The CIO Leadership Mosaic –
Results from a qualitative survey in the Silicon Valley and San Francisco Bay Area

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Abstract
The Chief Information Officer (CIO) plays a crucial role for the governance of IT, by assuring the strategic value of IT and driving and supporting new business models. To investigate this function a new holistic research tool – the CIO Leadership Mosaic - was developed to incorporate the most relevant dimensions of the CIO role. We apply a leadership-oriented view, allowing understanding how CIOs cope with rapid change in their environment. The theory-based mosaic was applied in a qualitative survey among CIOs from the Silicon Valley and San Francisco Bay Area, to test the CIO Leadership Mosaic and to gain insights into the work of CIOs and their success factors for an effective IT governance. As a result three cross-dimensional characteristics of CIOs from Silicon Valley are identified: innovation, ecosystem and leadership. These results are starting points to a holistic view on the CIO profession based on the CIO Leadership Mosaic.

1. Introduction

The Chief Information Officer (CIO) and his or her role in the organization and in comparison to other c-level executives has been subject to many researchers due to the enormous impact of information technologies (IT) on companies and economies [1]. With IT playing a crucial role in enterprises nowadays by driving new business models and enabling new ways of collaboration and mobility, a lot of attention was drawn to the role of IT leaders who are now “strongly encouraged to become drivers of business transformation and innovation” [35]. IT governance, as the approach “to control the formulation and implementation of IT strategy and this way ensure the fusion of business and IT” [15] is strongly influenced by the role of the CIO “who is responsible for assuring the governance of IT along the board and business management [15] and thereby has a major influence on corporate performance [26].

Compared to other functions in the top management team (TMT), the CIO is a quite young profession, which has undergone huge changes, starting with the first business sale of a computer in 1954 (UNIVAC 1 at General Electric) to ubiquitous digitalization today. This development will continue and very likely accelerate presenting new challenges and opportunities for CIOs in the future.

This situation led us to the idea to investigate the CIOs in the Silicon Valley, the most prominent hub and startup ecosystem for high-tech innovation and development, with a high pace of change and certainly a challenging ecosystem. The goal of our research was a descriptive model of CIOs to gather insights into their work and how they lead and shape the perception of IT in their companies, to apply the results to CIOs in other settings. A big consulting firm eventually tried a similar approach, but without an academic motivation [1].

However, the picture the scientific literature delivers today is far less than complete. Although specific parts of the CIO function are well understood, like methods or skill sets [45][41], a holistic view is still missing. Combining the isolated parts into a mosaic, where parts have to be well fitted together to build a consistent whole, is the goal of this paper.

The resulting CIO Leadership Mosaic can be applied as a research tool to holistically investigate CIOs in different settings to better understand certain phenomena. Furthermore, through future application of the mosaic more patterns can be derived to give recommendations towards effective IT governance and the development of the CIO profession.

1.1 Context

Regarding these challenges, we chose a qualitative approach to investigate the CIO
Leadership Mosaic by interviewing top IT executives from companies in the Silicon Valley and the San Francisco Bay Area, to learn from them how their mosaic looks, working in an ecosystem which produces a large amount of disruptive innovations every year. This specific mosaic might predict the near future of CIOs and investigates the ability of CIOs to cope with rapid change.

Leadership is one of the concepts, used to cope with challenges management faces today. It is a multidisciplinary approach trying to explain very successful leaders (see [8]). Leadership studies uses concepts and methods from social sciences, humanities and management [33][38]. Weber wrote already 1922 [47] about types of leaders in the context of power and hierarchy, with a clear bias towards legal authority. As stated by Ko and Fink [25], “IT governance requires leadership to ensure that IT activity is sustained and extended to achieve the organization’s goals.” IT leaders today are facing the problem how to be a leader with legal authority for their staff but not for the business side. That is why the concept leadership was chosen to differentiate our holistic view on CIOs and their mosaic to other research focusing on certain management techniques. Kotter [27] defines the differences as followed:

“The most pernicious half-truth about leadership is that it’s just a matter of charisma and vision—you either have it or you don’t. The fact of the matter is that leadership skills are not innate. They can be acquired, and honed. But first you have to appreciate how they differ from management skills. Management is about coping with complexity; it brings order and predictability to a situation. But that’s no longer enough—to succeed, companies must be able to adapt to change. Leadership, then, is about learning how to cope with rapid change.”

Taking this quote into account, leadership might be learnable and good role models or teachers would be leaders in rapidly changing ecosystems.

The three assumptions listed below were foundational to our research, framed its context, and kept us focused. We developed these assumptions while thinking about possible outcomes of our qualitative survey and believe they show how broad the role of the CIO can be in actual practice. Further, they might be a useful starting point for future research on this topic:

1. Change is constantly happening in the Bay Area, so CIOs here have developed a sophisticated mosaic,
2. All executives are IT savvy in the Bay Area, so the role of the CIO is cut back to deliver commodity services,
3. IT know-how is so crucial and key to further growth, the CIO function will be a necessary stepping-stone for prospective CEOs in the future.

1.2. Research methods

Following this idea, we designed a three-phased research process. At first we examined the existing literature to deduce the needed mosaic and categorize approaches regarding the CIO and the role within the TMT (see section “Theoretical Orientation”). Consequently, the first step of the research process was guided by the goal to explore and investigate the different topics of interest and relevance around the CIO and thereby provide a theoretical fundament for the following qualitative survey. Therefore an exploratory literature review was conducted. General search terms like e.g. “Chief information officer”, “CIO role”, “CIO framework”, “CIO function” and a literature basis containing an extract of leading sources in IS research [14] and practice were used during the search process. The search was limited to contributions and reports in English published since 1990.

Afterwards we planned a qualitative survey using semi-structured interviews [42] with CIOs from the Silicon Valley and the San Francisco Bay Area as the first instance of the CIO Leadership Mosaic [17].

The interviews were mostly face-to-face, except for two telephone interviews, lasted 60 to 120 minutes each and were supported by a guideline. The guideline was structured around the identified areas from the research literature, which was rated as relevant for the mosaic (see section “The Mosaic”). Afterwards, the interviews were fully transcribed. Finally, after reading and re-reading [37], a tool-based qualitative data analysis using a hybrid coding method [20] was conducted. The themes were partly grounded in the mosaic as theoretical background [29] and partly derived from the interviews [7]. Taking the mosaic as a basis for coding can be seen as template analysis to structure the empirical data and explore the topic from a particular perspective [24], in our case a holistic view of CIOs.

The goals of the survey were: to test our mosaic, to derive a specific Silicon Valley mosaic, and to get clues regarding the three assumptions and future research directions. 19 Interviews with CIOs and top IT executives were conducted between May and July 2014 with a total of 28 hours of interview material.

Table 1 lists the names and (by then) employer:
Table 1: Interviewees and their employer at that time

| Ashwin Ballal | KLA-Tencor |
| Barry Libenson | Safeway |
| Bask Iyer | Juniper Networks |
| Chris Hjelm | Kroger |
| Cynthia Stoddard | Netapp |
| Dave McCandless | Navis |
| Jessica Denecour | Varian |
| Jim McGuire | Charles Schwab |
| Kim Stevenson | Intel |
| Mark Grimsel | Rambus |
| Mike Kail | Netflix |
| Patrick Steele | Delta Dental |
| Paul Chapman | Gap |
| Ralph Loura | Clorox |
| Robert Worrall | nvidia |
| Sheila Jordan | Symantec |
| Tim Campos | Facebook |
| Todd Pierce | Salesforce.com |
| Volker Mehlo | Actelion (USA) |

2. Theoretical Orientation

A considerable amount of scientific and practice-oriented literature focuses on the role and responsibilities of the Chief Information Officer (CIO). The conducted analysis led to an observation that the existing publications tend to investigate the role of the CIO along two general perspectives: personal characteristics and organizational context. The topics of interest within these general perspectives will be introduced below.

With IT evolving to an important business driver the role of the CIO has undergone fundamental changes and demands a new and expanded set of responsibilities. Consequently, a considerable amount of literature was dedicated to identifying a key set of competencies of a successful CIO. The primary competencies for the CIO suggested in IS publications were outlined by [12] and can be listed as follows: business competence, technology management competence as well as interpersonal and political competence. Therefore, a knowledge of the business domain with its internal and external factors, understanding of technology and its impact on business followed by organizational and networking capabilities become a necessity for an effective CIO. The importance of technical as well as business orientation was also pointed out [10][43]. In addition, with companies operating within global, dynamic and high-competitive markets, intercultural competencies, understanding of the company’s business ecosystem with its core players and leveraging possible interrelationships with them gain relevance [43].

With a changing role of IS leaders in organizations also their leadership behaviour changes. CIOs are often described as visionary leaders who prefer to support and empower rather than to dictate [2][46]. "Successful CIOs draw a significant amount of satisfaction from what they accomplish by enabling others to perform more successfully" [39]. Other authors investigate the impact of personal background like education and previous career steps on the role execution [18][19].

Considering these findings two dimensions can be highlighted for the mosaic regarding personal perspective on the role of the CIO: personal background and skills.

Besides the identified relevance of personal background and skills, CIOs operate in an environment where organizational context and its challenges determine the possible variations in tasks, reporting levels and interactions with other TMT members [12][21]. Especially a mutual understanding between the CEO and CIO is associated with advantages in the strategic planning process [23]. Among further organizational factors of influence "the degree to which a firm has standardized its IS architecture infrastructure, and the degree to which IS enables core products, services, processes, or competitive advantage of the firm impact the nature of the role." [11] The organizational perspectives also often deal with the chosen operating model [22][28] as a determinant for performance and success of the IT organization.

Besides, the insights on the existing literature led to the perception that a set of tasks, processes and responsibilities is usually related to the organizational context of the role. Among the activities that draw attention of IT Leaders are, for example, IT strategic planning and control, IT architecture management, innovation management, human resource management and budget planning [3][13]. These practices are often grouped under the term IT governance [48][44]. Different approaches and software tools, for e.g. enterprise architecture, aim at supporting the CIO in facing the organizational challenges and successful execution of the related
tasks [30][40][4][36][49]. Taking the described findings into consideration, two dimensions were outlined on the role of the CIO from the perspective of organizational context: organizational background with its structure, goals and position of IT, and methods, that the role applies for leading IT within the organizational context.

In addition to the identified relevant topics around the role of the CIO, the conducted literature analysis revealed that contributions focus mostly on single aspects relevant for the CIO or investigate the interrelations between a couple of chosen dimensions. A holistic view on the role of the CIO was not found.

Guided by this observation we summarized the identified dimensions relevant for the role of the CIO in the mosaic, which will be introduced in the following section.

3. The Mosaic

We use the concepts and perspectives identified in the scientific literature to construct a frame of reference for our research tool - the CIO Leadership Mosaic. The two sides of the mosaic (see figure 1) match the perspectives personal characteristics and organizational context from the literature. We derived the additional four dimensions personal, skills, methods, organization from the relevant literature presented in section 2 and aligned them with the perspectives. Within these dimensions we further established categories, which were mentioned in the literature but could be assigned to more than one dimension. As an example the category processes & tasks can be seen as an organizational aspect as well as methods.

One goal of the qualitative survey is to confirm this structure of the CIO Leadership Mosaic. For that reason we will underline the description with some numbers from the analysis process. When no specific category was adequate, the overall dimension was used as a code.

**Dimension: Person**

We included all factors with an impact to the person itself in this dimension. Background is the category that could be used for e.g. aspects regarding family, sports, religion or childhood. Another category considers education & career, which deals with experiences in school, college or university (e.g. degrees, subjects) and the professional career (e.g. employers, industries). The category leadership was aligned to the dimensions personal and skills, to emphasize the close link of leadership to both dimensions.

**Dimension: Skills**

In this dimension again the leadership category played a role, especially when it comes to skills to deal with people. Additionally, the often-mentioned competencies like business understanding, listening, translating are combined here. Networks is the last category understood as bringing people and know-how together, exchange ideas inside and outside the company. The CIOs are well connected, the code networks has the count 31 in 12 interviews and we used the competencies code 68 times in 15 interviews.

**Dimension: Organization**

Organization describes the structure and setting the CIO has installed or at least influenced to operate and support the whole organization. Besides the hybrid processes & tasks category we used situation & challenges and role & reporting. Additionally, the code organization could be used for more general characteristics like the operating model.

To describe the position of the IT department and the CIO itself the code role & reporting was used 36 times. The code role of IT was used for analyzing the
role of the IT department told by the CIOs and was found 17 times in 9 interviews. The code situation & challenges was applied 63 times in 15 interviews. Most instances were about difficult situations of the company or the IT department or certain initiatives, which the CIO had to deal with.

**Dimension: Methods**

Methods are certain procedures or practices a CIO can use to get her or his job done. In this dimension the categories are: approaches, tools and processes & tasks. Approaches describe the relevant frameworks or concepts, like Balanced Scorecard (BSC) or COBIT. Tools can be seen as methods built into software and fit into this dimension; typical examples of tools are issue trackers, project management or controlling software. The category processes & tasks describes the work the CIO has to do and especially processes can be understood as explicit and formalized tasks.

The code processes & tasks had been coded 79 times, whereof 51 are codes for tasks. Tools were mentioned 52 times in total in 12 interviews, but we did not find a universal tool for all CIOs. As they are not distinct, the codes methods and approaches can be viewed as one group. This was the second largest group of codes with 141 occurrences in total in all interviews.

As part of the qualitative data analysis, we found a few additional codes we did not use in the mosaic and were not backed by sufficient literature. We realized, that innovation was one of the key tasks of the CIOs with 62 codes in 10 interviews (see section 5.1). Most of the CIOs understand this critical theme as an important part of their job.

The CIOs emphasized the special ecosystem in the valley, which was mentioned 27 times. The most interesting part of the ecosystem is the interrelation with the code Venture Capital & Start-Up (see section 5.2). In Silicon Valley the CIOs are working closely with Venture Capital companies and startups to identify new trends and boost innovation. These two codes were applied in 13 interviews having a count of 54 in total. An additional new code we found, is the Role of CIO. This code has been counted 48 times and there is an interrelation with the code tasks. This code displays how the business and the CIO itself sees the role of the CIO today.

Besides that we thought about two additional codes regarding the company background and overall goals the CIO wants to achieve. But already during the interviews we saw that these codes do not fit into the mosaic. Nevertheless the code company background has 25 appearances, but there seems to be no important factor that differentiates the CIO from any other executive.

**4. CIO Leadership Mosaic in Silicon Valley**

As shown above the dimensions and categories of the CIO Leadership Mosaic could be verified through our survey. However, certain parts did not deliver any patterns or correlations to other parts of the mosaic e.g. education or methods, while others where quite homogeneous, like reporting. The following findings of our analysis can be used as an orientation for CIOs outside the Silicon Valley, but should not be adopted without knowing the own mosaic.

**Personal:** The CIOs have a very differing scholarly background. Neither the degree nor the subjects seem to be a prerequisite for their later job and success. An interest in technology was not accompanied with a degree in computer science.

They have spent an average of 10 years per job in their earlier career and some changed the job to the business side or from an established business to a startup. “I took the role because I wanted to go into the services. I wanted to broaden my perspective about the technology industry.” (Interview 1)

During coding we started to code specific “personal views” to capture specific attitudes, but the data was too fuzzy and diverse, so no valuable patterns could be derived.

**Skills:** Every CIO mentioned the need for “Understanding the business”, which is also heavily emphasized by academic literature. Additionally, the CIOs stated that a deep technical knowledge to fulfill their job is not required, but was rated as helpful by them. The skills of leveraging personal networks, inside and outside the company, were mentioned and rated as important by every interviewed CIO. Mentionable is the fact, that big CIO Events were not rated as valuable networking opportunity. The topic all around leadership will be presented in more detail in section 5.3.

**Methods:** The CIOs knew common standards like ITIL and COBIT, but utilization was very mixed. It ranged from total refusal to best-of-breed and full acceptance. The number of software tools used to support certain methods was limited to only a few producers. The balanced scorecard approach was mentioned by a few CIOs, but was not fully implemented. Generally the work of the CIO is not process driven, that does also mean that the set of formalized methods the CIO uses is quite small.
Special governance mechanisms were not mentioned at all. Instead the CIOs rely on their direct reports, who have to take care of the outcome from approaches like security, sourcing and data management and especially project portfolio management. An emphasis was put on softer methods like addressing different audiences adequately or hiring people. The approaches most often mentioned in the interviews were Sourcing Management with 46, Controlling with 41, Data Management with 39 and Security Management with 28 occurrences each.

**Organization:** All IT departments were either organized in ‘plan, build, run’ or as a service organization. The CIO normally has 4-6 direct reports who are assigned to specific functions within IT, e.g. business applications, security, project portfolio. The role of the IT was seen as strategic, but not necessarily as business driver. Most IT departments had a significant part outsourced (to partners) or were operating units offshore (e.g. India). The CIOs predominantly reported to the CFO or Chief Administration Officer, while having regular appointments with the CEO.

### 5. Cross-dimensional characteristics

The survey fostered our view on the CIO profession and gave us the intended insights for the mosaic. But furthermore our open analysis of the interviews and the holistic view through our 4 dimensions enabled us to identify three characteristics, which will be presented as follows:

#### 5.1. Innovation

The topic of technologic innovation is closely linked to the Bay Area and Silicon Valley especially, since it is home for many high-tech companies. Dealing with innovation is a cross cutting characteristic in the personal, skill, methods and organization dimensions of the Leadership Mosaic. Most CIOs told us, that one of their most important tasks is to identify innovations and make them usable for their organization. Every dimension of the CIO mosaic seems to include innovation oriented parts. One example is the ‘curiosity’ and the willingness to take risks if necessary, which nearly every CIO mentioned as a specific quality they have and which they live out:

“I think curiosity is a big one, a willingness to continue to want to learn, which is curiosity, in terms of growing and everything else. The willingness to take a risk and if it doesn't work, it doesn't work. Knowing that you're going to have setbacks and that type of stuff. If you get in an environment that allows that to happen, then you can be a very, very successful CIO.” (Interview 2)

One CIO had a special team for innovation gathering and evaluation (Clorox), others used the existing information about competitors and their innovative projects from the marketing department and nearly all exchanged opinions with other CIOs.

“[…] I've had to be much more of a broker of ideation, of change, of cultural impact. The guy that I work with that runs innovation refers to me as his 'idea pimp'.” (Interview 3)

Six CIOs spent some time of their career in startups and 11 of the interviewees had also spent time on the business side of companies. These experiences were used by the CIOs to assess new innovations and the importance to the revenue of the employer, since they know about the impact bad decisions can have. The CIOs spend a significant amount of time visiting startups and monitoring innovations to inform the TMT about existing options for the whole company and not only IT:

“I just care about how can I generate the next billion dollars of revenue. Believe me is there a CEO in the world who, if he hears the word that "I am concerned about that" will not be supportive of you.” (Interview 4)

Especially in the area of data management, a lot of CIOs triggered the evolution of the business through innovative projects: “The steward of all this data is the CIO. He's the one who's got it or she's the one who's got it” (Interview 5). Overall, the CIOs see innovation as one of their core tasks and the translation of possibilities to the TMT as core competency. They do this mainly through personal engagement and networks, without having formalized methods or the support of a software tool.

#### 5.2. (Business) Ecosystem

The San Francisco Bay Area is a focal point for researchers and policy makers worldwide, who want to decrypt the code or DNA of this innovative part of California and implant it somewhere else. The structure of this ecosystem is also of interest for CIOs. We use the concept of business ecosystems [34] to deal with the complex environments of companies. The perspective on business ecosystems expands the viewpoint from a single enterprise and its internal organization to the whole surrounding business ecosystem with its key actors like suppliers, customers, regulatory authorities, competitors and partners [31][32]. In a complex and dynamic business environment the understanding of external key players, possible interrelationships and factors of
5.3. Leadership

“There is a profound difference between management and leadership, and both are important. To manage means to bring about, to accomplish, to have charge of or responsibility for, to conduct. Leading is influencing, guiding in a direction, course, action, opinion” [5]. The CIOs in our interviews emphasized the meaning of leadership and specific paradigms. “It comes down to giving people a compelling and exciting vision” (Interview 5). They mentioned the terms “management by walking around”, “empower people”, “mentorship”, “trust the smart people around you”. This mind-set of being a leader is crosscutting through all of our 4 dimensions. A major impact comes from the careers of the CIOs, but also their skills and competencies they have always had or they acquired over time. Specific methods (e.g. agile software development) and organizational concepts (e.g. an innovation forum where employees can present ideas) are results of this overall leadership mind-set.

The majority of the interviewees viewed themselves open and straightforward leaders: “ [...] what I learned is you have to be what I call, ‘radically open. Don’t keep any secrets’” (Interview 8). Additionally core competencies mentioned were listening and translating:

“You have to be able to listen well to people. As a manager, as a leader I think a big part of the obligation is to listen well, try to not to talk too much in conversation. Open your ears, and shut your mouth. In some cases, let people vent. Sometimes that's my job, and that works.” (Interview 9)

“I spend a lot time translating. I'll spend a lot of time searching for a physical metaphor, something that works for people.” (Interview 9)

Many of the CIOs see themselves more as General Managers and disclaimed the leadership style of micro managers. They see this as an advantage over being a specialist for IT only, when they are talking and collaborating with other c-level executives: “I would say I know enough to either be dangerous or make my technical team crazy by the questions I ask, but it's all about understanding the technology enough to connect it to business need and business outcome” (Interview 10).

Despite the fact that the CIOs don’t have the legal authority to make business decisions, they lead through ‘inspiration’ and influencing people: “[...] lot of what I do as a CIO is influence people, influence them to think that it's their idea” (Interview 11).

Most of the CIOs have a more or less technical education, nevertheless they have a high amount of
trust towards their direct reports and have the skills to hire good staff, develop and make use of their skills: “Again, I'm not a brilliant technologist by any stretch of the imagination, but I know how to hire really good people, and surround myself with really good people, and how to give them enough latitude to be successful and to do what they do well. I think that's what's first and foremost what's enabled me to succeed in my career.” (Interview 6)

Overall the CIOs are very people and business outcome oriented. They are acting from a self-confident position, knowing that IT is a major factor for their employers, getting the trust from the TMT and giving it to their staff. From that position they are able to take risks to push the whole company forward. “I find that my thing is that my table has the best assets for the company. Why aren't people coming and getting a seat at my table? Who's got the assets?”(Interview 4).

5.4. Assumptions

We asked most of the CIOs about their opinion to our three assumptions. The answers were of course biased, but they were consistent to the answers during the interview.

The first assumption Change is constantly happening in the Bay Area, so CIOs here have developed a sophisticated mosaic, is supported by the CIOs and by our analysis.

As sections 4 and 5 show, the mosaic of IT leaders in the Bay Area has significant instances of aspects, which might have developed because of the pace of innovation in this area. The examples already mentioned are the highly personal relationships between actors in the business ecosystem and the mindset regarding the impact IT has to the business. The willingness to take risks and to engage in business development was also emphasized. Nevertheless not every single aspect of the mosaic has these significant differences to the literature. For example the organization into plan, build, run has seen multiple evolutionary steps in other parts of the world.

Our second assumption All executives are IT savvy in the Bay Area, so the role of the CIO is cut back to deliver commodity services was negated. The CIOs stressed the fact that a very important part of their job is to identify new technologies relevant to the business, translate the possibilities, and sell the idea to the TMT. This function is not taken over by the other executives although they are aware of the potential of IT innovations.

For the third assumption The CIO function is (in the future) a necessary stepping-stone for prospective CEOs no tendency could be identified. The CIOs knew examples, where CIOs became CEOs. Especially, the current CIOs with a former profit and loss responsibility are candidates for becoming business leaders in the future. The claim that the CIO role will be a prerequisite to become CEO was not supported by the CIOs. Some even said they don’t want to be CEOs themselves.

6. Conclusion, Limitations and Outlook

The leadership concept is a promising approach by the CIOs to cope with rapid change. By setting agendas, giving employees room to act independently and concentrating on personal relationships inside and outside the company as well as the business outcome is the way to leverage IT in a highly innovative region.

The presented CIO Leadership Mosaic integrates the most important dimensions of the CIO profession. This enables researchers and practitioners to get a more holistic view and to identify crosscutting characteristics of this highly important role for the governance of IT within companies. The mosaic is proven to deliver these important views through the grounding in research literature and the empirical research presented above. By that way the CIO Leadership Mosaic can be a valuable tool for researchers in the field of IT leadership. However, the used methods and the sampling don’t enable the generalization neither for all Silicon Valley CIOs nor for the profession as a whole.

One weakness of having interviews with a broad focus is, that profound findings can hardly be proven. Instead evidence for interrelations and cross-cutting characteristics can be identified and investigated afterwards in more detail. The three cross-dimensional findings should be subject to research projects with a focus on this topic, considering the holistic view of the CIO Leadership Mosaic. Especially how CIOs are acting in the business ecosystem as an important task and is of special interest. The external perspective they curate is built mainly through their personal network. A more structured approach, generalizing existing practices will be a valuable contribution for CIOs worldwide.

Additionally, using the CIO Leadership Mosaic in different settings would allow the comparison of mosaics to find indicators for the improvement of CIOs. Also recommendations for prospect CIOs and companies to select the right CIO can be given. By collecting all relevant methods and organizational concepts with the mosaic, a catalog of the most relevant topics can be derived to support CIOs in the
process of selecting adequate organization and methods.

Clues regarding the three assumptions were found and can be starting points for more specific research projects.

The literature analysis conducted in the first phase of the research process showed that despite the fact that a lot of contributions are dedicated to the role of the CIO, the majority of them highlight only single topics of interest. More attention to the possible interrelations of the different factors and dimensions and their impact on the organizational and personal performance would be still an enrichment to the current state of the art in literature and understanding the success factors of the CIO role and its complex environment.

Future research should additionally investigate the specific governance mechanisms the CIOs rate as useful or not helpful at all. Since no CIO mentioned this topic on their own, a critical view on existing governance frameworks might be derived.

8. References


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