DEUTSCHER FÖRDERVEREIN ZUR STÄRKUNG DER **FORSCHUNG** ZUR **NORMUNG** UND **STANDARDISIERUNG** E. V.

Indicator Report 2014

GERMAN STANDARDIZATION PANEL (DNP)

STANDARDIZATION RESEARCH, POLICY AND PROMOTION

Supported by the German Society for the Promotion of Research on Standardization (FNS)

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GERMAN STANDARDIZATION PANEL 2014 – Indicator Report for the importance of standards and standardization activities of German companies

Summary

Based on representative data, this 2014 report presented by the German Standardization Panel (DNP) provides information on several aspects of standardization. The contribution of innovation to the competitiveness of businesses as well as to other entrepreneurial dimensions is undisputed. However, the benefits of standardization and standards have not yet been fully recognized as a significant influencing factor – not least due to a lack of empirical investigations in this area. This is where the German Standardization Panel comes in: It carries out annual surveys to collect data on the standardization activities of companies, which is then used to examine the impact of standards and standardization on various economic and social dimensions. Such a systematic analysis requires reliable, detailed data, particularly that which is collected regularly, e.g. through surveys, which is crucial for the exploration of the complex effects of standardization processes and the application of formal standards, and the more informal specifications, on business success. This is the remit of the German Standardization Panel (DNP), which was set up in autumn 2011 by the German Society for the Promotion of Research on Standardization (FNS).

Analyzing the data obtained from the second survey carried out in 2013, in which more than 1,300 companies participated, produced the following four main results:

1. Formal standards, specifications and other technical rules developed by the standards organizations are by far the most important types of document for the companies interviewed. These documents promote legal certainty and facilitate market access for companies. The great significance of standards work, above all for medium-sized and large companies, is reflected in the large number of businesses that maintain specialized standardization departments.

2. Internal company standards represent the third most important type of document and are considered more relevant than informal consortial or de-facto standards. Company standards are applied by the majority of businesses surveyed, especially by large and innovative companies. These standards are particularly seen as being important for improving quality and productivity. For smaller companies this type of standard plays a lesser role.

3. Although more than half of the companies participating in the survey apply consortial and de-facto standards, these are considered to be of little importance. Informal consortia standards are of above-average importance solely for companies active in the information and communication sector, mainly for ensuring interoperability.

4. The special section concerning standards and the Transatlantic Trade and Investment Partnership (TTIP) reveals that compliance with US regulations forms the biggest problem for German companies, regardless of their size and sector. Survey participants favor the bilateral application of international standards as a harmonization solution.

Providing an empirical basis for exploring the German standardization landscape.

Introduction

Innovation is commonly regarded as a source of growth and prosperity. Many factors contribute to the transformation of ideas into successful market solutions, standardization being one of them. Data that is gathered on a regular basis is needed for the scientific analysis of the correlations and effects of standards.

Inspired by the innovation surveys carried out among EU Members by the European Commission in the early 1990s.[1], the German Standardization Panel (German: Deutsches Normungspanel, abbr. "DNP") is generating a comprehensive collection of empirical data containing a large amount of information on businesses which can be used for the exploration of central problems in innovation research.

[1] These were the "Community Innovation Surveys (CIS)" *(see http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/cis)* in which the same companies were regularly interviewed regarding their innovation activities, successes and problems.

Objectives

The data generated by the German Standardization Panel forms the basis for scientific research into the standardization activities of companies, their implementation of standards, and the effects of standards on entrepreneurial success.

Furthermore, the results of the survey can be used to draw up strategies for European and international standardization, in order to articulate national business interests vis-à-vis the European Commission.

A further goal of the German Standardization Panel is to deal with current standardization policy issues to assess any steps taken. Moreover, the Panel helps businesses who have not been very active – or are not active at all – in standards work become more aware of the importance of standardization, and motivates them to participate in this work. One means of doing so is widely disseminating the results of its surveys via reports like this one. Thus, the DNP helps achieve interrelated objectives concerning standardization research, policy and promotion.

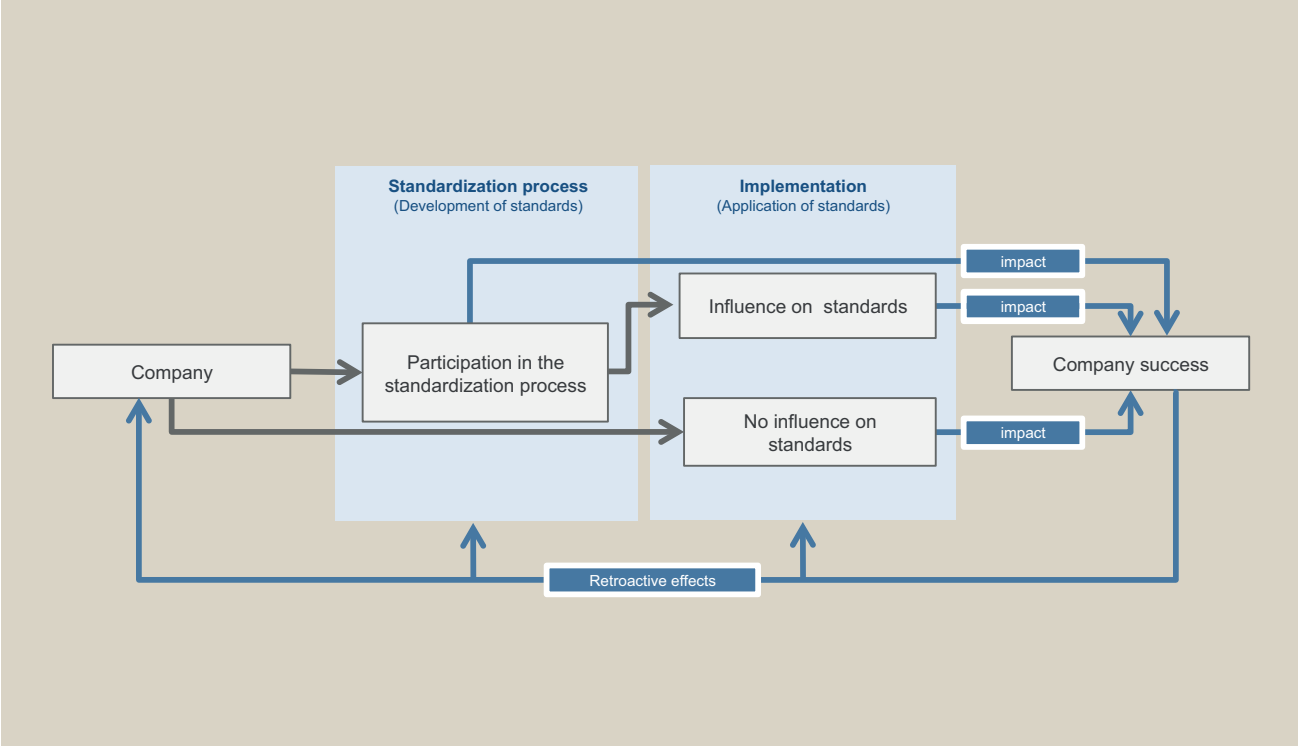
A heuristic model

The annual survey is divided into more general "core questions" and questions related to a specific subject. The core question section is conceptually based on the following heuristic model (see figure 1). This model is comprehensive, allowing a broad array of topics and questions to be integrated. Here, in particular, the model illustrates the multidimensional links between participation in the standardization process, the implementation of formal standards and corporate success.

Standardization activities are characterized by the nature and scope of the work itself, e.g. the time required, necessary human resources, participation in standards committees, etc. With regard to the implementation of standards, various dimensions of costs and benefits are determined. Apart from these aspects, which mainly concern the standardization process itself and the implementation of standards, the German Standardization Panel's long term goal is to assess the impact of standardization as well as the application of standards on business success.

A number of questions can be asked in this context: Does participation in the standardization process increase the success which can be achieved through the implementation of formal standards? Does standardization have a direct impact on corporate success or rather an indirect one through networking with other companies and organizations in standardization? Which dimensions of

Figure 1:
The heuristic model used by the Standardization Panel



success are influenced by standardization? Do the insights gained apply mainly to the standards which one has actively helped develop, or is this a more general learning process? What does this learning process look like? How do company-specific characteristics influence company success through standards work? Does the impact of standards work vary depending on sector or company size?

While the first wave of surveys provided some evidence for answering the last two questions, the more complex questions, e.g. regarding learning effects, can only be answered through the analysis of standardization activities, the implementation of formal standards, and business developments over a period of time.

Realization

The second wave of the German Standardization Panel's survey was launched on 14 October 2013, World Standards Day. Due to an improved database for establishing contacts and a pronounced interest of standardization experts in the survey, this time more than 2,600 experts completed the questionnaire. These experts represent about 1,300 (16 %) of the companies active in standardization. In comparison to the pilot study, this is a remarkable increase in completed questionnaires available for analysis.

This rise in interest was achieved by significantly reducing the number of questions and focusing on a topic that is currently being hotly debated, namely the significance of standards and specifications within the context of the TTIP.

The survey as well as the analysis, interpretation and editing of data was conducted by the Chair of Innovation Economics at the Technical University Berlin. The project was initiated in the context of the foundation of the German Society for the Promotion of Research on Standardization (FNS), who supports the project and provides long-term financial support .

The following indicator report summarizes the answers of 1,316 questionnaires from the second survey. Industry affiliation and company size served as criteria for structuring the results and identifying particularities.

Confirmed: Formal standards are the most important type of standard for businesses

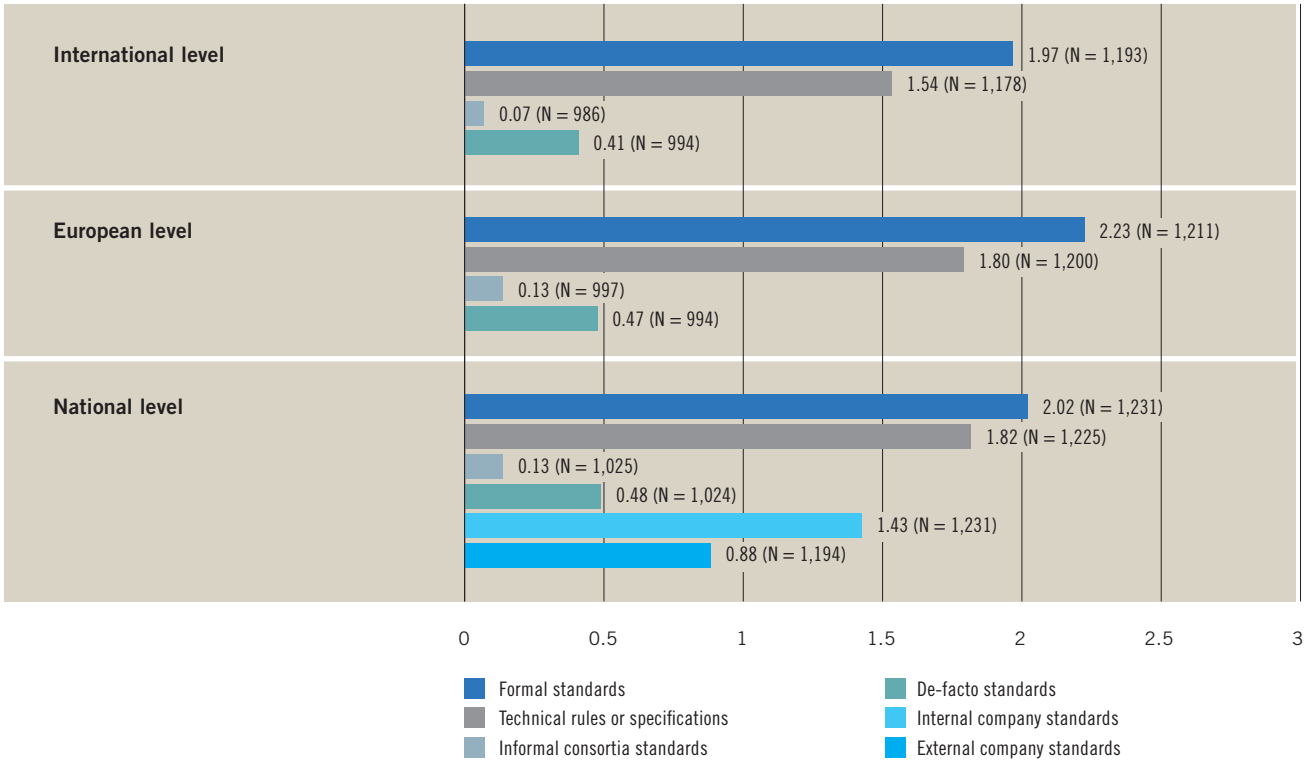
Relevance of formal standards, informal standards and specifications

Although the first survey of the German Standardization Panel (2012) was certainly a success as a pilot project, it was not possible to derive meaningful insights into the standardization landscape based on about 300 responses. In particular, there was not enough data for size- or sector-specific analyses.

Thanks to the high response rate for the 2013 survey, the results of the first wave can now be validated and differentiated based on representative data. First, the general significance for businesses of six different types of standards is discussed. Figure 2a shows that formal standards and technical rules are most important for the surveyed businesses in all sectors. The third-place ranking of company standards was maintained in 2013. Consortial and de-facto standards are still considered to be least important.

Figure 2a:
Assessment of the general importance of different types of standard published at different levels

On a scale from -3 (not important at all) to +3 (very important)

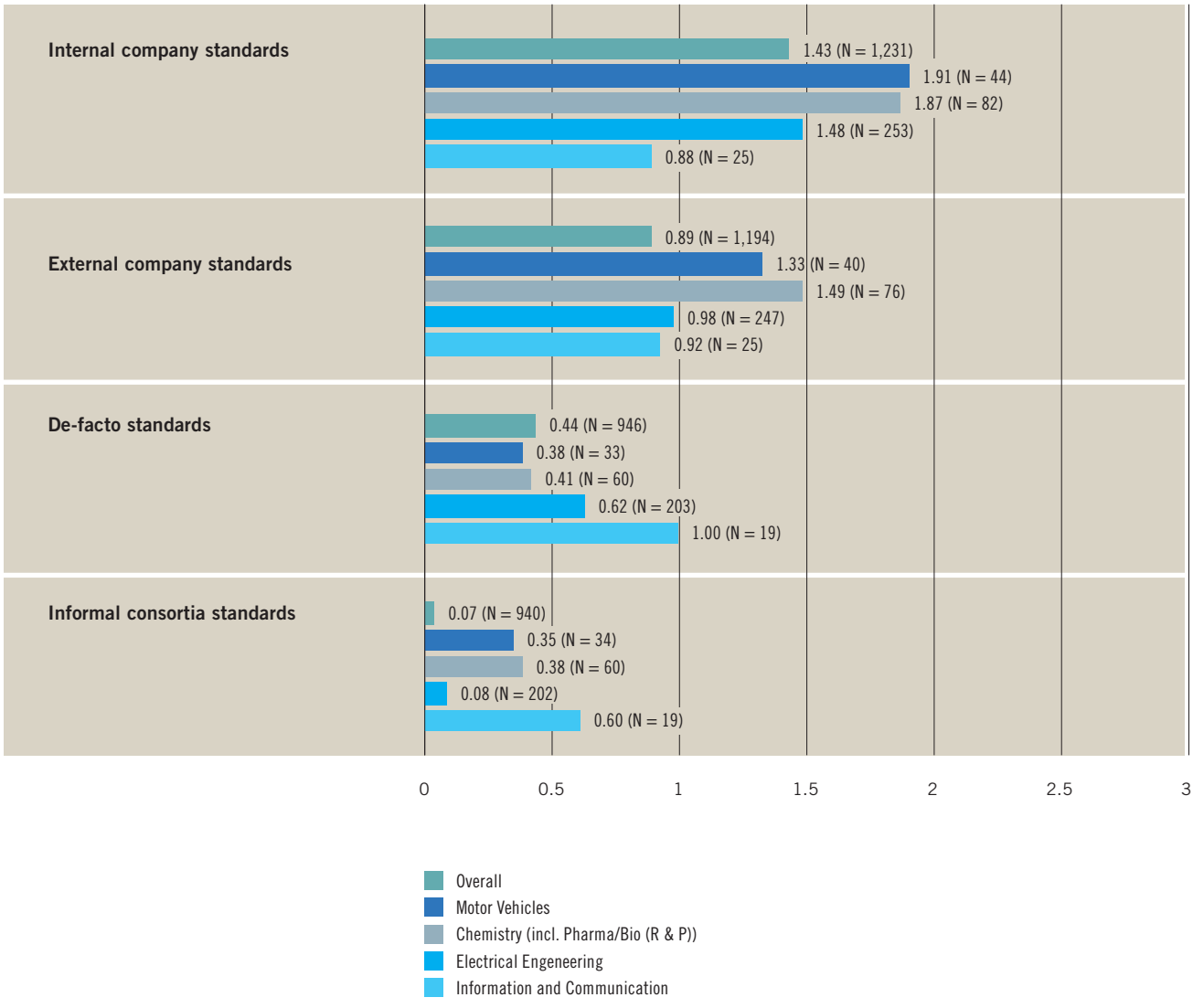


Furthermore, the differentiation between internal and external company standards reveals that internal company standards have greater significance across all industrial sectors; they have a lower importance in comparison to formal standards only in the service industry

The overall picture shown in figure 2a concerning the importance of the different types of standards applies for all sectors and company sizes. Still, there are some sectoral differences: While the importance of company standards is comparatively high for businesses in the chemical and pharmaceutical industry as well as vehicle manufacturing, informal standards are especially important in the "Information and Communication" sector (see figure 2b).

Figure 2b:
Assessment of the general importance of company standards and informal standards for selected industries

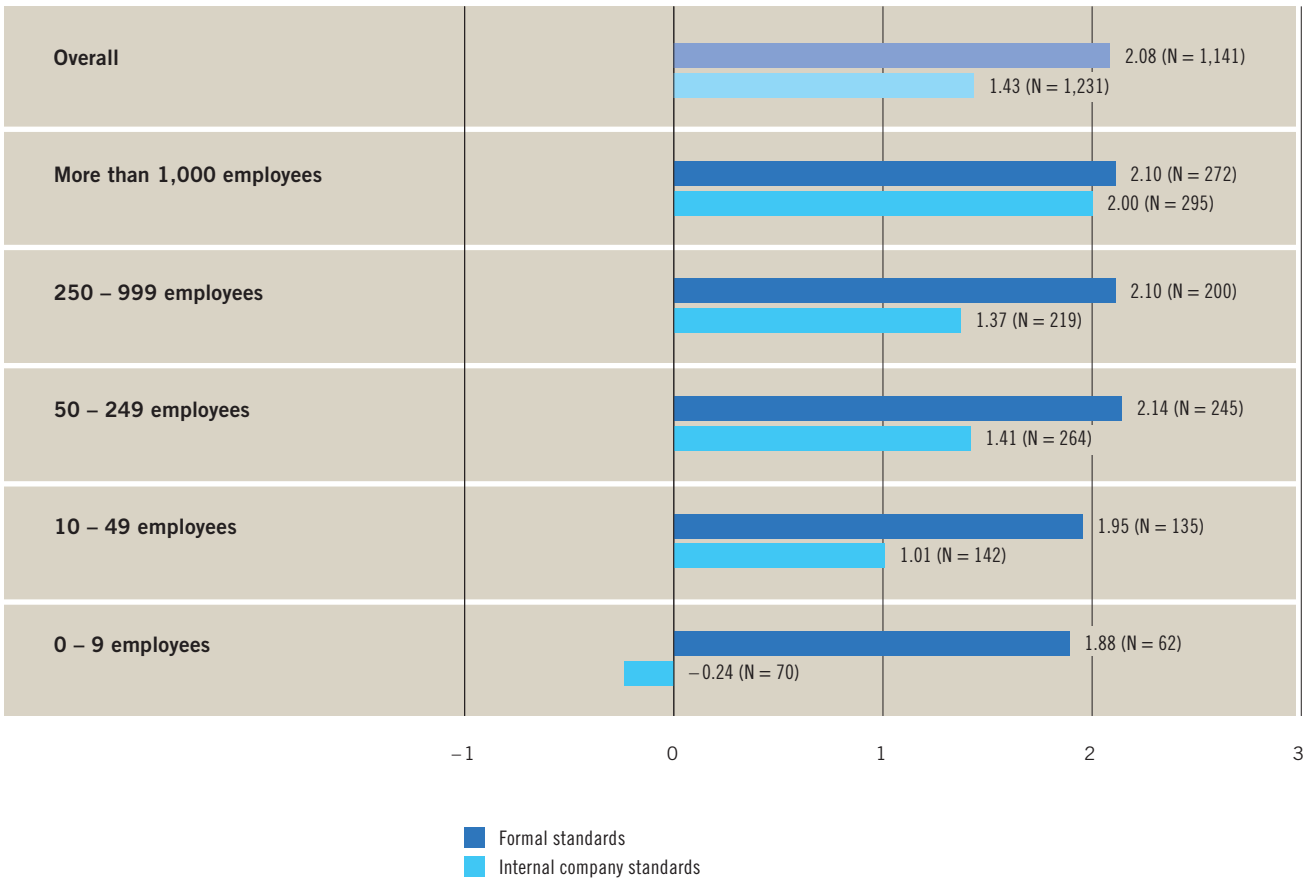
On a scale from -3 (not important at all) to +3 (very important)



As figure 2c suggests, a differentiation according to company size also reveals interesting differences. While formal standards are regarded as very important by businesses of any size, the significance of internal company standards rises with the number of employees: For micro companies, internal company standards are relatively unimportant. Companies with more than 1,000 employees, however, consider internal company standards nearly as important as formal standards. One explanation for this is the difference in capacity. While micro companies are not likely to possess the know-how and capacity for drawing up their own standards, larger companies can develop their own company standards and thus adjust them to their own needs.

Figure 2c:
Assessment of the general importance of formal standards and internal company standards according to company size

On a scale from -3 (not important at all) to +3 (very important)

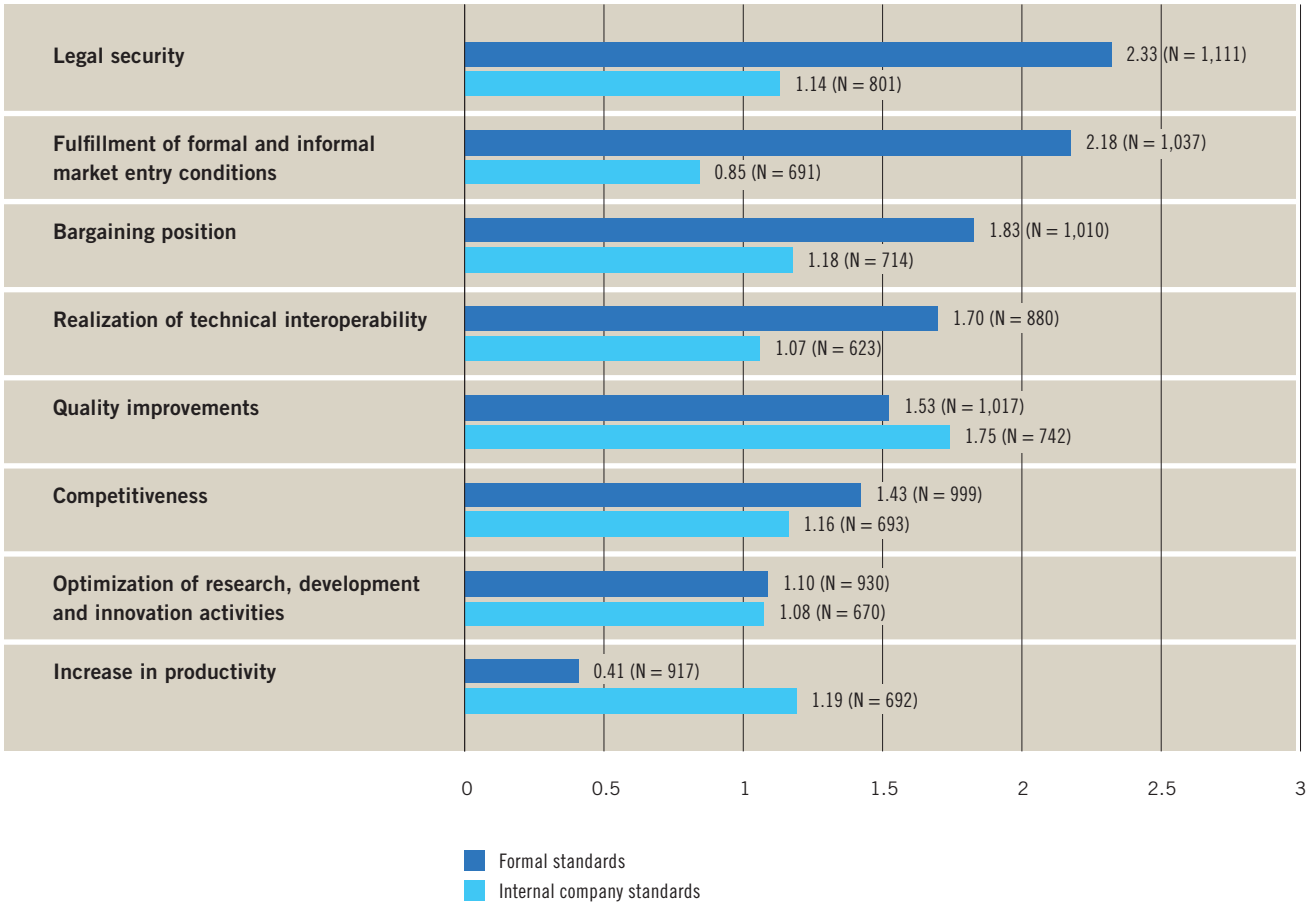


Formal standards, technical rules and internal company standards are very important for the realization of business objectives

As regards the impact of different types of standards on the realization of various business objectives, the analysis again shows that the companies surveyed regard the impact of formal standards and technical rules or specifications on nearly all aspects of business success as being more significant than the impact of consortial and de-facto standards. Furthermore, company standards are of extreme importance for specific business objectives. Figure 3a illustrates the significance of formal standards as compared with internal company standards. Here it is evident that the impact of formal standards is very strong, especially as regards "Legal security" and "Fulfillment of formal and informal market entry conditions".

Figure 3a:
Assessment of the importance of formal standards and internal company standards for specific aspects of business success

On a scale from -3 (not important at all) to +3 (very important)



By contrast, formal standards only play a small role in increasing productivity. In this regard, internal company standards are by far the most important type of standard. Internal standards also have a greater influence on improvements in quality as compared to formal standards.

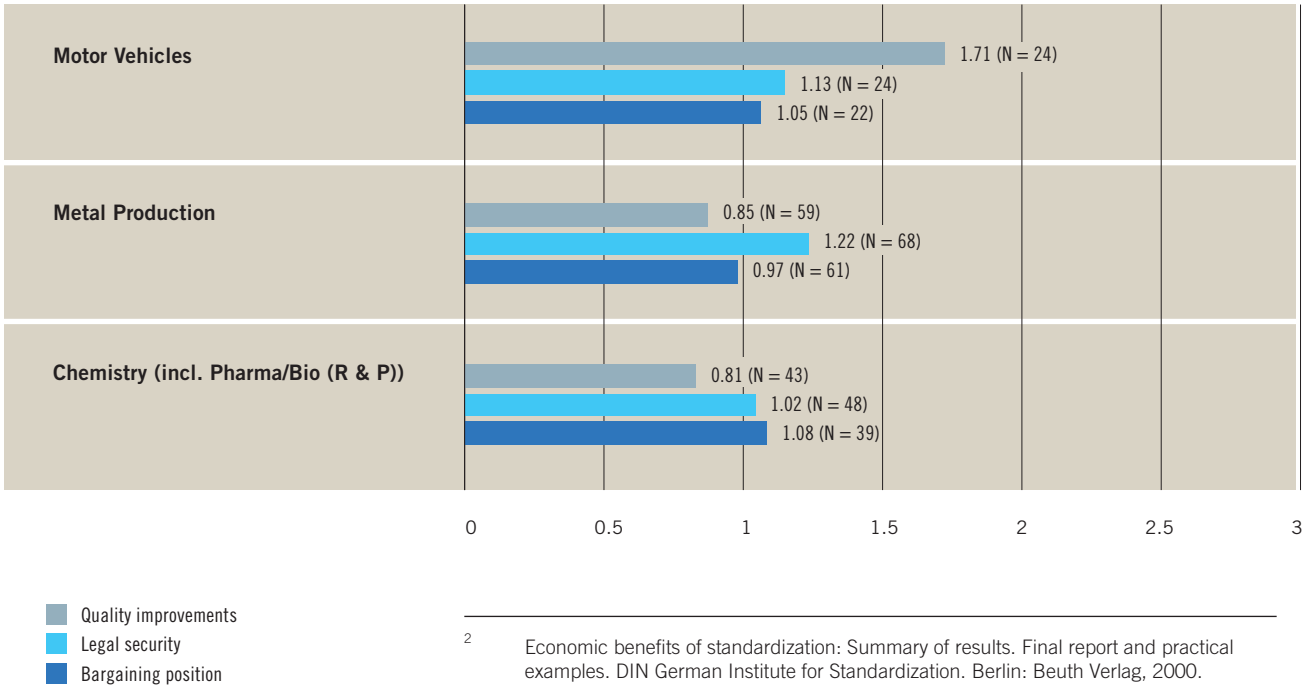
These results emphasize the great importance of internal company standards for the functioning of internal processes within companies, while formal standards are primarily decisive for success on the market.

Previous investigations concerning the macroeconomic benefits of standardization conclude that company standards improve internal business processes. Formal standards, on the other hand, are the dominant means of lowering transaction costs when businesses interact with suppliers and purchasers to strengthen their position within the value creation chain.[2]

Yet there are distinct sector-specific deviations concerning the impact of external company standards on the success factors considered in the survey. Companies in vehicle manufacturing assess them as being very important for quality improvement, in addition to internal company standards. For the metal sector, internal company standards are important for improving legal security, while for businesses in the chemical and pharmaceutical industry these standards strengthen their bargaining power (see figure 3b). There are also sector-specific differences in terms of other types of standard. Consortia standards are mainly important for increasing productivity in vehicle manufacturing,

Figure 3b:
Assessment of the importance of external company standards for specific aspects of business success in selected industries

On a scale from -3 (not important at all) to +3 (very important)



[2] Economic benefits of standardization: Summary of results. Final report and practical examples. DIN German Institute for Standardization. Berlin: Beuth Verlag, 2000.

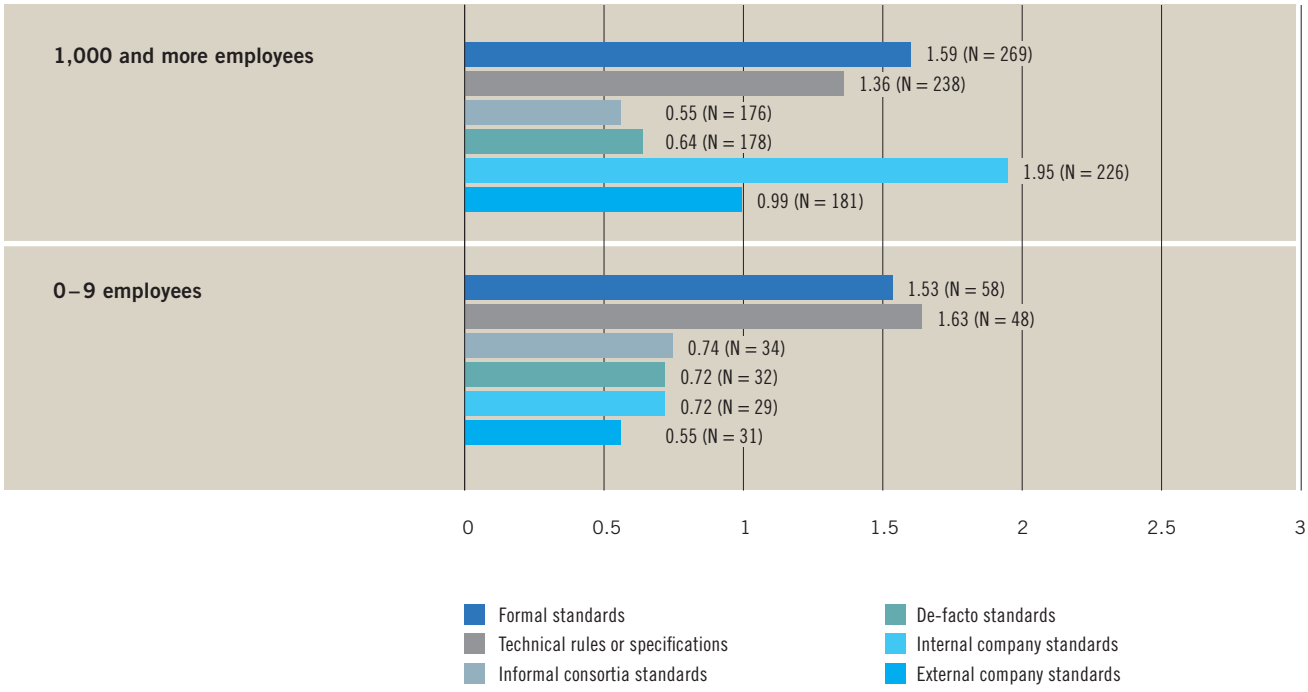
whereas in all other industries they are considered to be comparatively unimportant for this business objective. De-facto standards are mainly important with respect to the realization of technical interoperability in the network-based industries “Information and communication” and “Electrical engineering”.

Considering the effects of informal standards and company standards on business success in companies according to size, there are pronounced differences between the smallest companies (less than ten employees) and all other companies. While large companies use informal standards, such as consortial and de-facto standards, primarily to realize technical interoperability, in small companies these types of standards are mainly used for quality improvement. Figure 3c depicts the influence of the different types of standards on improvement in quality. Regarding companies with more than 1,000 employees, internal company standards mainly have a positive influence on quality as well as productivity improvement.

However, for micro-sized companies technical rules or specifications and formal standards are of far greater significance for business success than informal standards. This confirms the assumption that it is mostly large companies who generate internal company standards and utilize them to improve internal processes. By contrast, small companies mainly turn to external sources for such standards, which could be ascribed to the fact that they do not necessarily have the capacities to develop and efficiently utilize internal company standards.

Figure 3c:
Assessment of the importance of different types of standards for improving quality in micro-sized and large companies

On a scale from -3 (not important at all) to +3 (very important)



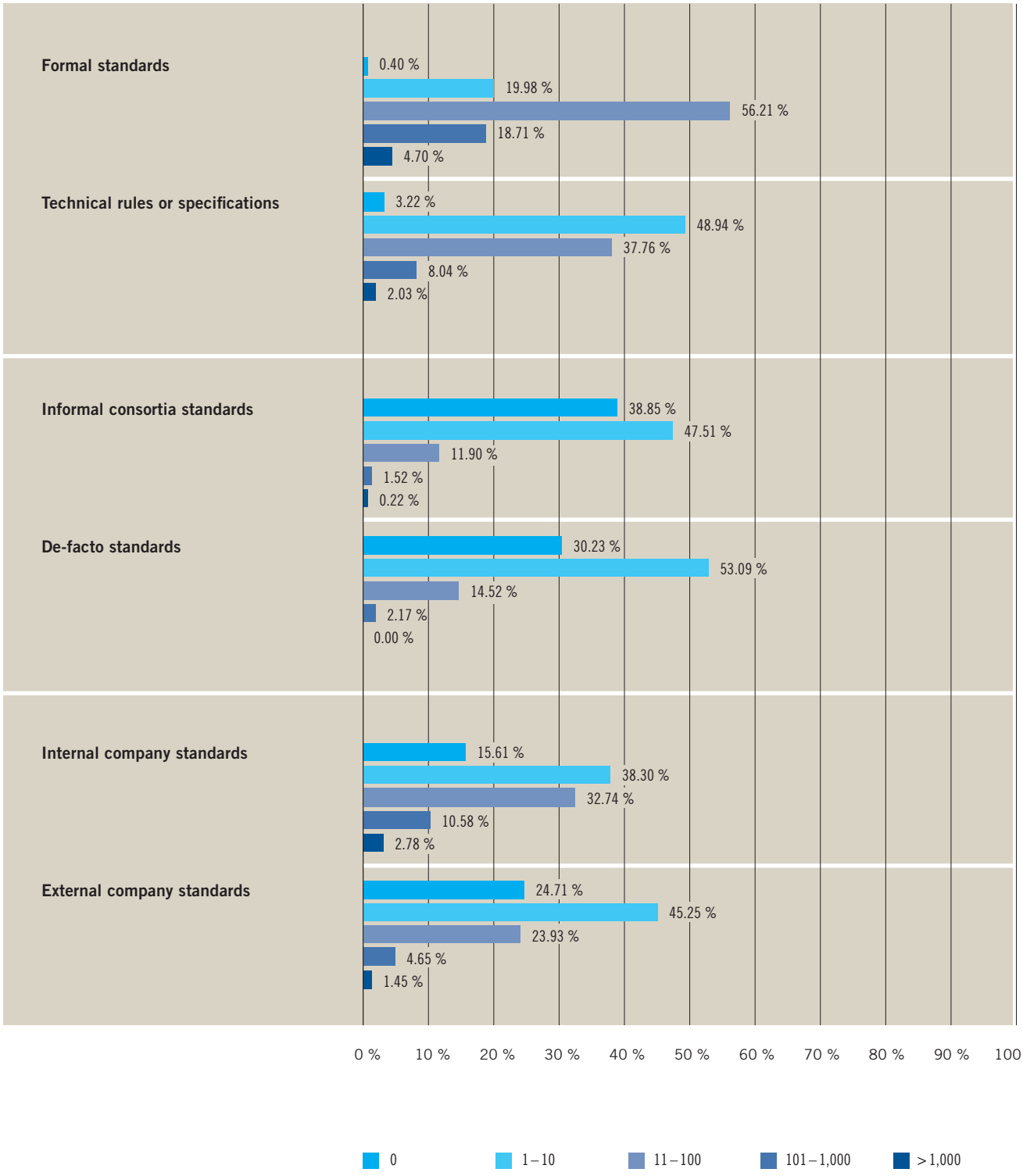
Company standards are used by over 80% of companies surveyed

Application of formal and informal standards and specifications

The great significance of formal standards and technical rules or specifications is reflected in the number of formal standards applied within companies, as illustrated in figure 4. Only 0.4% of the companies said they did not use any formal standards in 2012, whereas 23.4% said they have applied more than 100 formal standards. Also, the majority of businesses (approx. 97%) applied technical rules and specifications, with 10% of these companies applying more than 100 such documents. The very low significance of de-facto and consortia standards is also mirrored in the fact that the percentage of companies not using either type is the greatest. Still, more than 50% of the companies stated that they applied de-facto- and consortia standards in 2012. However, only one out of 50 companies implemented more than 100 documents. This shows that there are only a few important informal standards. Additionally, the relatively great importance of internal company standards is also indicated by the extent of their application, with almost 85% of the companies applying them in 2012, while nearly 73% of all companies applied external company standards.

Further differences in the application of different types of standards can be observed when comparing smaller and larger companies. The number of applied standards rises significantly with the number of employees. This effect is especially pronounced in the application of company standards. For example, more than half of the interviewed micro-sized companies do not use any internal company standards, which is true only for 4% of the large companies.

Figure 4:
Percentage of companies applying formal and informal standards in 2012



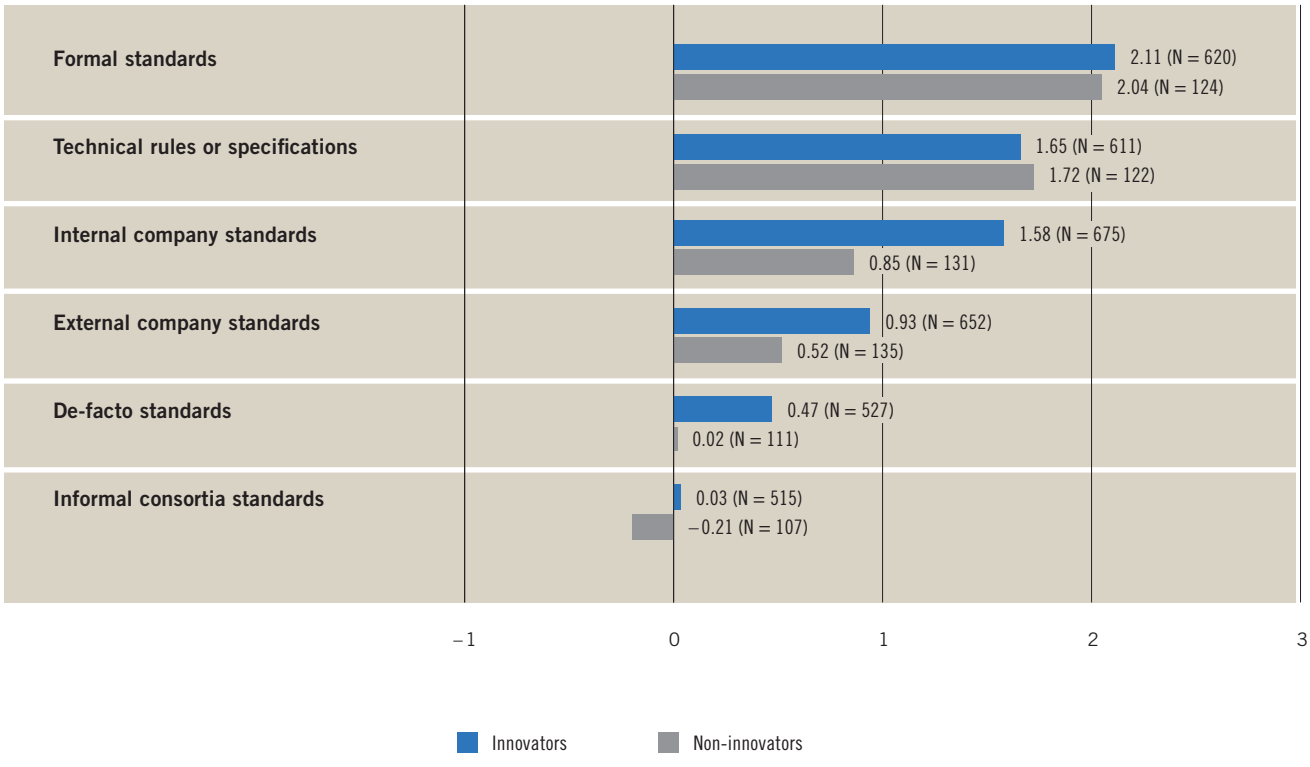
Strong correlation revealed between innovation activities and the significance of company standards and informal standards

Importance of formal and informal standards, specifications and product innovations

The results of the survey provide important insights into the correlation between the different types of standards and innovation activities of companies (see figure 5). Formal standards and technical rules or specifications are considered exceedingly important both by companies that have developed innovative products and by those who have not. By contrast, there is a relation between assessments regarding company standards and informal standards and the innovation activities of a company. Innovators regard company and informal standards as considerably more important than businesses who do not carry out innovation. This is consistent with the finding that company standards have a positive influence on internal processes within companies.

Figure 5:
Assessment of the importance of different types of formal and informal standards for companies with differing levels of innovation

On a scale from -3 (not important at all) to +3 (very important)



Confirmed: Very high response rate among companies engaged in formal standards organizations

Standardization activities

As in the 2012 pilot study, companies who participated in the survey typically actively participate in committee work in the formal standards organizations. This is consistent with the survey's focus on companies that are engaged in standardization.

As shown in figure 6a, nearly 86% of responding businesses were active in DIN standards committees in 2012. 46% of responding businesses were active in the DKE, which deals with electrotechnical standardization. At European and international level, the rate of participation diminishes across the board. This, however, is probably due to the national delegation system where national committees send delegates to participate in European and international mirror committees. About a quarter of the interviewed companies are organized at European and international level in electrotechnical standardization (CENELEC and IEC), and about 5% in telecommunication (ETSI and ITU).

Looking at participation in standards organizations at all three levels according to company size, it becomes apparent that participation in general changes with the number of employees (see figure 6b). Large companies are especially active at international level, whereas medium-sized companies are rather active in the European standards committees. Furthermore, it is remarkable that 50% of the micro-sized companies are active at European level and that at least 40% of them are represented in the international standards committees. This percentage is higher than for companies with 10 to 49 employees.

In general it can be said that companies have recognized the opportunity to influence and steer the standardization process through participation in standards committees of the official standards organizations and that they make good use of this opportunity.

Figure 6a:
Percentage of companies active in standards organizations in 2012

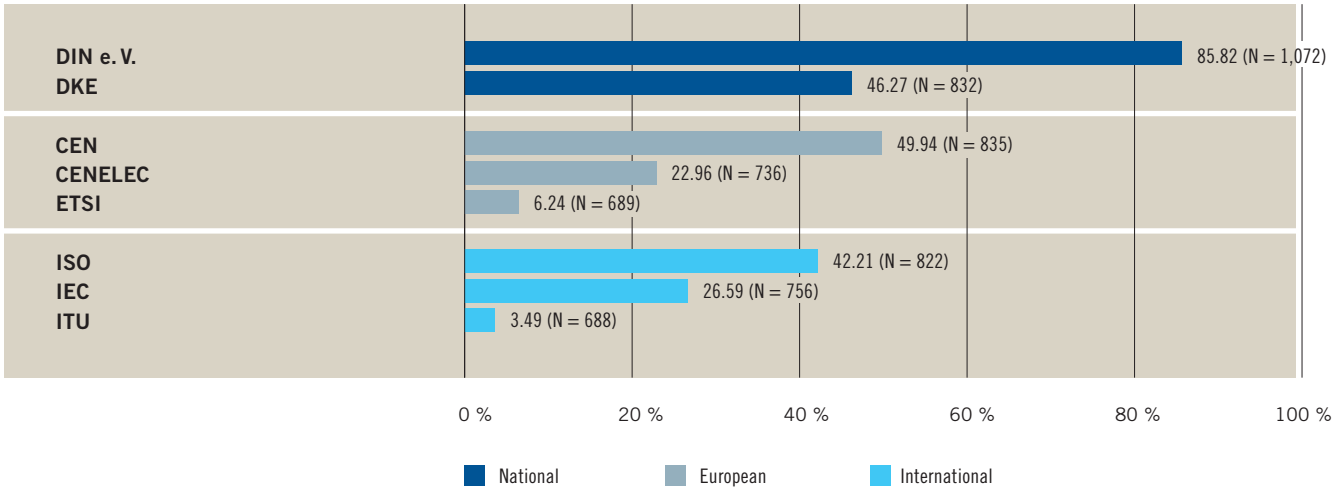
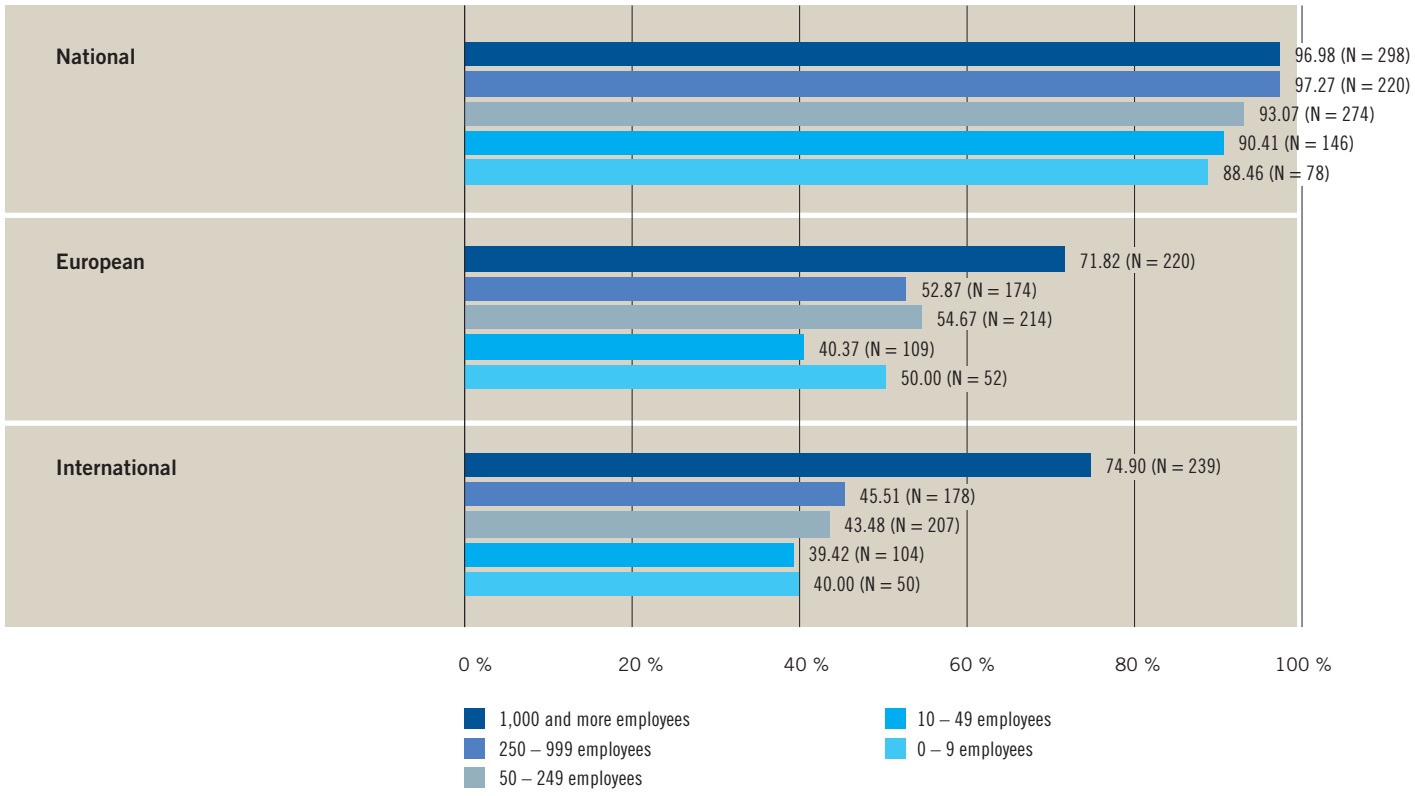


Figure 6b:
Percentage of companies active in standards organizations in 2012, differentiated by regional level and company size

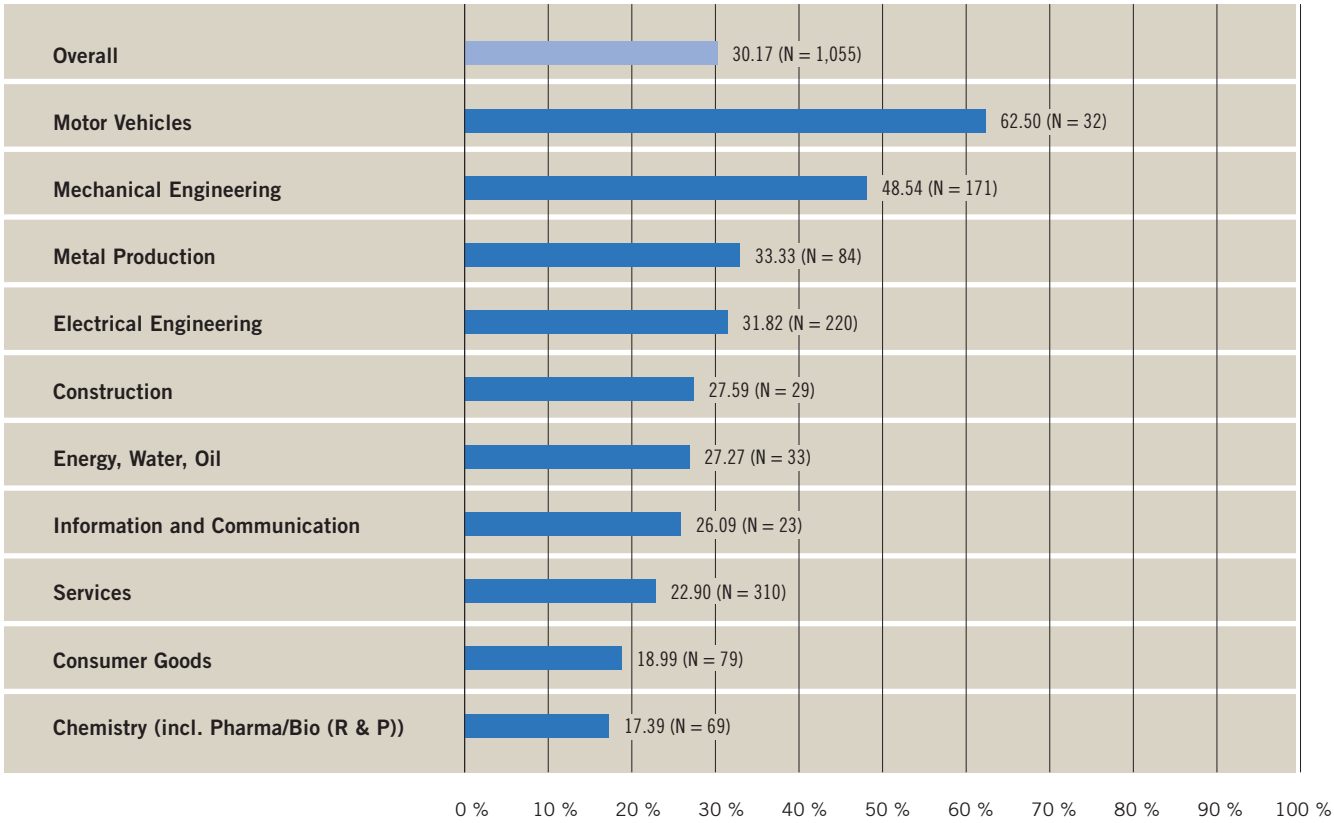


The increasing significance of standards work is supported by the large percentage of companies with specialized standards departments. This percentage is a little smaller in comparison with 2012 but almost one-third of all interviewed companies still say they have such a department. Consequently, the results of the first survey are backed up by the large number of interviewed companies. Standardization departments are common particularly among companies in vehicle manufacturing (see figure 6c). In contrast, they are least common in companies active in the production of consumer goods and in the chemical and pharmaceutical industry.

The data show a similar picture concerning the total expenditure for standardization activities in the year 2012: While nearly one-third of the companies in vehicle manufacturing spent more than 100,000 on standardization activities, this applies only to 6.4% of companies who produce consumer goods and to 5% of companies active in "Information and communication" and "Metal production".

Figure 6c:
Percentage of companies maintaining a specialized standardization department in 2012, differentiated by industry

Distinguishing between different levels of company size, a clear picture emerges: The larger the company, the greater the likelihood is that company has a separate standardization department.



Standardization in the context of the Transatlantic Trade and Investment Partnership (TTIP)

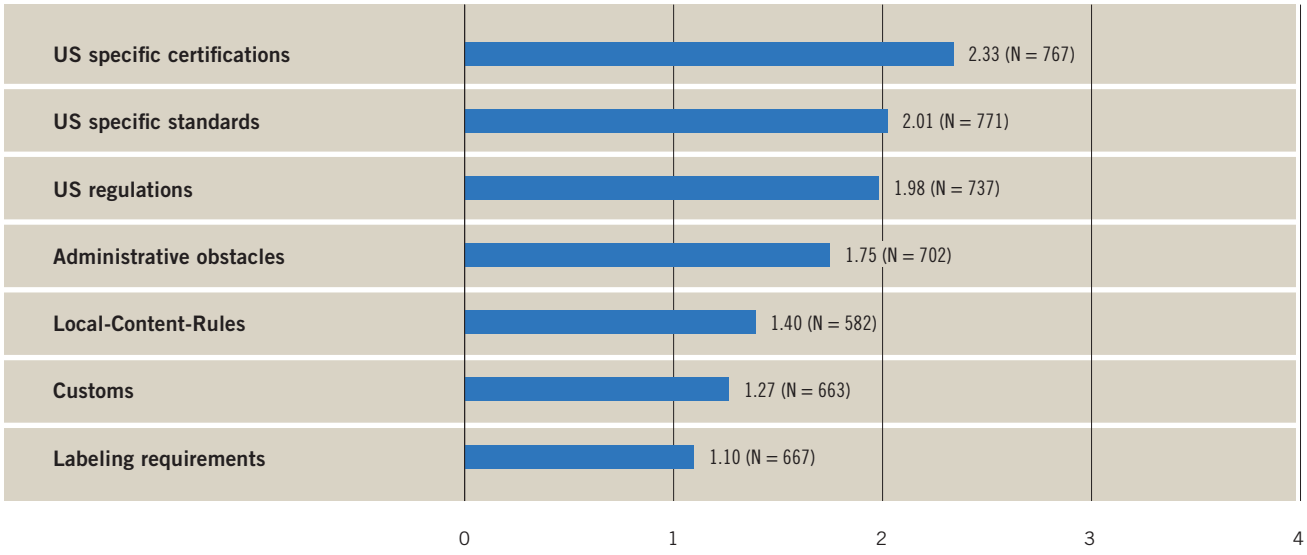
Specific US regulations are greatest barriers to exports

Effect of various trade barriers on exports

A special section of the 2013 survey dealt with the role of standardization in the context of the planned Transatlantic Trade and Investment Partnership between the European Union and the United States. The main focus was on potential trade barriers impeding export to the US for German companies, as well as possible harmonization solutions. Figure 7a shows that specific US certifications, standards and regulations pose the largest barrier for German companies. Customs duties and national labelling requirements, however, pose fewer difficulties. Regarding the importance of the trade barriers for different industries, it becomes clear that export-oriented industries like vehicle manufacturing and electrical engineering on average evaluate the trade barriers as

Figure 7a:
Extent of adverse effects on exports of German companies to the USA according to different trade barriers

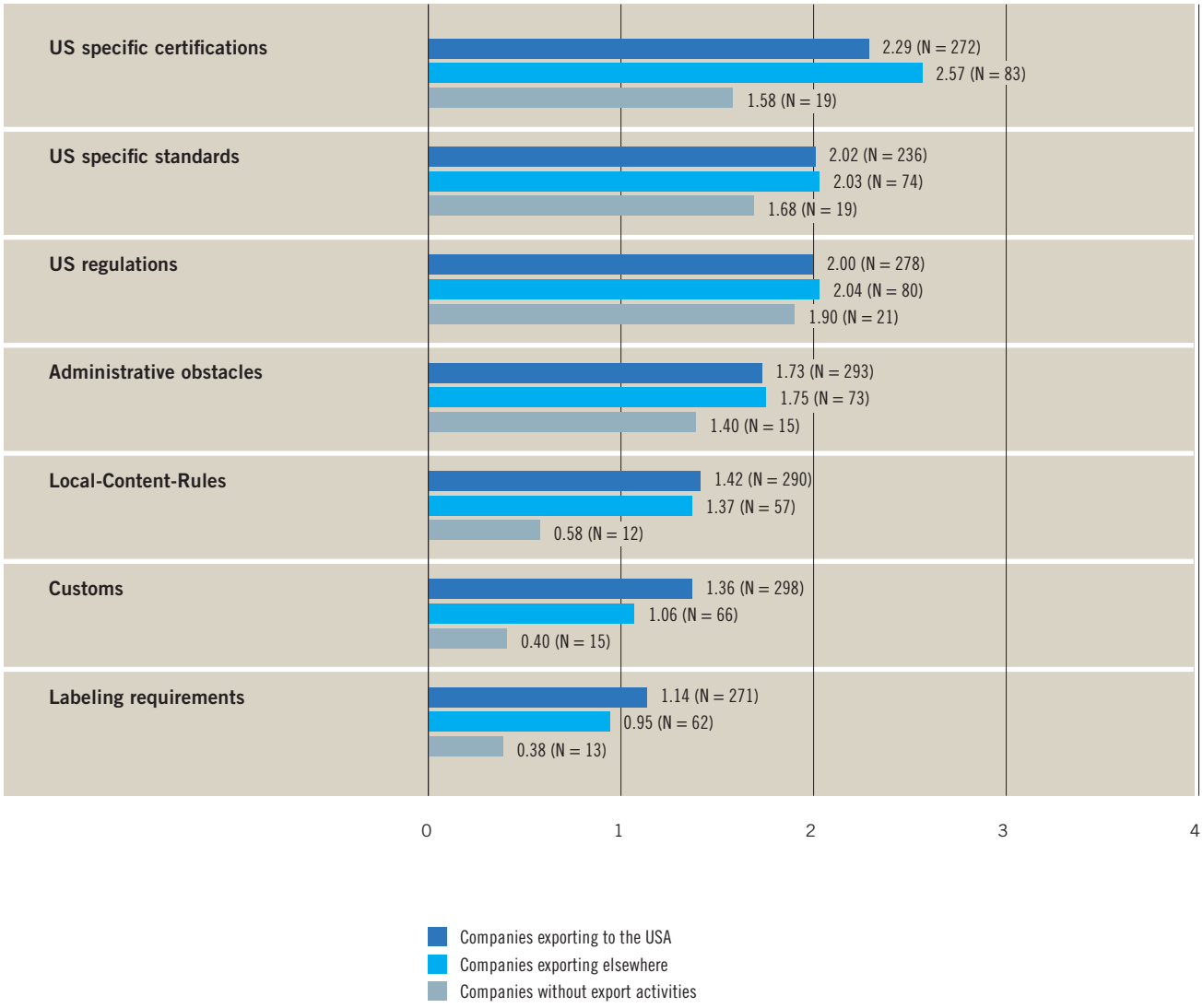
On a scale from 0 (no effect) to 4 (very strong effect)



more restrictive than do less export-oriented industries like the mining industry or utilities. In addition, US-specific certifications are considerably more relevant for companies that export to the USA than for other exporting companies (see figure 7b). This applies especially to companies in electrical engineering, mechanical engineering, metal production and production of consumption goods. Differentiation by size also reveals that these observations apply especially to medium-sized businesses. Thus, barriers to market access arising from US-specific regulations might be one reason for some firms not to export to the US.

Figure 7b:
Extent of adverse effects on exports to the USA according to different trade barriers, for companies with various levels of export activity

On a scale from 0 (no effect) to 4 (very strong effect)



German companies prefer the adoption of International Standards as a harmonization solution

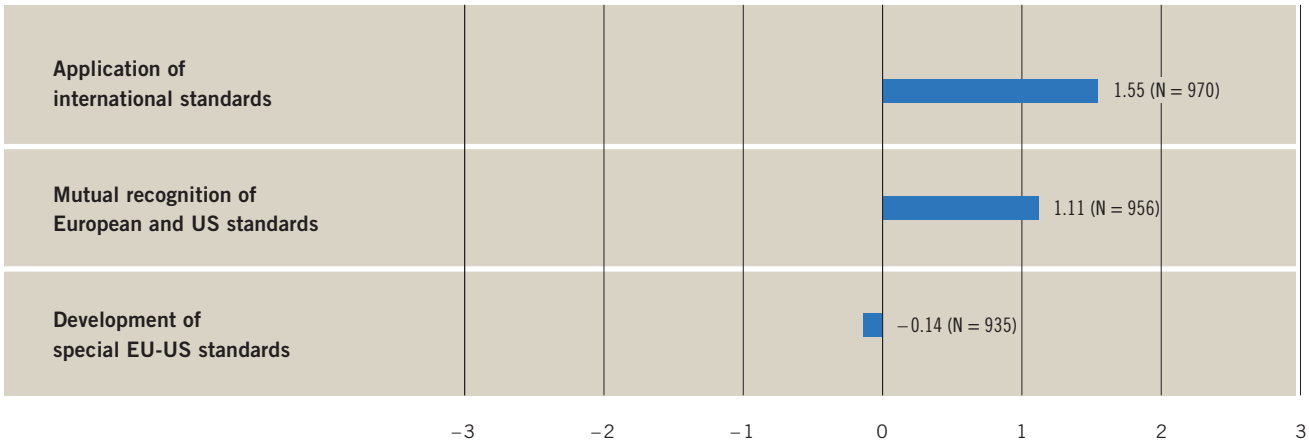
Preferences for alternative harmonization solutions

Considering that it is mainly US-specific certifications, standards and regulations that complicate the trade of German companies with the USA, the question arises as to which harmonization solutions are best in the context of the planned TTIP.

Figure 8 shows that the interviewed companies are strongly in favor of the application of international ISO Standards. Mutual recognition of already existing standards is moderately favored. By contrast, the option of developing new standards that are especially tailored to the shared economic region is only rarely supported. This result could point to problems in further negotiations, as US companies prefer their standards as international solutions and are reluctant to adopt ISO Standards.[3]

Figure 8:
Assessment of different harmonization solutions for formal standards in the context of the TTIP

On a scale from -3 (very bad solution) to +3 (very good solution)



[3] See the article "Freihandel zwischen Europa und den USA – Normung im Fokus" (Free trade between Europe and the US – Focus on standardization) by Sibylle Gabler in the journal "DIN-Mitteilungen", May 2014 issue.

Harmonization of markets is seen as the main advantage of the TTIP but risks due to the opening of markets are seen as well

Opportunities and risks of the TTIP

In the final section of the survey, an open question asked participants to name potential opportunities and risks of the TTIP. The number of opportunities named (434 = 54.6%) significantly outnumbered the number of expected risks (213 = 26.8%). Only 148 (18.6%) companies stated that the TTIP was irrelevant for them. This means that more than 80% of the companies regard the TTIP as important.

Most frequently, opportunities were mentioned that can be summarized as "Advantages due to market harmonization" (see figure 9a). Therefore, the harmonization of standards, regulations and certification requirements should be prioritized in the negotiations on the design of the TTIP agreement. With respect to competitive effects, disadvantages are mentioned nearly as often as advantages.

Figure 9a: Frequency of opportunities and risks of the TTIP mentioned by participants

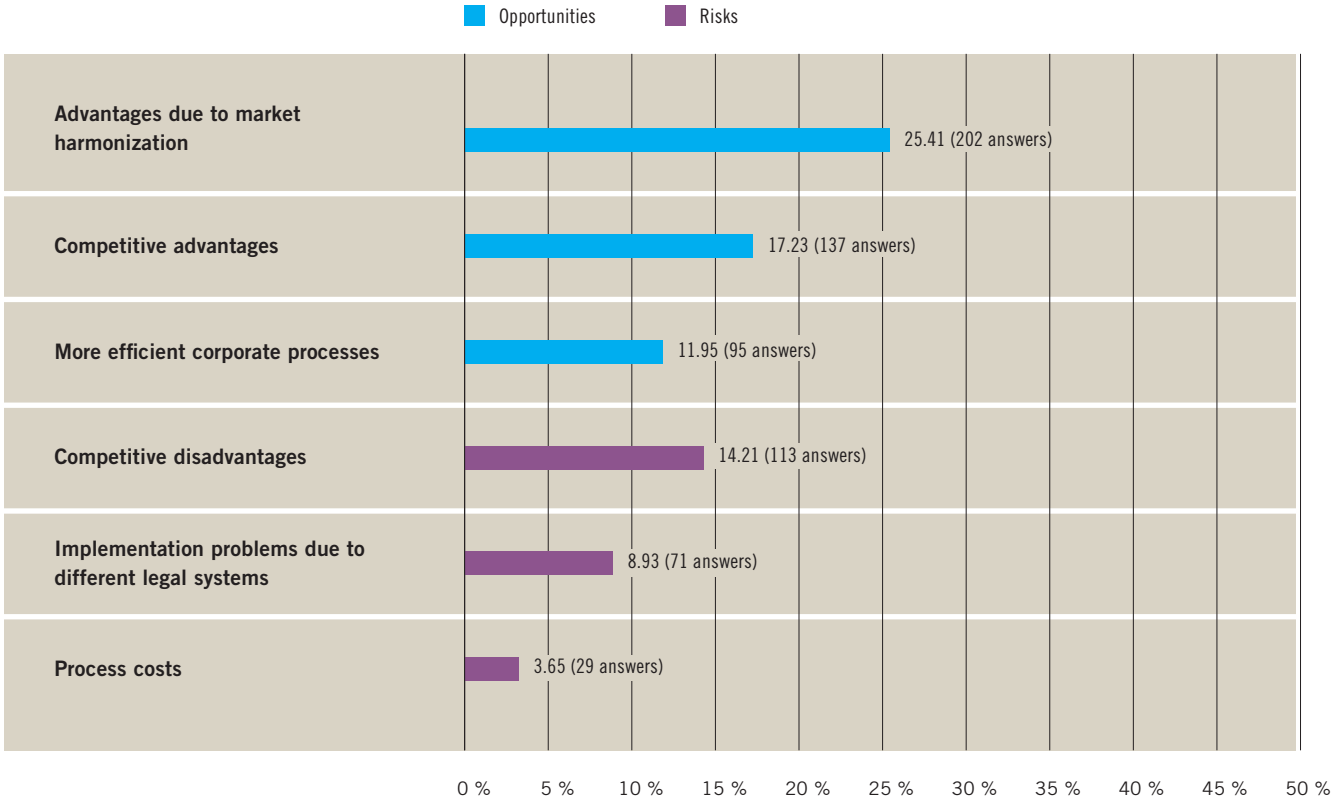
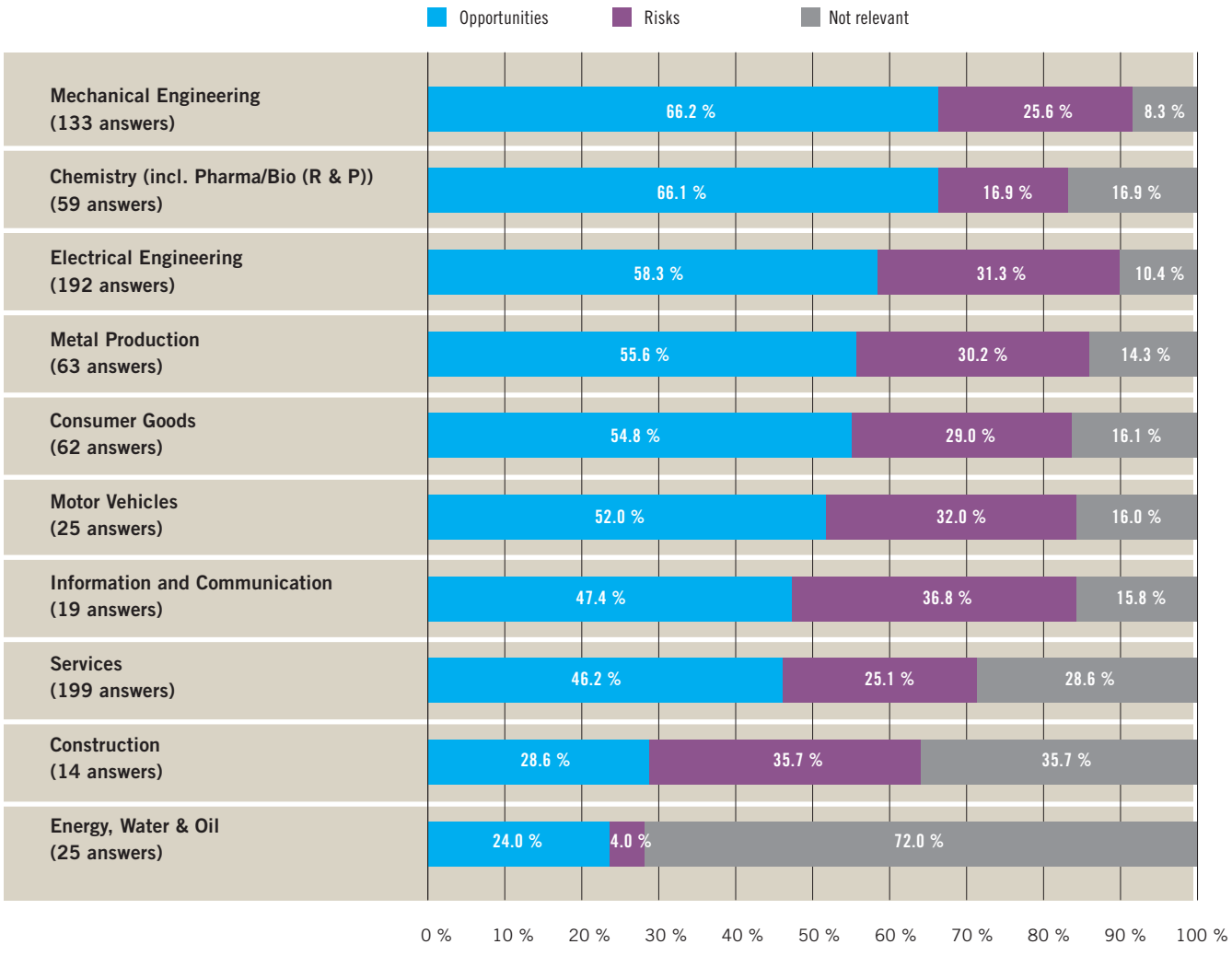


Figure 9b illustrates the opportunities and risks described above according to industrial sector. While companies in “Mechanical engineering” and “Electrical engineering” rarely classify the TTIP as irrelevant, this applies to nearly three quarters of the answers by participants in “Energy, Water and Oil” and to no fewer than 36% of those active in “Construction”. Again, especially the companies affected by the TTIP see the opportunities of such an agreement. Above all, companies in mechanical engineering and the chemical and pharmaceutical industry take a positive view of the TTIP. Still, the German companies interviewed are aware of the risks of opening European markets to US businesses. Among the risks, the weakening of existing safety and quality standards and tougher competition are particularly mentioned. The differentiation by size shows that both the relevance and the number of opportunities mentioned rise with the number of employees. This can be explained by the fact that primarily large companies are active exporters and could therefore benefit from the advantages of the TTIP.

Figure 9b:
Frequency of opportunities and risks of the TTIP mentioned, differentiated by industry



Conclusion

The second wave of the survey largely confirms the results of the 2012 survey.

Standards, technical rules and specifications developed by formal standardization institutes are by far the most important types of standard for the interviewed companies, regardless of industry and company size. These standards mostly serve to ensure legal security and to fulfil formal and informal market entry conditions. Concerning the importance and application of informal standards, company standards are significantly more important than consortial and de-facto standards. This is particularly driven by the importance of internal company standards for large, more innovative companies, which use these standards especially to improve quality and productivity.

The great significance of formal standards and technical rules or specifications and their broad application is also reflected in the participation of German businesses in a variety of formal and informal standardization bodies. The existence of standardization departments in the majority of medium-sized and large businesses indicates the great importance of standards work. The strong participation by companies in the service industry could be an indication of a growing demand for standards in the service sector.

The special section “Standards in the context of the TTIP“ revealed that compliance with US-specific regulations poses the biggest problem for German companies from all sectors and of all sizes. Concerning possible harmonization solutions for the alignment of standards in the context of the TTIP, it becomes apparent that the participants strongly favor the mutual application of International Standards. Also, the interviewed companies most often mention opportunities presented by the TTIP, which can be summarized as being “Advantages due to market harmonization”. However, competitive disadvantages are mentioned nearly as frequently as competitive advantages. This shows that the risks of such a market opening are anticipated as well, although in principle a vast majority of the businesses consider the TTIP to be relevant. This justifies further analysis of the requirements industry place on this agreement, especially in relation to formal standards and regulations which influence foreign trade.

The survey questionnaire

The goal of the German Standardization Panel is to measure not only the expense and effort companies invest in standardization, i.e. their activities in standards organizations, but also their utilization of the results of this work, that is, the application and implementation of standards and specifications. The questionnaire was therefore divided into several sections:

- **Importance of formal and informal standards and specifications**
- **Importance of formal and informal standards in the context of the TTIP**
- **Formal and informal standardization activities**
- **General information on participating businesses**

Survey details

The second wave of the survey

The second wave of the survey took the form of an online survey carried out by the German Standardization Panel (DNP) in autumn 2013 with the support of DIN and several industry associations. The survey itself and the data analysis and preparation were conducted by the Chair of Innovation Economics at the Technical University Berlin.

To present representative results to the companies involved in standardization, the results of the survey are being compared to DIN's data on companies active in standardization. In the medium term, data from the innovation surveys commissioned by the German Federal Ministry of Education and Research since the 1990's, and from the survey on the research and development of economic statistics by the Stifterverband für die Deutsche Wirtschaft are also being used to complete the overall picture.

This project was initiated in the context of the foundation of the German Society for the Promotion of Research on Standardization (FNS).

For the next surveys it will be important to motivate previous participants to take part in subsequent survey waves in order to establish a useful structure. Finally, other businesses will need to be encouraged to participate in further surveys, so as to gain a wider, more representative data base.

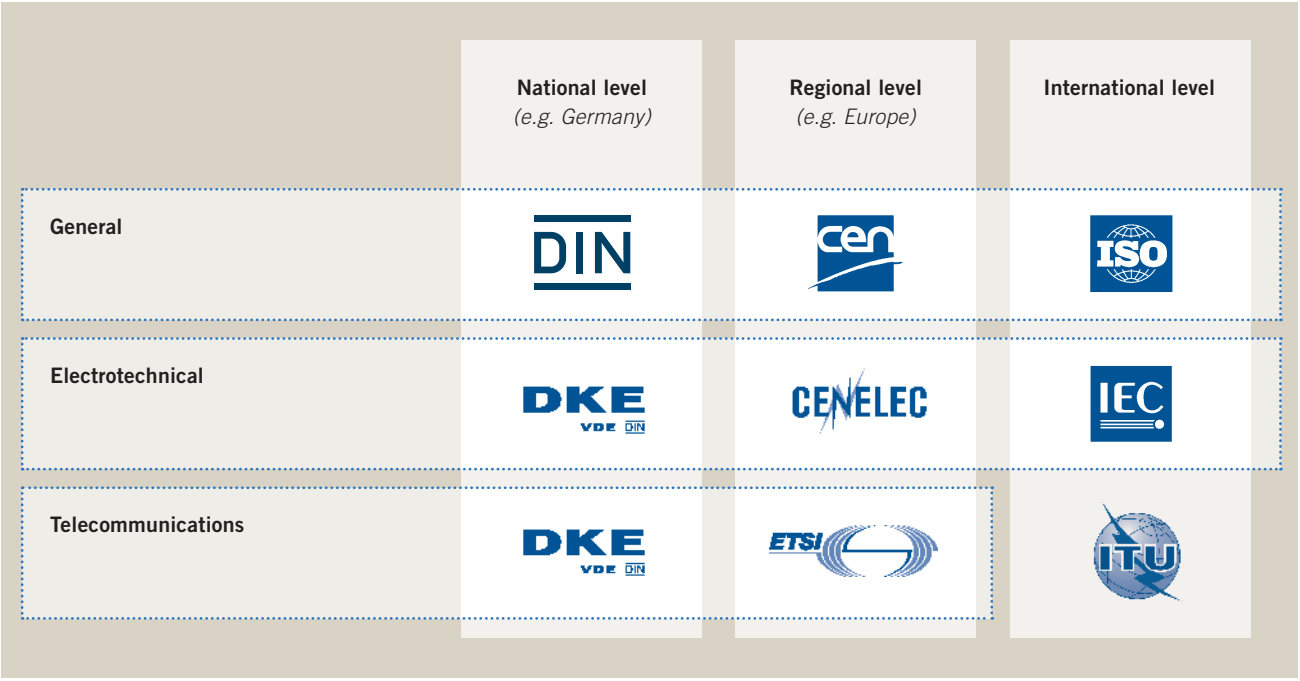
Glossary

Formal Standardization

In Germany, "formal" national standardization (also called "full consensus standardization") is defined as the "systematic unification of material and immaterial subjects carried out by all stakeholders working in consensus for the benefit of society as a whole" *(see also DIN 820-1:2014-06 Standardization - Part 1: Principles, definition from DIN 820-3:2014-06)*. Provisions are laid down with full consensus and are adopted by recognized formal standards institutes (such as DIN German Institute for Standardization and DKE German Commission for Electrical, Electronic & Information Technologies of DIN and VDE). Formal standardization has a high level of legitimation due to its well-established processes.

In addition, the international and European standards organizations form a network of national standards institutes. DIN's staff administer international and European standardization activities carried out in Germany, ensuring that all rules of procedure and guidelines are complied with. They prepare, carry out and follow up meetings of international or European bodies and of the corresponding German "mirror" committees *(see www.din.de)*.

Figure A.1:
Formal standardization at three levels
(Source: www.din.de)



Glossary

National standards organizations

DIN, the German Institute for Standardization, is a privately organized provider of services relating to standardization and the development of specifications. By agreement with the German Federal Government, DIN is the acknowledged national standards body representing German interests at all levels, including the European and international standards organizations. DIN's purpose is to encourage, organize, steer and moderate standardization and specification activities in systematic and transparent procedures for the benefit of society as a whole and while safeguarding the public interest. DIN publishes its work results and encourages their implementation. Some 30,000 experts contribute their skills and experience to the standardization process, which is coordinated by 400 DIN employees *(for further information see www.din.de)*.

The **DKE German Commission for Electrical, Electronic & Information Technologies of DIN and VDE** is a modern, non-profit service organization which ensures that electricity is generated, distributed and used in a safe and rational manner, thereby serving the good of the community at large. DKE is the German national organization responsible for developing standards and safety specifications in electrical engineering, electronics and information technology. Its work results form an integral part of the collection of German Standards. VDE Specifications also form the VDE Specifications Code of safety standards *(see www.dke.de)*.

European standards organizations

In Europe, standards are drawn up by the three officially acknowledged European standards organizations: the **European Committee for Standardization (CEN)**, the **European Committee for Electrotechnical Standardization (CENELEC)** and the **European Telecommunications Standards Institute (ETSI)**. The national standards bodies of CEN and CENELEC's 33 members work together to draw up European Standards, which are adopted by the members at national level *(see http://www.cencenelec.eu/aboutus)*.

Each country is represented within CEN and CENELEC by one member body. German interests are represented by DIN within CEN and by DKE at CENELEC. Each DIN standards committee decides on active participation at European level. This work is supported by a working committee designated as the "mirror committee" to the relevant European body. This committee determines the German position on a particular subject and sends delegates to the European committee to represent this position and participate in the consensus-building process.[4]

[4] DIN: Kleines 1x1 der Normung – Ein praxisorientierter Leitfaden für KMU *(http://www.din.de/cmd?level=tpl-artikel&languageid=de&cmstextid=128876)*.

Glossary

ETSI is responsible for drawing up globally applied standards for the information and communications technology (ICT) sector. This includes television and radio technology as well as the internet and telecommunications. The European Union has officially recognized ETSI as a European standards organization *(see www.etsi.org/about)*.

International standards organizations

ISO International Organization for Standardization und **IEC International Electrotechnical Commission** are private organizations whose members are the national standards organizations. The secretariats of ISO and IEC technical committees are held by these member organizations, who come from all over the world. DIN's standards committees decide on active participation at international level and on the adoption of an International Standard as a national standard. The main bodies of ISO and IEC are the respective General Assemblies; other bodies include policy-making bodies such as the Council and technical executive committees ,such as the Technical Management Board. Standards work is carried out by national delegations and their experts acting in technical committees, sub-committees and working groups.

Another international body that sets technical rules is the **ITU International Telecommunication Union**. The ITU is a subsidiary organization of the United Nations, and is based in Geneva, Switzerland. Recommendations of the ITU are developed by government representatives of the 191 member countries and representatives of companies and regional and national organizations. They serve as guidelines for legislators and companies in the member countries.

Formal standards

In Germany, formal standards are developed by the standards committees in DIN and DKE with the full consensus of all stakeholders, and are largely recommendatory in nature. However, if they are cited in a law or contract their use may become mandatory. They "provide, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at achieving the optimum degree of order in a given context" *(definition as in DIN EN 45020:2006 Standardization and related activities - General vocabulary (ISO/IEC Guide 2:2004))*. Standards define the state of the art at the time of their publication, and contain recommended properties, test methods, safety requirements or dimensions, for example *(see www.din.de)*.

Glossary

The most important designations for standards:

- **DIN** – National German Standard
- **DIN VDE** – National electrotechnical German Standard containing safety-relevant or EMC-specific provisions
- **DIN ISO, DIN IEC, DIN ISO/IEC** – German translation of an International Standard published by ISO and/or IEC and adopted, unchanged (but sometimes with national elements such as a National foreword or National footnote), as a German Standard
- **DIN EN** – Official German version of a European standard. All European Standards are to be adopted, unchanged, by the members of the European standardization organizations CEN/CENELEC/ETSI
- **DIN EN ISO** – Official German version of a European standard which is the unchanged adoption of an International Standard

Informal standardization

In Germany, a differentiation is made between *"Normung"* ("formal", full consensus standardization) and *"Standardisierung"* ("informal" standardization that is not based on full consensus). The latter process results in specifications, such as the "DIN SPEC", or consortia standards, for example. Usually these are developed by a temporary body or standardization consortium. Full consensus and the involvement of all stakeholders are not required.

Specification (e.g. DIN SPEC)

In Germany, a "specification" such as the "DIN SPEC" is the result of an "informal" standardization process, and describes products, systems or services by defining characteristics and laying down requirements. Like standards, such specifications are developed by experts in formal standards organizations such as DIN. However, they differ from formal standards in that full consensus and the involvement of all stakeholders are not required.

Consortia standards

Like specifications, consortia standards are drawn up in an "informal" standardization process. They are developed on the basis of majority decision by a selected group of companies and organizations taking the form of a "consortium".

Glossary

De-facto standards

De-facto standards are not developed by specific consortium, but are a consequence of market demand. De-facto standards are also known as “industry standards” and are also developed in what is called an “informal” standardization process. All standards drawn up by industrial interest groups are de-facto standards.

Technical rules

Technical associations actively participate in DIN’s standards committees in order to represent the interests of their members at national, European and international level. Some of these associations also draw up their own technical rules *(see www.din.de)*, which contain recommendations on how to comply with legislation, a regulation or an established technical procedure. Although they are not legal documents in themselves they can become legally binding where cited in a law or regulation, for example in building regulations. Technical rules published by organizations such as VDI, VDMA, VDE are not drawn up with full consensus.

Company standards

Company standards are developed and adopted by companies themselves and or by cooperating businesses (e.g. suppliers). For example, their use can be mandatory for a company’s suppliers.

Transatlantic Trade and Investment Partnership (TTIP)

The “Transatlantic Trade and Investment Partnership (TTIP)” is a free trade agreement currently under negotiation that, if agreed upon, will take the form of an international treaty between the USA and the EU. For further information *see http://ec.europa.eu/trade/policy/in-focus/ttip/*

Panel survey

A panel survey is a survey, carried out at regular intervals, of an identical sample of surveyed individuals. This prevents falsification through changing samples.

DEUTSCHER FÖRDERVEREIN ZUR STÄRKUNG DER **FORSCHUNG** ZUR **NORMUNG** UND **STANDARDISIERUNG** E. V.

The German Society for the Promotion of Research on Standardization (FNS) aims at enhancing the significance of standardization by promoting strategic research. Presenting this research in an open German platform helps effectively disseminate results not only at national level, but within Europe and internationally as well. Standardization can thus become established as a strategic instrument that can be used together with research findings, academics and practical application by actors in science, industry, politics and society as a whole.

The Society's activities include identifying trends in research and technology that are relevant for future standards work and monitoring any policy-making that relates to standardization. This ensures that new areas for standardization are identified early on and allows the Society to help further develop the standardization system.

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