

## Controlling in Germany from Practitioners' and Students' Point of View – An Empirical Time Series Analysis

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*Abstract:* This study examines the characteristics of controlling in German small and medium-sized enterprises (SMEs). Within this approach, differences and similarities of controller images, controlling organization structure and controller tasks from students' and practitioners' point of view are explained. The data gathering occurred since 2003 and is still ongoing, whereas the development of the discovered research subjects within a large time range is observable, promoting an empirical time series analysis. The study started questioning controllers in German enterprises, which were members of the RKW Baden-Wuerttemberg, in 2003, and started questioning students from the University of Applied Sciences Kaiserslautern, Campus Zweibruecken, (study course: business administration) and the University of Applied Sciences Mittelhessen, Campus Friedberg (study course: engineering) in 2006. Considerable overlaps concerning the organisational structure of the controlling divisions between the estimations of the students and the controllers could be found. The same result was observable within the description of typical controller images. Major differences between both interviewed groups occurred within the evaluation of controller tasks. This fact leads to some possible implications for university teachings, which could explain this difference. Apart from that, several effects of sales volume and number of employees are shown within the paper. For future research, it would be interesting to spread the students' survey in Germany to other Universities, which maybe have another curriculum within the study course business administration. Thus, the above mentioned difference within controlling tasks possibly could be explained. Furthermore, the curriculum of those universities, that reach more similar results with practitioners regarding controlling tasks, could be evaluated as superior regarding the relevance of the major fields of study.

*Keywords:* Controlling, Controllership, small and medium-sized enterprises, job description, image, task fields, personality traits, organisational structure.

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## 1 Introduction

The demands in controlling have changed quickly because of globalisation and digitalization. Latter implies great influence on industrial firms, as machines and products are increasingly connected to the internet (The Economist, 2015). Innovations, in particular, are granted with a vital role within digitalization, as they help to promote it (i.e. through knowledge spill-overs) (De Clercq, Hessels & Van Stel, 2008). In this context, research articles have already pointed out the special role of young and small companies, as they imply a high potential for innovations.; therefore, positive effects on economic growth as well as job creation can be made (Aleksejeva & Aleksejeva, 2015; Ammetller, Rodríguez-Ardura & Lladós-Masllorens, 2014; Hessels & Van Stel, 2011; Lerner, 2010; Rajaei, Yaghoubi & Donyaiei, 2011; Welter, 2010). Through globalization, the chances for small and medium-sized enterprises (SMEs) are even more promoted. Nevertheless, the importance of financial safety – especially in smaller businesses – play a vital role in businesses, giving controllers an important task (Ruda & Christ, 2016). But what are the actual tasks of controllers in SMEs? How is a controlling organization structured? And how can we describe the image of a controller nowadays?

The following study focuses on the characterisation of the job description of controllers in German SMEs. For this study, the images and task fields of controllers as well as the organisational form of the controlling will be observed. Selected results of this study were presented and published on the MEB conferences in 2008, 2013 and 2015 in Budapest. The expectations were and still are the gathering of new empirical data, its statistical analysis and finally the delivery of new statistically proved input to the research and teaching community as well as to the companies.

## 2 Methodology: Sample and Data Analysis

The methodology of the study is characterized through a differentiation of both the sample and the data analysis in two clusters; controlling practitioners and students. Within the observation, a comparison of the practitioners' and students' point of view according to several questions will occur over the sampling survey duration of 13 years – beginning in 2003 (Ruda & Grünhagen, 2009). Through this approach, the development of the job profile from different points of view can be observed, leading us to the following research question (RQ):

**RQ 1:** How can the image of a controller be described? Is this description changing? And do students and practitioners have different opinions?

**RQ 2:** What is the superior organizational form for the surveyed businesses? Are their opinions changing? And how do students evaluate this question?

**RQ 3:** What are the actual tasks controllers have to do while fulfilling their job? Are those tasks changing and do students evaluate those tasks the same way as practitioners actually fulfill them?

**RQ 4:** Regarding the survey of practitioners, how does the size of the company possibly influence RQ 1, RQ 2 and RQ 3?

To answer those questions partly, a questionnaire for participants of the RKW Baden-Wuerttemberg was developed and applied from 2003 to 2015 by using specific questions. Within this time range, 168 questionnaires were filled out from practitioners, which represent the controller department of their enterprises.

The questionnaire was divided into two different parts. In the first part of the questionnaire, general data of the enterprises, like turnover and number of employees were collected. The data are useful to classify the companies on basis of the German code of commerce in small, medium and large enterprises and to serve as a basis of further evaluations with regard to effects of enterprises' size on the results (see RQ 4). The second part of the questionnaire surveys the aspects mentioned in RQ 1-3:

- Regarding RQ 1, practitioners had to rate seven different controlling images from 1 to 7, beginning with 1 for the most appropriate image and 7 for the worst one. Every number had to be used exactly one time. The different images are “guide”, “helmsman”, “Kontrolleur”, “track hound”, “number cruncher”, “nitpicker” and “braking force”.
- To answer RQ 2, they had to answer the question, if their enterprises' structure is centralized, hybrid type or decentralized.
- According to RQ 3, they had to rate twelve different tasks they use in their job as controller, beginning with 1 for the mostly applied task and 12 for the least applied task. The several tasks are “reporting”, “operative planning”, “analysis of variances”, internal accounting”, “consulting/coaching”, monitoring/surveillance”, “regulating tasks”, “financing”, “investment analysis”, “personnel management”, “tactical planning” and “strategical planning”.

For further answering of the research questions, student surveys took place at the University of Applied Sciences Kaiserslautern, Campus Zweibruecken, and the University of Applied Sciences Mittelhessen, Campus Friedberg from 2006 to 2016. In this case bachelor and master students – which were enrolled in presence and correspondence courses of studies as well as in full time and extra occupational – were considered from the subject areas business administration and engineering. Thus, possibly different outcomes from the subject areas could be detected. The questionnaire of the students differed slightly from that of the practitioners in content and structure:

- Regarding RQ 1, students had to do exactly the same ranking of controlling images as practitioners.

- To answer RQ 2, they had to rank centralized, hybrid type and decentralized enterprise structure in the way of how useful they are. Every number had to be used exactly one time.
- According to RQ 3, they had to rate the above mentioned tasks according to their relevance for controlling, beginning with 1 for the most relevant task and 12 for the least relevant task.

### **3 Results and Discussion**

The results of the study are selected and divided into the study subjects controlling image, enterprises' structure and task fields of the controller. In each study subject, the results of the students are shown primarily, followed by the interviewed practitioners.

#### **3.1 Image of the Controller**

Both the participants of the RKW Baden Wuerttemberg and the students assessed the image of the controller with the help of the above mentioned images and role models, which were described by Weber and Schäffer (2014). Whereas students just had to estimate their expectations of the controller's image, the interviewed practitioners should assess their image at the colleagues with the parameters "very strong distinct", "less distinct" and "not applicable" (Ruda & Dackiw, 2015). The cumulative results from 2006 to 2016 from the students' point of view and from 2003 to 2015 from the practitioners' point of view are shown in the following figure:

	nitpicker	number cruncher	braking force	"Kontroleur"	track hound	helmsman	guide	N
Result business adm.	3173	2610	3271	1592	2230	1956	2288	612
<b>Ranking business adm.</b>	6	5	7	1	3	2	4	
Result engineering	1794	1499	1981	990	1424	1381	1496	381
<b>Ranking engineering</b>	6	5	7	1	3	2	4	
Overall result	4967	4109	5252	2582	3654	3337	3784	993
<b>Overall ranking</b>	6	5	7	1	3	2	4	
Strong distinct	3,68%	12,27%	3,68%	31,90%	26,99%	36,20%	53,37%	163
<b>Ranking Practitioners</b>	6	5	7	3	4	2	1	

Figure 1

Controller images from the point of view of students and practitioners

For the results, the rankings from all surveys of students (N=993) and practitioners (N=163) were added, and then again ranked to an overall ranking. Within the student version of the questionnaire, a high number of responses both in the study field business administration (N=612) and engineering (N=381) could be reached, which clearly benefits robust results.

As it can be observed through the lowest overall result in the student survey, "Kontroleur" clearly is the most appropriate image of a controller, which could portray a positive or negative view of controllers. In this context, it would be interesting, if students see 'control' rather negative with the meaning of observation or rather 'positive' with the meaning of planning (Ruda and Dackiw, 2015). Apart from that, nitpicker and braking force clearly are the least relevant controller images. These points somehow show a positive view of students on the controlling job, as they clearly can be evaluated as negative images. The rankings from 2 to 5 are lying quite close together, making it difficult to interpret something out of the results.

Interestingly, exactly the same rankings were made from business administration students and engineering students within the time range of the study. This could be an indication, that the role of a controller within a company is clearly seen by students and/or well-portrayed from their lecturers. These hypotheses are strengthened through the fact, that students' and practitioners' results are very similar. Just like in the students' version, "number cruncher", "nitpicker" and "braking force" are ranked at the last places. In contradictory to the student version, guide represents the most appropriate image of a controller, having a strong distinct in over 53% of all surveyed enterprises (at the meaning of the surveyed practitioners). "Helmsman" is just like the students' version on second place, making it to a further appropriate controller image. "Kontroleur" 'only' reaches third place, but still reaches a quite high amount of nearly 32%. Undoubtedly, it has

to be considered, that the differences between students and practitioners also could be explained by the lower number of practitioners' surveys (N=163) in contrast to the students, leading to less robust results.

Nevertheless, the influence of sales volume on controller images has been tested, leading to the following results:

- The higher the sales volume, the less appropriate is the helmsman image ( $p = 0.6\%$ ).
- No other controller image has been influenced significantly from the sales volume.
- The higher the number of employees, the more appropriate is the braking force image ( $p = 4.24\%$ ).
- No other controller image has been influenced significantly from the number of employees.

As the most and least important controller images from 2003 to 2016 became clear, the development of these images in the students' version of the survey will be explained more detailed in the following figure:

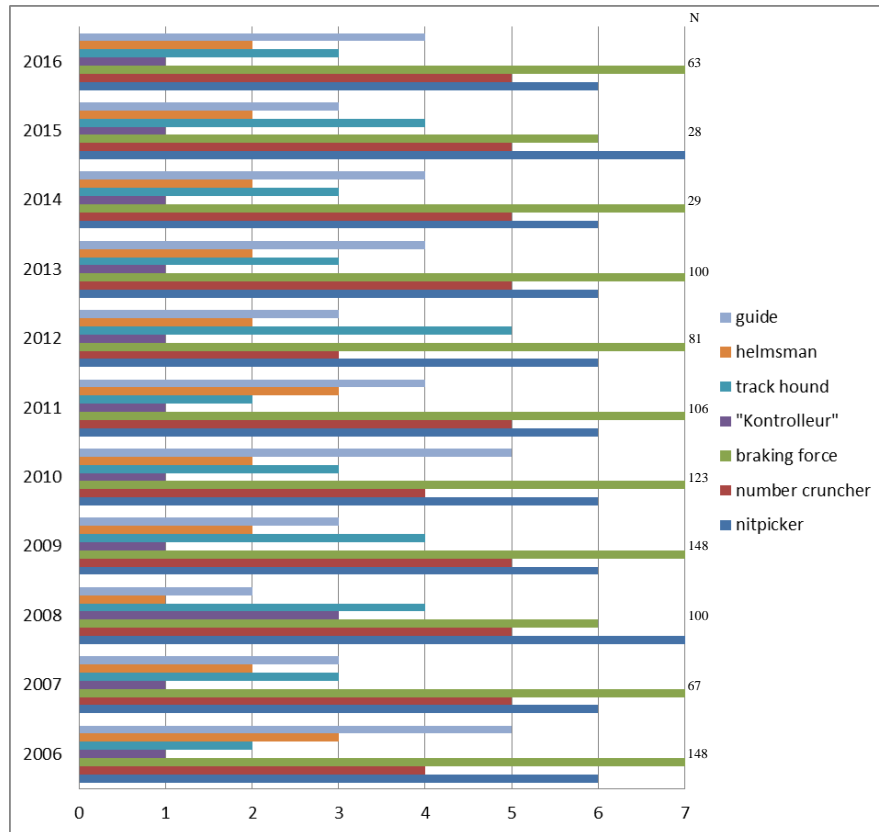


Figure 2

Development of controller images from the point of view of the students

Within the time range of the students' version, no significant changes according to their point of view to controller's images are observable. "Kontrolleur" was – except of 2008 – always on first place, braking force – except of 2008 and 2015 – always at the last place. Variance of rankings is low in every case; some higher variance occurs at the images "track hound" and "guide". Interestingly, exactly at those both images, differences in the ranking have been observable in contrast to the practitioners (see figure 1).

In summary, no major differences in the controller images happened within the last ten years – according to the opinion of the students. As the number of practitioners is quite low – as it was mentioned above –, no further development of the controller image from the point of view of practitioners in particular will be given.

### 3.2 Organization of the Controlling

As mentioned above, the students should evaluate, which organization type is the superior one. The practitioners of the study should estimate how their controlling sector is organized. They could judge the controlling structure on the basis of “central organization”, “decentralised organization” and “hybrid form of central and decentralized organization”.

One part of the results (only students) is presented in the following figure:

	central	hybrid	decentralized	N
Result business adm.	1140	1157	1716	669
<b>Ranking business adm.</b>	<b>1</b>	<b>2</b>	<b>3</b>	669
Result engineering	785	746	1021	425
<b>Ranking engineering</b>	<b>2</b>	<b>1</b>	<b>3</b>	425
Overall Result	1925	1903	2737	1094
<b>Overall Ranking</b>	<b>2</b>	<b>1</b>	<b>3</b>	1094

Figure 3.

Controlling sector organization ranking from the point of view of the students

Procedure of the evaluation follows the methodology of the controller images, adding the rankings of all questionnaires. As response rate of this question was higher than in the ranking of controller images, an even higher sample size of students (N=1094) could be generated. They categorized a decentralized controlling organization as the weakest one. The results of central and hybrid organization structure are very similar; leading to switched rankings of central and hybrid controlling structure from business administration and engineering students. Concerning the development of the controlling structure, close results and steady switches between central and hybrid controlling structure occurred from 2006 to 2016.

The practitioners (N=158) categorised the controlling sector predominantly as centrally organized (approx. 64%). This result was already explained by Ruda and Dackiw (2015). Interviewed companies were predominantly SMEs, which are mostly family-owned enterprises. Those predominantly use a centralized structure, whereas a distinct decentralised structure in practice is generally a characteristic of large enterprises with a concern-structure (Ruda and Dackiw, 2015). Regarding a correlation analysis of sales volume and organization structure, our results showed a significant impact (p-value = 2.68%); higher sales led to a more decentralized organization form and the other way around. Number of employees did not have a significant effect on controlling organization.

In summary, it can be cherished, that the estimations of the students regarding the structure of the controlling organization more or less overlaps to the observed forms in the practice; evaluating decentralized controlling structures as unimportant and just outweighing hybrid form a bit more than practitioners, who clearly evaluated



the central form as their used one. Nevertheless, the bias of the practitioners' sample has already been explained above, leading to a shift to the answer "central", which could explain the difference of students' and practitioners' result.

### 3.3 Task fields of the controller

As it was mentioned above, the survey regarding task fields of controllers occurred the same way within the students' and practitioners' questionnaire. The tasks fields and the image of the controller are connected in a close way, as specific tasks have a big influence on the fact, whether the controller is noticed rather in a negative way or rather in a positive way. Therefore, evaluation of data will be made the same way as in chapter 3.1 – as a differentiation between business administration students, engineering students and practitioners. The cumulative results from 2006 to 2016 from the students' point of view and from 2003 to 2015 from the practitioners' point of view are again evaluated; beginning with the studential results shown in the following figure:

	Analysis of variances	Monitoring/surveillance	Consulting/coaching	Reporting	Strategical planning	Tactical planning	Operative planning	Regulating tasks	Personnel management	Investment analysis	Financing	Internal accounting	N
Result Business adm.	3301	2255	4389	3520	3161	3883	3880	3836	6606	3809	4749	4704	617
<b>Ranking business adm.</b>	<b>3</b>	<b>1</b>	<b>9</b>	<b>4</b>	<b>2</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>12</b>	<b>5</b>	<b>11</b>	<b>10</b>	617
Result engineering	1958	1568	3020	2057	2309	2587	2553	2399	4053	2306	2902	2762	391
<b>Ranking engineering</b>	<b>2</b>	<b>1</b>	<b>11</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>12</b>	<b>4</b>	<b>10</b>	<b>9</b>	391
Overall Result	5259	3823	7409	5577	5470	6470	6433	6235	10659	6115	7651	7466	1008
<b>Overall Ranking</b>	<b>2</b>	<b>1</b>	<b>9</b>	<b>4</b>	<b>3</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>12</b>	<b>5</b>	<b>11</b>	<b>10</b>	1008

Figure 4.

Controller task ranking from the point of view of the students

According to the image question, a less homogenous result from business administration students and engineering students is observable. Despite the fact of very similar rankings in most task fields of controllers, some bigger differences exist in the task fields "consulting/coaching" and especially "strategical planning". Both differences could be explained by the curriculums of the students. Business administration students (N=617) ranked both "consulting/coaching" and "strategical planning" more important than engineering students (N=391). Undoubtedly, these two subjects are quite important subjects within business administration studies, which could favor those tasks. In contrast, the higher ranking of "analysis of variances" from engineering students would follow the same logic, as it – in comparison to the other controller tasks – depicts an important subject within their studies and prospective workplace.

Both student groups see “monitoring/surveillance” clearly as the most important controller task. The other way around, “personnel management” portrays clearly the least important one. According to the development of the different tasks, no significant changes were observable within the time range of the survey. Nevertheless, a quite high variance in “consulting/coaching” and especially “reporting” occurred in some years. Furthermore, the importance of “reporting” seems to get higher.

In comparison to the practitioners, the following similarities and differences are observable:

	Analysis of variances	Monitoring/surveillance	Consulting/coaching	Reporting	Strategical planning	Tactical planning	Operative planning	Regulating tasks	Personnel management	Investment analysis	Financing	Internal accounting
Strong distinct	75,60%	46,43%	55,36%	92,86%	16,07%	19,05%	76,79%	39,29%	23,21%	33,93%	34,52%	55,95%
Ranking	3	6	5	1	12	11	2	7	10	9	8	4

Figure 1.

Importance of controller tasks from the point of view of the practitioners

In contrast to the student’s survey, reporting implied the most important controller task for practitioners – as more than 92% of the sample evaluated this task as “strong distinct”. Furthermore, “operative planning” and “consulting” were evaluated much more important from practitioners as from students. In contrast, “monitoring/surveillance” didn’t play such a vital role for practitioners. Especially “strategical planning”, “investment analysis” and “tactical planning” are much more unimportant for practitioners than for students.

Summarizing, contrary to image and organizational structure, huge differences occurred suddenly. This could be an indicator of an emphasis on controller tasks within study lectures, which aren’t that relevant in practice, or a disregard of important controller tasks.

According to RQ 4, the following significant dependencies between sales volume, number of employees and importance of controller tasks were found:

- The lower the sales volume, the higher is the importance of “investment analysis” (p-value = 4.24%).
- The lower the sales volume, the higher is the importance of “financing” (p-value = 2.00%).
- No other controller task has been influenced significantly from the sales volume.
- No controller task has been influenced significantly from the number of employees.
- As it was shown above, higher sales volume has a significant effect on how appropriate the “helmsman” image is. Therefore, the correlation of

“helmsman” image and “investment analysis” and “finance” – which are also influenced through the sales volume – has been tested, with the result of an almost significant effect between “helmsman” and “investment analysis” (p-value = 8.95%), whereas “investment analysis” clearly has been insignificant.

## Conclusions and Recommendation

The aim of the study was to gain empirical data to define a job profile of controllers, who work in SMEs and to compare the expectations of students with that profile. Therefore, differences and similarities of the analytical results between students and practitioners have been pointed out.

- With regard to **RQ 1**, the images of controllership like “braking force”, “number cruncher” or “nitpicker” have been on the rear ranks from both practitioners’ and students’ point of view; carrying all negative job images ad acta. “Kontrolleur” and “helmsman” were dominating within the studential sample, whereas “guide” and again “helmsman” were highest ranked within the practitioners’ survey. Furthermore, – according to the opinion of the students – no major differences in the controller images happened within the last ten years. At last, only marginal differences between students’ and practitioners’ opinions were observable.
- According to **RQ 2**, practitioners categorised the controlling sector predominantly as centrally organized (approx. 64%). Nevertheless, a possible bias regarding the survey sample was mentioned in this context, which also could explain the minor deviation in comparison to the studential results. The estimations of the students regarding the organization of the controlling process are quite similar with the observed forms from the practitioners’ survey; both are evaluating decentralized controlling structures as unimportant.
- The results of the students and practitioners have a lot of similarities, but also differ partially from each other; especially within **RQ 3**. Over the time of the sample range, few shifts occurred regarding the controller tasks. “Monitoring/surveillance” and “analysis of variances” from the students’ point of view as well as “reporting” and “operative planning” on the opinion of the practitioners play the most vital controlling tasks. Within this question, huge differences between students’ and practitioners’ point of view have been detected, and possible reasons have been explained.
- According to **RQ 4**, some effects of the number of employees and especially the sales volume have been found, leading to different opinions regarding the organization form of the controlling (i.e., higher sales led to a more decentralized organization form), to a varying importance of the several controlling tasks and to different controller images, which are typical for those

companies (i.e. the positive effect of higher numbers of employees on how appropriate the braking force image is).

The study has some limitations, which should not be neglected. The first limitation of the methodology is the size of the sample. The sample should be increased in terms of the practitioners' survey. Furthermore, the data about the controller image has been gained out of the controllers' own perspective (representing a company). However, the opinion of other employees would be interesting to validate the results. That approach would be feasible, as every practitioner had to name their company at the beginning of the survey. Even if this would be very challenging, a big chance to gain much more meaningful data would be possible.

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