1999b). Strategic information systems planning: the IT strategy implementation matrix. *Eur. J. Inf. Syst.* 8, 107–118.

Hackney, R., Little, S., (1999). Opportunistic strategy formulation for IS/IT planning. *Eur. J. Inf. Syst.* 8, 119–126.

Hidding, G.J., (2001). Sustaining strategic IT advantage in the information age: how strategy paradigms differ by speed. *J. Strateg. Inf. Syst.* 10, 201–222.

Iyamu, T., Batyashe, N.R.,(2020). Operationalisation of the Information Technology strategy in an organisation. *J. Contemp. Man*ag. 17, 198–224.

Lederer, A.L., Salmela, H., (1996). Toward a theory of strategic information systems planning. *J. Strateg. Inf. Syst.* 5, 237–253.

Lederer, A.L., Sethi, V., (1988). The Implementation of Strategic Information Systems Planning Methodologies. *MIS Q.* 12, 445–461.

Lee, J.-N., Choi, B., (2014). Strategic Role of IT and Its Impact on Organizations. Inf Manage 51, 881–882.

Li, H., Yoo, S., Kettinger, W.J., (2021). The Roles of IT Strategies and Security Investments in Reducing Organizational Security Breaches. *J. Manag. Inf. Syst.* 38, 222–245.

Mithas, S., Rust, R.T., (2016). How Information Technology Strategy and Investments Influence Firm Performance: Conjecture and Empirical Evidence. *MIS Q.* 40, 223–245.

Mocker, M., Teubner, A., (2005). Towards a Comprehensive Model of Information Strategy, in: ECIS 2005 Proceedings.

Munkvold, B.E., (1999). Challenges of IT implementation for supporting collaboration in distributed organizations. *Eur. J. Inf. Syst.* 8, 260–272.

Powell, T.C., Dent-Micallef, A., (1997). Information technology as competitive advantage: the role of human, business, and technology resources. *Strateg. Manag. J.* 18, 375–405.

Ross, J.W., Weill, P., (2002). Six IT decisions your IT people shouldn't make. *Harv. Bus. Rev.* 80, 84–91, 133.

Salmela, H., Spil, T.A.M., (2002). Dynamic and emergent information systems strategy formulation and implementation. *Int. J. Inf. Manag.* 22, 441–460.

Sanders, N.R., Premus, R., (2005). MODELING THE RELATIONSHIP BETWEEN FIRM IT CAPABILITY, COLLABORATION, AND PERFORMANCE. *J. Bus. Logist.* 26, 1–23.

Shu, W.S., (2008). Strategic IT planning as change specification, in: Proceedings of the 2nd International Conference on Theory and Practice of Electronic Governance - ICEGOV '08. Presented at the

the 2nd International Conference, ACM Press, Cairo, Egypt, p. 136.

Tai, L.A., Phelps, R., (2000). CEO and CIO perceptions of information systems strategy: evidence from Hong Kong. *Eur. J. Inf. Syst.* 9, 163–172.

Teo, T.S.H., Ang, J.S.K., (2001). An examination of major IS planning problems. *Int. J. Inf. Manag.* 21, 457–470.

Teubner, R.A., (2013). Information Systems Strategy: Theory, Practice, and Challenges for Future Research. *Bus. Inf. Syst. Eng*. 5, 243–257.

Valorinta, M., (2011). IT Alignment and the Boundaries of the IT Function. *J. Inf. Technol.* 26, 46–59.

Waema, T.M., Walsham, G., (1990). Information Systems strategy formulation. *Inf. Manage*. 18, 29–39.

Yeh, C., Lee, G., Pai, J., (2012). How information system capability affects e-business information technology strategy implementation: An empirical study in Taiwan. *Bus. Process Manag. J.* 18, 197–218.