



Traction with fraction: Strategic IS management in SMEs through Fractional CIOs

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Abstract:

Small and medium-sized enterprises (SMEs) increasingly need to manage information technology (IT) effectively in order to remain competitive. However, compared to larger organizations, SMEs often face challenges in terms of resources and employer attractiveness, and regularly do not have the need to employ a Chief Information Officer (CIO) on a full-time basis. To address this issue, a growing number of global experts have begun to provide CIO services on a part-time basis for multiple clients simultaneously. This approach allows SMEs to tap into the expertise of experienced IT leaders at a fraction of the cost and without committing to long-term arrangements. While these professionals, known as “Fractional CIOs”, have proven their value in the field, there has been a lack of academic research on this emerging trend. Therefore, we carried out a comprehensive research project between 2020 and 2023, involving 62 Fractional CIOs from 10 countries. The research produced a definition, different types of engagements, and success factors for Fractional CIOs and their engagements. This paper summarizes these findings for a wider audience of academics and practitioners.

Keywords:

fractional CIO; Chief Information Officer; SMEs; small businesses.

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1. Introduction

The role of the Chief Information Officer (CIO) has been the subject of information systems research for over four decades [1–3]. As the importance of information technology (IT) within companies continues to grow, the establishment of strategic IT management has become increasingly important over time [4]. Effective IT management is essential for both large enterprises and small to medium-sized enterprises (SMEs) to gain a competitive advantage [5, 6]. While larger companies typically appoint a full-time CIO for this purpose [4], SMEs often face challenges due to limited resources and employer attractiveness when considering the employment of a full-time CIO [7, 8]. As an alternative, SMEs often turn to external help or assign IT responsibilities to a manager with a different primary focus [9]. However, these involuntarily assigned IT managers are often preoccupied with other responsibilities, which can lead to reduced productivity and expose the company to security risks [5, 10].

To fill this gap, there are many experts around the world who have started to offer CIO services to SMEs on a part-time basis. These so-called “Fractional CIOs” (also known as “Virtual CIOs”, “CIOs for hire”, or “part-time CIOs”) are often highly experienced IT professionals who work as CIOs for several companies at the same time [11–13]. This gives SMEs access to IT experience and expertise at a fraction of the cost and without making a long-term commitment. While the role of the Fractional CIO is becoming increasingly popular in practice [14, 15], there has been little relevant research on the subject to date. Therefore, we launched a major research project in November 2020 with the participation of Fractional CIOs from 10 different countries to investigate the role of the Fractional CIO. We derived a definition of the role and different types of engagements [16], identified and evaluated factors for the success of Fractional CIO engagements [17, 18], and analyzed the Fractional CIO’s role in mainland Europe, namely the German market [17]. Partially similar to an article we published recently in German [19], this article summarizes the findings of the research project with the intention of making them accessible to a wider audience of academics and practitioners. We aim to stimulate further research in this area and invite industry to consider this role as a useful means of driving digitalization in SMEs.

The article is structured as follows: First, we provide an overview of the studies and methods used. Then, we present the findings from the previous studies on the Fractional CIO. We conclude the article by discussing limitations and areas for future research.

2. Background

In this article, we summarize our three preceding studies regarding the role of the Fractional CIO (see Table 1).

Table 1. Overview of the three preceding Fractional CIO studies [16–19]
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	Fractional CIO study #1	Fractional CIO study #2	Fractional CIO study #3
Reference	Kratzer et al. [16]	Kratzer [17], Kratzer et al. [18]	Kratzer et al. [19]
Title	The Fractional CIO in SMEs: Conceptualization and research agenda	Factors for Fractional CIO engagement success	Beyond full-time: Fractional CIOs in SMEs
Number of Fractional CIOs participating in the study	40	48	3
Research focus	Conceptualization of the Fractional CIO role and identification of engagement types	Empirical evaluation of the relative importance of factors influencing Fractional CIO engagement success and identification of different viewpoints on engagement success	Analysis of the Fractional CIO role in the German market
Section	3.1, 3.2	3.3	3.4

In the first study on Fractional CIOs [16], we conducted 40 semi-structured, exploratory interviews with Fractional CIOs from a total of 10 different countries between November 2020 and April 2021. For this purpose, we first developed a set of key questions taking into account existing research and practice reports [e.g., 1, 12, 13, 20, 21]. We then contacted a total of around 500 potential interview candidates via personal contacts and LinkedIn. If they expressed interest, we conducted semi-structured interviews with these Fractional CIOs according to the guidelines proposed by Myers and Newman [22]. We conducted a total of 39 interviews in English and one interview in German via video conference. The average duration of the interviews was 40 minutes. All interviews were recorded, carefully transcribed, coded, and analyzed. Finally, we derived concepts based on the identified categories and codes and interpreted the results in a meaningful way.

The second study on the Fractional CIO was conducted in two phases. First, between May and September 2021, we developed a framework of success factors for Fractional CIO engagements [17]. We used the analyzed interview data from the first Fractional CIO study [16] to quantitatively and qualitatively assess specific topics of interest. Within these topics, all factors that were mentioned by at least 20% of respondents were considered and all factors were grouped thematically. The resulting framework consists of four components: the *Fractional CIO*, the *client*, their *relationship*, and the *engagement setup* (see Figure 1). Each component in turn comprises several factors that influence the success of the engagement.

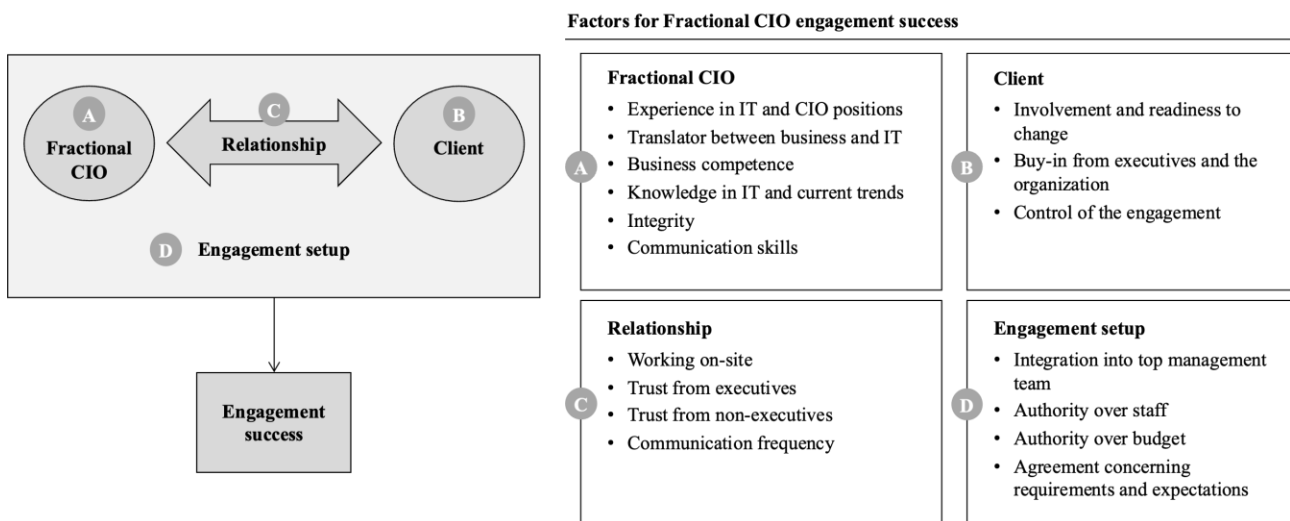


Figure 1. Research framework for Fractional CIO engagement success [17]

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In a second step, we conducted a Q-method-based study [23] with 48 Fractional CIOs between September 2021 and July 2022. The aim of this study was to sort the factors for the success of Fractional CIO engagements according to their importance and identify different viewpoints on success among the Fractional CIOs [18]. The Q-method aims to identify respondents' subjective viewpoints, i.e., their individual opinion or evaluation of a particular issue [24–26]. To perform the Q-method, a Q-sample with statements must first be extracted from a so-called “concourse”. A concourse is a collection of all possible statements on a specific topic [23]. We created the concourse for the success factors of Fractional CIO engagements based on the research framework from Kratzer [17] (see Figure 1). Using existing literature from the fields of CIO [e.g., 27] and consulting [e.g., 28] as well as empirical data from the interviews by Kratzer et al. [16] and expert interviews, we extracted a representative Q-sample with 25 statements from the concourse.

The 48 Fractional CIOs then performed Q-sorting by sorting the 25 statements into a pyramid-shaped, forced quasi-normal distribution with nine levels. The levels of the pyramid range from -4 (least important) to 4 (most important), with room for five statements in the middle column (0, neutral). We excluded a total of 12 results as the CIOs did not match our definition of a Fractional CIO. Based on the 36 usable responses, we first identified the general factors for Fractional CIO engagement success. We then performed a principal component analysis with Varimax rotation. The resulting three factor solutions represent groups of Fractional CIOs who have a similar opinion regarding the importance of the factors. For the interpretation of the Fractional CIO groups, we analyzed the differentiating statements between the factor solutions [29]. Differentiating statements are those statements that show the highest variance across all factor solutions.

For the third study, we conducted three additional semi-structured interviews between June 2022 and May 2023 with experienced Fractional CIOs/CTOs from Germany to obtain a mainland Europe perspective [22]. For this purpose, we translated the questionnaire from Kratzer et al. [16] into German and expanded it to include specific questions on the topic of Fractional CIOs in Germany, such as reasons for the low prevalence and possible challenges specific to Germany. We conducted and recorded the interviews in German via video conference, with each interview lasting approximately 50 minutes. We then transcribed, coded, analyzed, and interpreted the interviews in a similar way to the first Fractional CIO study [16].

3. The Fractional CIO

3.1 Conceptualization of the Fractional CIO role

The Fractional CIO role offers a novel approach to tackling many of the IT management challenges that SMEs face today. Fractional CIOs provide access to highly experienced IT leaders at a fraction of the cost. The role also combines the benefits of a full-time employee (i.e., integration into internal structures and interest in the success of the business) with those of a consultant (i.e., bringing an external perspective and flexibility). If an SME wants to differentiate itself from its competitors, it is probably better to employ a Fractional CIO for 1 to 3 days per week than a full-time IT executive who may lack experience and strategic vision.

In the first study, we derived a definition of the Fractional CIO role from 40 interviews and by analyzing existing literature. The 40 interviewees gave numerous role designations: e.g. *Virtual CIO*, *Part-Time CIO*, *CIO-on-Demand*, or *vCIO*. While some respondents used multiple role titles, the majority described themselves as Fractional or Virtual CIO. However, most do not see a difference between the two terms. Smith and Sinclair [30] define a virtual executive as someone who leads employees, works at least some of the time in a different geographical location from their team, and communicates with their employees by means other than regular face-to-face contact, such as email or telephone. According to this definition, a “virtual” CIO could also be a full-time employee. To avoid ambiguity, to emphasize the part-time nature of the role, and to clearly describe the phenomenon, we chose the term “Fractional CIO”.

There are also clear differences in the structure of the Fractional CIO role. The interviewees who have been in this role for more than 10 years did not know any other people offering such a service when they started this activity. This fact underlines the scattered and heterogeneous development of the role and the service model. Nevertheless, there was clear agreement on many points. By combining the key similarities, we define a Fractional CIO as “a highly experienced and competent individual that acts in the capacity of a CIO, but only part-time, depending on the clients’ needs. The Fractional CIO serves multiple clients at the same time and often has the authority and responsibility of a full-time CIO and (in-) directly manages each of his/her clients’ IT staff and suppliers” [16, 588, 591].

There is a difference between a Fractional CIO and a full-time CIO or consultant. Figure 2 illustrates the positioning of a Fractional CIO between a full-time CIO and a consultant along various dimensions. While the role of a full-time CIO has different characteristics and incentives than that of a consultant, both roles have certain advantages for organizations. On the one hand, a full-time CIO tends to stay with the company for the long term, is well integrated into the organization, and has limited incentive to generate “follow-up” work. On the other hand, a consultant is flexibly tied to the organization and brings an outside-in perspective as well as a high level of experience from different areas. A

Fractional CIO, who is positioned between the two roles, combines the integrity and long-term perspective of a full-time CIO with the flexibility, experience, and outside-in perspective of a consultant.

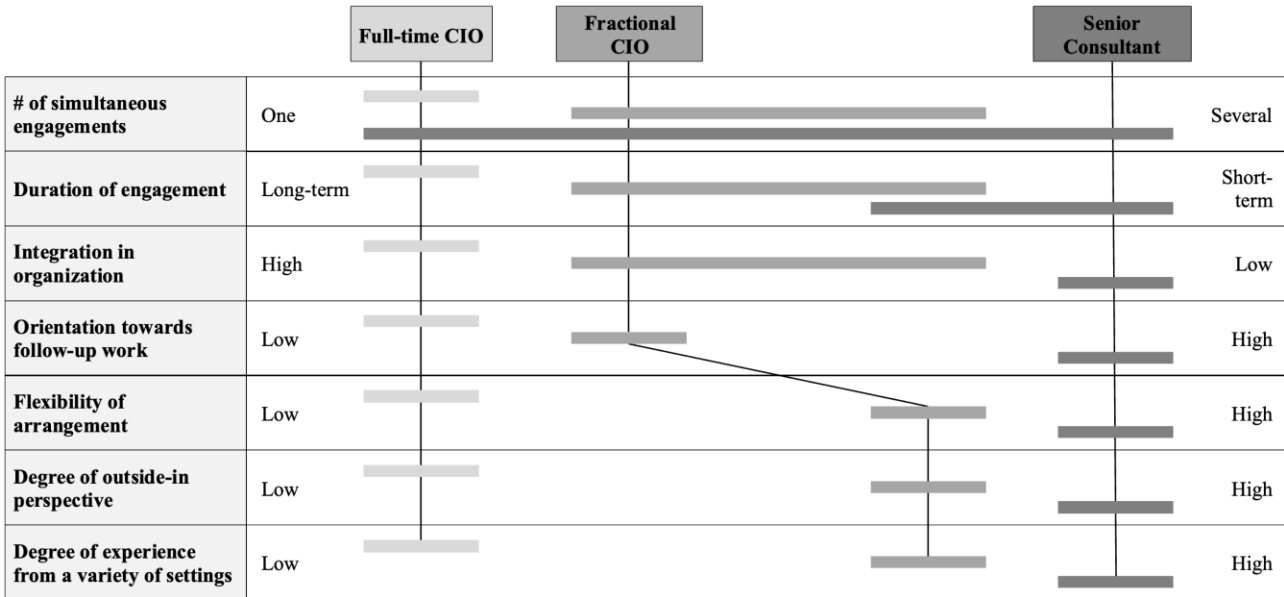


Figure 2. Differences of a Fractional CIO compared to a full-time CIO or consultant [16]
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Often the responsibility for IT in an SME lies with an employee with a different functional background, e.g., the CFO. For an SME with an existing IT department including an IT manager, a Fractional CIO is superfluous as there is already a manager in place.

3.2 Fractional CIO engagement types

Through the 40 interviews in our first study, we identified a variety of reasons why SMEs hire a Fractional CIO. Fractional CIOs were found to tailor their value proposition specifically to the needs of their clients. In synthesizing these value propositions, we identified four different engagement types that Fractional CIOs pursue (see Figure 3). The different engagement types can be categorized into a continuum ranging from strategic and demand-driven, i.e., enabling new business models, to operational and supply-driven, i.e., “keeping the lights on”. While *strategic IT management* focuses primarily on supporting the company, *hands-on support* is an operational engagement. The *restructuring* and *rapid scaling* types are in between. The engagement types offer added value in different client situations, and each type has its own value proposition. Which engagement type is most suitable depends on the specific needs of the company. Each of the engagement types is presented in more detail below.

In the *strategic IT management* engagement type, the client generally requires strategic IT management, as there is a lack of alignment between IT and the business. In addition, the client usually has an existing IT department with several employees. The value proposition of the Fractional CIO in this case is to work on the strategic IT alignment and to establish good relationships and collaboration between IT and the business. To do this, the Fractional CIO needs strong communication skills and must focus on strategic issues.

In the *restructuring* engagement type, too, the client usually has an existing IT department. However, the department typically has serious problems, e.g., is regularly over budget, is severely underinvested, or has outdated IT. The Fractional CIO helps to solve urgent problems, restructure the IT organization, and build IT capabilities. Towards the

end of an engagement, the Fractional CIO transitions the company's IT to a stable state and carries out a handover, e.g., by hiring a new CIO. For such engagements, the Fractional CIO requires restructuring experience and expertise in the areas of IT auditing and reorganization.

The *rapid scaling* engagement type describes the collaboration of a Fractional CIO with a start-up company that does not yet have an IT department but expects rapid growth. The Fractional CIO's tasks include setting up a suitable IT structure and architecture, building an IT department and providing IT leadership skills, and finally hiring a full-time CIO to take over the company's IT. The Fractional CIO should have experience in building and scaling an entire IT department.

The final engagement type, *hands-on support*, is aimed at companies without their own IT department that are dependent on external IT suppliers. In such scenarios, the Fractional CIO often remains long-term and acts as a buffer between the organizations and their IT suppliers. In addition, the Fractional CIO helps to keep IT running smoothly from an operational perspective.

Figure 3 illustrates the four engagement types, outlines typical client situations, and depicts the Fractional CIOs' specific value propositions in these contexts.

Types	Typical client situation	Value proposition
Strategic IT management	<ul style="list-style-type: none"> • Missing connection between IT and the business • Need for strategic IT management • Usually several employees in IT 	<ul style="list-style-type: none"> • Establishing good relationship and collaboration between IT and the business • Working on strategic IT direction
Restructuring	<ul style="list-style-type: none"> • Severe problems in IT (regularly over budget, heavily underinvested) • Usually several employees in IT 	<ul style="list-style-type: none"> • Solving urgent problems and restructuring the IT organization • Building up IT capabilities • Transitioning into steady-state and handover
Rapid scaling	<ul style="list-style-type: none"> • Start-up with no IT yet, expecting rapid growth • Usually no IT department in the beginning 	<ul style="list-style-type: none"> • Setting up proper structure and architecture • Building an IT department and providing IT Leadership • Hiring a full-time CIO to take over
Hands-on support	<ul style="list-style-type: none"> • No in-house IT (everything outsourced) • Often dependent on MSPs/ vendors 	<ul style="list-style-type: none"> • Staying long-term • Acting as "protection" between client and vendors • Helping to run IT smoothly ("Keeping the lights on")

Figure 3. Typical client situations and Fractional CIO value propositions according to the 4 identified engagement types [16] (adapted table from [16] licensed under CC BY 4.0 DEED Attribution 4.0 International - <https://creativecommons.org/licenses/by/4.0/>)

3.3 Factors for Fractional CIO engagement success

In the second study, we initially developed a framework for Fractional CIO engagement success (see Figure 1). Building on this, we conducted the Q-method with 36 Fractional CIOs. On the one hand, we derived overarching, general factors for the success of an engagement, and on the other hand, we derived specific success factors for each Fractional CIO group within the three factor solutions. We first present the general factors for success, followed by the individual Fractional CIO groups and their respective subjective views.

The key to a successful engagement is the relationship with the client's leadership team, which manifests itself through trust. The second most important general factor for the success of an engagement is integrity. While companies that do not have the appropriate technical expertise run the risk of being taken advantage of by their IT suppliers, the Fractional CIO is often seen as an objective and loyal contact. The third and fourth general factor for Fractional CIO engagement

success is support from the client's leadership team and effective communication between the Fractional CIO and the leadership team.

Through a careful evaluation of the descriptive statistics and interpretation of the individual factor solutions, i.e., the groups of Fractional CIOs who share similar views, we labeled them as follows: *strategic IT advisors*, *full-ownership CIOs*, and *change agents* (see Figure 4). Each of the three groups of Fractional CIOs has different characteristics and opinions on the success factors of engagements. In the following, we first discuss the different characteristics of the Fractional CIO groups. Then we present the views of each group on the factors for Fractional CIO engagement success.

	Strategic IT Advisor <i>often serves multiple clients simultaneously with varying IT department sizes</i>	Full-Ownership CIO <i>usually has clients with smaller IT departments or even no IT department at all</i>	Change Agent <i>typically serves larger clients and, hence, needs to limit the number of engagements</i>
Avg. # of simultaneous client engagements	5	4	3
Avg. size of IT department (in FTE)	7	4	18
Avg. IT Budget (in mn USD)	≈ 4.5	≈ 1	≈ 3.5
Most important factors for success	<ul style="list-style-type: none"> • Strategic thinking • Integrity • Suitable business competence • Ability to switch context quickly and effectively 	<ul style="list-style-type: none"> • Alignment on requirements and expectations • Effective communication with and support from the client's non-executive staff • At least partial authority over the client's staff 	<ul style="list-style-type: none"> • Integrity • Fit with organizational culture • Willingness to change of the client's staff • At most three simultaneous engagements

Figure 4. Description of the three Fractional CIO groups and their most important factors for success [18]

While the *change agents* have an average of three clients at the same time, the *full-ownership CIOs* have four. This corresponds to around 1.3 to 1.7 days per client per week. *Strategic IT advisors*, on the other hand, have an average of five simultaneous engagements, i.e. around one day per client. While *strategic IT advisors* and *change agents* tend to support larger clients with an average of 260 and 349 FTEs respectively, *full-ownership CIOs* focus on smaller clients with an average of 66 FTEs. This is also reflected in the size of the IT department: the *full-ownership CIOs* work with IT departments with an average of 4 FTEs, the *strategic IT advisors* with around twice that and the *change agents* with four to five times that.

However, the three Fractional CIO groups not only have different characteristics in terms of the number of concurrent clients and client size, but also have significantly different views on which factors particularly contribute to the success of an engagement. We present the three groups and their views in detail below.

The first group, *strategic IT advisors*, support their clients at a strategic level in terms of how they can develop the business through IT. Fractional CIOs must act with integrity, think strategically, and have appropriate business skills to build the necessary trust. They also need to be able to change context quickly and effectively, as they often manage multiple clients with different sized IT departments at the same time. The ability to think strategically is the key differentiator for *strategic IT advisors*. In addition, there is a strong focus on business expertise and how IT supports the business.

Knowledge and broad experience in IT are also essential. In order to create the necessary trust, the Fractional CIO must act with integrity. Since the position offers various opportunities to emphasize one's own advantages – for example, by receiving a commission or similar from IT service providers when recommending them – integrity is one of the highest-rated factors. On average, the Fractional CIOs in this group have five clients at the same time, which means about one day per client per week. This requires effective time management.

Another factor is therefore the ability to change context quickly. Sometimes the *strategic IT advisors* are rather detached from the employees. In some cases, the lack of responsibility for the employees is also due to the different sizes of the IT departments. Although *strategic IT advisors* are the closest to traditional IT consultants, there are clear differences. On the one hand, Fractional CIOs often have line responsibility. Secondly, there is no real offer of strategic IT consulting, especially for small SMEs, while CIOs in large companies often have a kind of permanent consultant that they can call on by the hour or day. This gap is filled by *strategic IT advisors*.

The second group of Fractional CIOs, *full-ownership CIOs*, take full responsibility for the CIO position and therefore need a clear alignment on requirements and expectations regarding the engagement. They often need at least partial authority over their clients' employees. As a rule, *full-ownership CIOs* have clients with smaller IT departments with an average of four FTEs and sometimes even clients who have no IT department at all. Due to the more hands-on approach, effective communication with and support from the non-executive staff is required. Full ownership means that Fractional CIOs must not only support from a strategic IT perspective, but also ensure proper IT operations. This is especially true if the Fractional CIO is a one-person IT department and has to negotiate with IT suppliers, for example. As they deal with an average of four clients at a time, they need to ensure that they devote sufficient time to each client.

Another important factor for the success of a *full-ownership CIO* is the support of the company management. The relationship with the management team must also be cultivated. The fact that it is important for the success of this group of Fractional CIOs to have relevant experience in IT and CIO positions and at least partial authority over their clients' employees underlines the full ownership mentality. Some Fractional CIOs even have full management responsibility for the client's IT staff, including responsibility for hiring and firing.

The third group of Fractional CIOs, *change agents*, are part of the leadership team, act with integrity, and adhere to the highest professional standards. To facilitate change, it is important that these Fractional CIOs fit the organizational culture of their clients and build trusting relationships. Personal fit is also important.

Compared to the other groups of Fractional CIOs, *change agents* tend to have larger clients and therefore need to limit the number of engagements and spend at least a certain amount of time per week with each client. Fractional CIOs in this group have an average of 18 FTEs in the IT department and manage an average of three clients at a time.

Compared to *full-ownership CIOs*, *change agents* work at a much higher and strategic level and therefore do not focus as much on operational activities. Another critical factor in the success of the engagement is integrity. To facilitate change, these Fractional CIOs need to fit in with their clients' corporate culture. In addition, support from the client is required and employees must be open to change.

It is also more important for *change agents* to have no more than three concurrent assignments compared to the other groups of Fractional CIOs. Having more employees working in the IT department requires more commitment and time for each client.

The identified groups of Fractional CIOs with similar perceptions of success factors can be related to the engagement types described previously. *Strategic IT advisors* are most likely to operate in the *strategic IT management* engagement type. Fractional CIOs who belong to the *full-ownership CIOs* group are most likely to engage in the *hands-on support* engagement type, and slightly less likely to engage in the *strategic IT management* and *rapid scaling* engagement types. Finally, *change agents* will often see their engagement in *restructuring* settings with *strategic IT management* and *rapid scaling* being also likely engagement options. Figure 5 illustrates the mapping of the engagement types to the Fractional CIO groups and explains the rationale behind each mapping.

Groups Engage- ment types	Strategic IT Advisor	Full-ownership CIO	Change Agent
Strategic IT management	Most common	Likely Exemplary case: Small organization that needs help with IT strategy, but also IT operations	Likely Exemplary case: Organization that requires strategic IT direction besides change
Restructuring	Unlikely Full ownership required for <i>restructuring</i> , which is often not the case for the <i>Strategic IT Advisor</i>	Unlikely <i>Full-ownership CIOs</i> mostly serve smaller organizations, which rarely require extensive <i>restructuring</i>	Most common
Rapid scaling	Unlikely Full ownership required for <i>rapid scaling</i> , which is often not the case for the <i>Strategic IT Advisor</i>	Likely Exemplary case: A start-up that hires a Fractional CIO for scaling up fast	Likely Exemplary case: An established IT department that hinders the company's growth
Hands-on support	Unlikely Mostly concerned with IT strategy instead of IT operations	Most common	Unlikely <i>Change Agents</i> typically work on a more strategic level without too much involvement into IT operations

Figure 5. Mapping of Fractional CIO engagement types with Fractional CIO groups

3.4 The Fractional CIO in mainland Europe, namely in Germany

In the first two Fractional CIO studies, it was notable that there are hardly any Fractional CIOs to be found in Germany or other European countries outside Great Britain. Even the few German Fractional CIOs that were interviewed rarely knew other Fractional CIOs in Germany. Various opinions exist regarding the reasons for the limited presence of the role in Germany. One hypothesis is that European companies in general and German SMEs in particular might be too conservative. Others think it could be a lack of awareness of the problem and the Fractional CIO role. While there are different opinions about the limited prevalence, all interviewed Fractional CIOs agree that SMEs could greatly benefit from Fractional CIOs.

To establish the Fractional CIO role in European SMEs, it is crucial to enhance awareness of the role and understanding of its added value. Additionally, a receptiveness to new working models and problem awareness among company leaders is necessary. For SMEs, there should be an emphasis on strengthening awareness that the alternative to full-time employment does not automatically imply external consultancy. Figure 2 illustrates the two extremes with the Fractional CIO positioned in between, combining the best of both worlds for SMEs. Acting as an integrated part of the organization, often assuming line responsibilities, the Fractional CIO offers the flexibility of a consultant with a longer-term focus.

We outline concrete recommendations for the collaboration between Fractional CIOs and SMEs. For companies with small or no IT departments, *full-ownership CIOs* can provide operational and strategic support by taking responsibility for managing personnel and suppliers on behalf of their clients. A successful collaboration requires careful alignment of requirements and expectations, along with a high level of trust and clear decision-making authority for the Fractional CIO. *Strategic IT advisors* are the right choice for companies with existing IT departments that want to focus on strategic IT alignment and business support. Success in this context depends on the ability to combine business knowledge and technical understanding. Companies with established IT departments experiencing severe IT issues or requiring comprehensive transformation would benefit from collaborating with *change agents*. While capable of transforming the IT department, they are not typically responsible for operational IT functions [18].

Especially for SMEs in Germany, *full-ownership CIOs* seem to pose the most challenging option, as extensive directive powers and significant trust are often required. In contrast, *strategic IT advisors*, could be considered insufficient for the company's success. Nevertheless, or precisely because of this, *strategic IT advisors*, particularly with their proximity to IT consultants, form a potential starting point for collaboration with a Fractional CIO.

4. Conclusion

Our paper explored the evolving role of the Fractional CIO in SMEs, highlighting its strategic importance in information systems management for these organizations. We presented a comprehensive examination of the role's definition, responsibilities, engagement types, and success factors. The research was based on extensive interviews and surveys, providing a fundamental understanding of the importance of the Fractional CIO's significance in SMEs.

Our research was limited by its focus on a new role with a limited pool of participants, resulting in a non-representative sample. Reliance on the perspectives of individuals currently in the role may have introduced bias. While our exploratory approach was broad, further quantitative and case studies are needed for a more in-depth understanding.

Future research should examine regional and demographic variations in the Fractional CIO role and seek a balanced and neutral perspective by including the perspectives of organizations. Research on the opportunities and risks associated with the part-time nature, authority, and liability of the Fractional CIO is critical. Comparative studies with full-time CIOs would enhance understanding of the effectiveness and evolving nature of this role, paving the way for a comprehensive understanding in the field of information systems.

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