

CIO structures and the success of HE institutions

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1. Summary

The success of higher education (HE) is hard to measure, despite all efforts in national and international rankings. To claim an influence of governance structures and the work of a CIO on this success is even harder. Nonetheless, there is room for discussions. For excellence in academia to happen there has to be a set of institutional habits, which may include appropriate decision structures in general. This paper presents high correlations between success by means of extended research budgets and the formal participation of a CIO on decision domains concerning IT in HE. Whether this can be tracked down to a causal link between successful research and good work of CIO with a top management, is an open question. We will focus on this in the upcoming 2016 CIO study, which takes place in March and April and therefore cannot be part of this submission but will be presented at EUNIS in Thessaloniki.

2. Motivation and methods

One central task for all institutions in higher education is the control and governance of information technology (IT). Based on projects covering almost everything within a university, the rapidly increasing collaboration between universities as well as the everlasting financial pressure, several governance agencies advised: the introduction of an IT-governance model in form of a chief information officer (CIO) or in other ways is mandatory [MA01, DFG06, vdH08, FL09, BK10, GPT11, ZK112, HRK13]. Following these general advises led to a variety of implementations in Germany which had been extensively analyzed and published [vdH14, ZK114, HWvL15] and [vB15]. Figure 1 shows the diversity of these implementations.

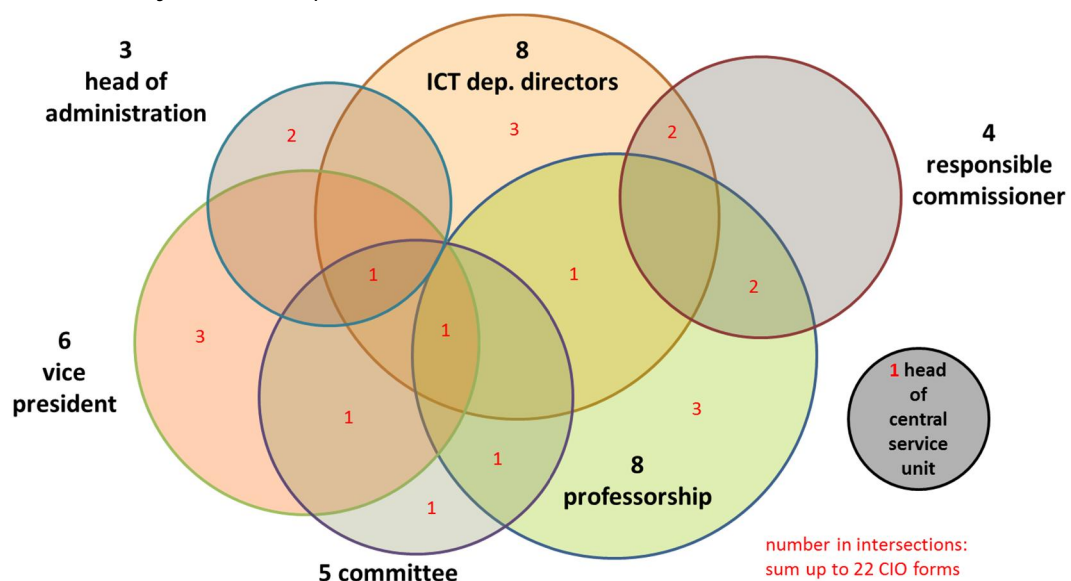


Figure 1: Variations of CIO forms in German HE institutions. Black numbers indicate the occurrence of the primary roles. Red numbers indicate the intersections between those roles. For example there is one CIO who stated to be VP, professor, director of the ICT dep. as well as member of a CIO committee.

At the same time, two studies reported (2014 in [ZK114, vdH14, HWvL15] with interviews and 2015 in [vB15] with web based questionnaire) the high correlation between the ratio of external research budget and main budget of institutions with several indicators:

- 1) Number of IT decision domains (as defined by Weill and Ross in 2004 [WR04]) the CIO participates (2014, 2015)
- 2) Whether the CIO has direct influence on the ICT departments by organizational rules (2014).
- 3) Participation on the decision on the overall ICT infrastructure (2015).
- 4) Transparency of IT personal across the institution (2014)
- 5) The amount of time a CIO spends on actual strategic work and projects (2014).
- 6) An established HPC service structure (2015).
- 7) The absolute amount of research budget (2014, 2015).

Apart from many other statistically evaluated indicators, these line up in a certain direction: They all aim at the power of a CIO with respect to the overall decisions on IT. Those CIOs which are limited to verbal power alone seem not as successful with applications on external research funds.

3. Causal links

In the interviews (2014), many CIOs emphasized their role in moderation, coordination and general responsibility for the overall strategic use of IT. Most CIOs also argued for participation on the board of directors. Those CIOs who have a permanent guest or member status in the rectorate or on executive boards emphasized the current value. Those who rely on the contact to a certain member from those councils hypothesized a high value of direct participation.

Three major impacts can be identified: 1) Being part of these councils obviously guarantees early access to valuable information. 2) IT also can provide additional information on value and service being connected to new initiatives. 3) The overall value of IT can be shaped and identified much more effectively by the joint perspectives on the alignment of IT and business.

To gain these advantages, it seems necessary to open up decision processes. Institutions stay behind:

- when transparency for personal budgets is limited,
- when there is only one joint position of operative ICT directors and CIOs,
- when all decision powers for IT stay on the level of the board of directors,
- when there is no delegation of decision competencies to the IT expert (CIO), and
- when there is limited flexibility on the access to joint resources (e.g. HPC services and others).

Up to now, not one single indicator alone but all indicators in a joint approach point in the same direction. The focus on the 2016 study will therefore include more questions to shed light onto this causal link between decisions and success of higher education.

4. Future perspective

Since the actual causal link remains open, and we cannot test in real life the differences between institutions. The 2016 study will additionally focus on:

- Personality of the CIO: Degree of innovation; ability to decide; focus on success and some other factors from psychological frameworks [Ai02].
- Context of the institution: Ability to adopt quickly; flexibility of structures; degree of innovation; focus on governance and strategy and other key indicators from organizational frameworks [ISO08, WR09].
- Application of IT management frameworks: IT maturity rankings, quality of IT services, perceived degree of security and user experiences and other factors from international IT standards may also be correlated to the success and value of IT [BF11].

The correlation of those factors will hopefully help us to learn more about the causal link as well as about the efficiency of the CIOs work within his/her institutional context.

The pure measurement of success indicated by research funds also needs to be extended towards student success and abundance rates. But these factors had been a puzzle for more than half a century for the applied research in Germany and around the world [Sc15].

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6. Author's biographies



Dr. Markus von der Heyde received his PhD in Computer Sciences from the University of Bielefeld for his work at the Max Planck Institute for Biological Cybernetics Tübingen in 2000. His approach is to adopt biological principles into distributed computer applications in order to enhance stability and robustness.

Since 2004 he has worked within ZKI on topics as information security, service-management, strategy and governance. Until 2011 he was ICT director of Bauhaus-University in Weimar. Until today he also focuses on internationalization and supports ZKI, GI, EUNIS and EDUCAUSE and serves as program committee member as well as a proposal reviewer for conferences and the scientific community. In cooperation with various partners he continues to conduct the German CIO studies. Today, he is management consultant specialized on IT topics in higher education.

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