BM²D
Business Moves to Digital – The Internet’s Economic Impact
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Introduction

Ever since the internet has been opened for civil purposes, it has turned into a new driver of structural change. The Cologne Institute for Economic Research (IW Köln) determines the internet’s economic impact in Germany for the first time.

Within the space of 20 years, the World Wide Web has developed from being a tool used by a few to being a technology used by everyone, and it has changed many aspects of the business world. There is hardly a business that can get by without the internet today. Business worlds and business models have fundamentally changed as a result of that. Structural change has acquired a new driving force.

But how is it possible to determine the importance of the internet for German business? Previous approaches have adopted the suppliers’ perspective, which means that mainly infrastructure and the direct provision of products and services linked to the internet are looked at. However, it is hardly possible to establish the importance of the internet taking that perspective, because the internet is a cross-cutting technology whose value is measured according to the extent to which it is used in business enterprises. Just like the steam engine or electricity back in their day, the internet has the power to change business models on a sustainable basis. It is time to adopt a new perspective and to find out how important the internet, as a cross-cutting technology, actually is for German business.

Together with its subsidiary IW Consult and in cooperation with BITKOM, the Cologne Institute for Economic Research (IW Köln) adopted a new perspective and developed a new approach that is able to paint a comprehensive picture of the importance of the internet for German business. The IW Future Panel, a representative survey of German business enterprises*, for the first time asked businesses how important the internet was within their business model. The result is the Business Model Monitor Digital (BM²D) presented in this study. It defines the importance of the internet for German business, takes a closer look at the business models of German enterprises and reveals how use of the internet varies across different branches of industry.
Over the past 50 years information and communication technologies (ICTs) have found their way into all sectors of the economy. In fact, most new data processing systems are invisible to humans. They are fitted into our cars, machines and white goods. The internet permits these systems to communicate effortlessly with each other. For example, traffic jams can be identified in real time and avoided. It is especially since broadband data connections have been in a position to transmit large data volumes at high speeds that the internet has become an integral part of modern ICTs. This trend is most obvious in our private lives, for example in mobile phones, which are getting ever ‘smarter’. And it is primarily the internet that is responsible for that.

Aside from PCs on our desks at work, the internet is also often invisible in the business world. Photocopying systems, for instance, communicate with their manufacturers. Photocopiers send reports when problems crop up, when it is time for routine maintenance work or when the toner needs refilling. The customer services agent can see at a glance what is wrong, which spare part is most likely required and what the most efficient route is, in combination with other customer appointments. The days have gone when the manufacturer’s interaction with the product seized when it left the factory. Integrating services into products means the internet has taken on a new quality. It enables business models to change. And the basic prerequisite for that change is the internet.

And that is precisely what IW Consult’s approach is based on. In order to be able to show how dependent business models are on the internet, German businesses in the IW Future Panel, a survey of a representative sample of businesses in Germany*, were asked how important the internet was to each building block of their business model. That is what sets the study at hand apart from all previous approaches.

*excluding some business services
The Business Model Monitor Digital (BM²D) evaluates the internet’s importance for German firms based on their business models. By this method, the internet’s economic impact as a cross-cutting technology can be captured.

Projecting the level of dependency of business models on the internet to corporate level, four groups of enterprises emerge. The internet has a key role to play in businesses whose business model is at least strongly dependent on the internet. The internet has an important role to play in businesses whose business models are dependent on the internet to a moderate degree, whilst it has a subordinate role to play in businesses whose business models are only little or very little dependent on the internet. The internet has no role to play in businesses without internet access.

In order to be able to assign businesses to one of these categories, those in the IW Future Panel were asked how important the internet is in relation to Osterwalder & Pigneur’s (2010) nine business model building blocks. The businesses were asked to award between 0 and 4 points for each building block. As a result, each business model’s level of dependence on the internet was categorised along an index of between 0 and 36 points. Above 18 points, that is half the maximum number of points available, the business model was classed as strongly dependent on the internet and the business was assigned to the group for which the internet has a key role to play. Business models that were weakly or very weakly dependent on the internet were those that had on average awarded less than 1 out of 4 points across the nine business model building blocks.

Based on this classification, the internet has at least an important role to play in half of all German businesses. This level of importance can be seen across all branches of industry and sizes of enterprise, although the services industries and smaller firms tend to have business models that are more dependent on the internet. According to the Federal Statistical Office (Statistisches Bundesamt), 18 per cent of all businesses in Germany are still offline. Agriculture and forestry, as well as the hotel and catering industry stand out as branches of industry whose use of the internet is particularly low.
The Internet's Role in the German Economy (Number of Firms)
Proportions in per cent

Segment 1: The business model depends fully on the Internet

Segment 2: The business model depends very strongly on the Internet

Segment 3: The business model depends strongly on the Internet

Segment 4: The business model depends moderately on the Internet

Segment 5: The business model depends very moderately on the Internet

Segment 6: The business model depends only slightly on the Internet

Segment 7: Offline business model

The Internet plays a...

key role

important role

subordinate role

no role
The economic significance of the internet becomes clear when these figures are translated into revenues and number of employees (on the basis of data taken from the Commercial Register). Businesses in which the internet at least has an important role to play represent 46 per cent of revenues and employees in Germany (figures rounded off). Businesses without internet access only represent 7 per cent of revenues and employees.

An example of business models’ dependency on the internet

The agricultural sector is not exactly known for its affinity to the Internet. Numerous firms in this sector do not even have an internet connection. Nevertheless, there are also those for whom the internet does have a role to play. A farmer can determine how important that role is via his business model, because the more dependent the business model is on the internet, the greater the role played by the internet across the whole business.

It is up to each farmer to decide to what extent to digitise his business model. For example, he can run a very traditional business in which he does not use the internet. However, that does not prevent him from advertising his farm shop on his website or using an online newsletter to let his customers know about special offers and the date of his open day. That generates revenues, because it is an easy way for him to reach his customers. In such business models the internet has a subordinate to important role to play on the farm, depending on how dependent individual building blocks in the business model are on the internet.

However, if a farmer directly markets his own produce, his business model will be entirely dependent on the internet. For example, organic farmers on the outskirts of big cities often deliver their own produce and, sometimes, other products directly to customers' doors. The customers are online, are addressed directly in a targeted fashion via search engine marketing (SEM) and a website, and customer relationship management is also largely taken care of online. Since the organic farmer sells his goods exclusively via an online shop, his key activity – selling his own produce – is directly dependent on the internet. The online shop is operated by a business partner that therefore also uses the internet intensively for doing business. This online work generates costs for the organic farmer, and a large share of income is generated via the online shop. The farmer will even use the internet to make his own purchases: to find out about the latest agricultural spare parts and to buy them via an online mail order firm. The internet has a key role to play in such businesses.
The Internet’s Role in the German Economy (Revenue and Jobs)
Proportions in per cent

Segment 1: The business model depends fully on the Internet

Segment 2: The business model depends very strongly on the Internet

Segment 3: The business model depends strongly on the Internet

Segment 4: The business model depends moderately on the Internet

Segment 5: The business model depends very moderately on the Internet

Segment 6: The business model depends only slightly on the Internet

Segment 7: Offline business model

The Internet plays a...

key role
important role
subordinate role
no role

©IW Consult
IW Future Panel (2011)
The Internet in the Business Model Building Blocks

In order to understand how firms work, it is necessary to analyse their business models. Osterwalder and Pigneur (2010) identified nine business model building blocks. IW Consult employed its IW Future Panel survey to determine the internet’s importance in each of these nine building blocks.

A business model is defined as the value that a business enterprise delivers to one or more customer segments. It also includes the structure of the business enterprise, as well as partners in regard to value creation, marketing, provision of the value and existing customer relations, the goal being to generate profitable and continuous revenues. Osterwalder & Pigneur’s (2010) approach focuses on the architecture (building blocks) behind value creation and thus provides a solid basis for comprehensively reflecting the influence of a specific technology.

According to this approach, business models comprise four main areas: customer – offering – infrastructure – finances. However, these four main areas are generally not sufficient to comprehensively depict a business model. That is why Osterwalder’s Business Model Canvas defines nine building blocks that describe how a business earns its money.

Business models are influenced by a number of factors. They include market-related forces, regulation by means of legislation and rules, as well as technological influences. These can sustainably change the business model.

In order to be able to show what influence internet technology and use of the internet exerts, the businesses in the IW Future Panel were asked how important the internet was in regard to the nine business model building blocks. Even in businesses whose economic activity is not chiefly internet-oriented, certain business model building blocks can still be influenced by the internet. For example, the important role the internet plays in German businesses is especially reflected in the building blocks Channels, Customer Relationships and Key Resources.
Business Model Building Blocks Osterwalder & Pigneur (2010)
The chart on the right indicates the average importance that German businesses assign to the internet in the nine business model building blocks according to Osterwalder & Pigneur (2010). The nine building blocks are also reflected in the fictitious example in the agricultural sector described on page 8. It is ultimately up to the business enterprise itself as to what extent it orients its business model to the internet. But the results of the BM²D also indicate that the market exerts a certain amount of pressure.

More than 80 per cent of German businesses have internet access. Logically, costs arise when a business actively uses the internet over and above the internet connection itself, for instance for employees or infrastructure. The businesses are of course clearly aware of that fact. The two business model building blocks for which the internet is nearly equally as important are Channels and Customer Relationships. It is clear that many customers in the b2b sector are also online and that they can be effectively addressed via the internet. The market thus exerts a certain amount of pressure on businesses. When the majority of firms in its branch of industry already have a website, an enterprise must follow suit. On the other hand, using the internet for customer contact and customer relationship management also clearly has its advantages: both become more targeted and generally more effective than when using traditional channels.

As regards the flow of goods, the internet mainly has an influence on procurement. There is hardly a business in Germany that has not ordered something online. As regards Value Proposition, Key Activities and Revenue Streams it is clear that the role of the internet in Germany cannot be directly derived from revenue from e-commerce. Other business models are significantly more dependent on the internet.
The Internet affects a major part of our…
Percentage of firms agreeing

- Customer Segments: 25%
- Channels: 37%
- Customer Relationships: 44%
- Key Partners: 44%
- Value Proposition: 17%
- Revenue Streams: 12%
- Key Activities: 22%
- Cost Structures: 55%
- Key Resources: 29%

Source: IW Future Panel (2011); "strongly agree", "agree", and "neutral" on a 5-points Likert-Scale
Customer Segments

Consumers and firms purchase products and services online more and more or use the internet as an information platform before they purchase offline. Therefore, companies have to deal with the role the internet has to play for their main customer segments i.e. how they acquire information as well as products and services.

A major part of our customer segments pursue their business online

Percentage of firms agreeing grouped by the internet’s role

<table>
<thead>
<tr>
<th>The Internet plays a...</th>
<th>key role</th>
<th>important role</th>
<th>subordinate role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of firms agreeing that a major part of their customer segments are pursued online; Source: IW Future Panel (2011)</td>
<td>79</td>
<td>26</td>
<td>5</td>
</tr>
</tbody>
</table>

Customers form the heart of every business model, because no business could survive without them. The aim in regard to this business model building block was to assess to what extent the relevant customer groups are online and use the internet for their business activity.

If the majority of customers are online and also use the internet for their business activity, that means that this part of an enterprise’s business model is dependent on the internet. However, compared to other building blocks, this building block of the business model has relatively little influence on the role the internet plays within the business as a whole. Of those enterprises whose business models are at least strongly dependent on the internet, 79 per cent state that the majority of their customers do business online.
Channels
The internet has added a fundamentally different channel to the marketing mix. Firms can approach potential customers in a more targeted fashion.

The internet has provided a new means of reaching customers that numerous businesses in Germany make use of. Online marketing is the fastest growing channel within the advertising industry.

More than one third state that they reach the majority of their customers via the internet – more than 90 per cent of businesses that are dependent on the internet state that that is the case. Nearly one tenth of businesses for whom the internet plays a subordinate role in regard to their economic activity even state that they use the internet to contact the majority of customers.

**We approach a major part of our customers online**
Percentage of firms agreeing grouped by the Internet’s role

<table>
<thead>
<tr>
<th>The Internet plays a...</th>
<th>93</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td></td>
</tr>
<tr>
<td>important role</td>
<td>45</td>
</tr>
<tr>
<td>subordinate role</td>
<td>9</td>
</tr>
</tbody>
</table>

Proportion of firms agreeing that a major part of their customers are approached online; Source: IW Future Panel (2011)
Customer Relationships
Managing customer relationships is key to a successful marketing strategy. The internet offers numerous ways to stay in contact with one’s customers, raising their attention to special offers or getting their feedback. Within that, Social Media play a vital role.

The internet is well-suited to providing customers with the latest information or for ensuring the enterprise is visible to and reachable by customers at any time. Of those enterprises whose business models are dependent on the internet, 97 per cent state that the internet has a significant role to play in regard to customer relationship management. More than 50 per cent of businesses for whom the internet has an important role to play use the web for such activities. One in seven of those businesses whose business model is only weakly influenced by the internet use the internet for the majority of its customer relationship management. Thus, the internet has an important role to play in this business model building block for the majority of German businesses.

A major part of customer relationships are managed online
Percentage of firms agreeing grouped by the Internet’s role

The Internet plays a...

- key role: 97
- important role: 56
- subordinate role: 14

Proportion of firms agreeing that a major part of their customer relationships are managed online; Source: IW Future Panel (2011)
Key Partners

For the functioning of their business models, firms often rely on key partners. For instance, these may be suppliers or other firms in the same network. If these key partners have business models that embrace the internet, their internet affinity could have an impact on one’s own business model.

A major part of our key partners depend strongly on the Internet
Percentage of firms agreeing grouped by the Internet’s role

The Internet plays a...

<table>
<thead>
<tr>
<th>Role</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td>93</td>
</tr>
<tr>
<td>important role</td>
<td>55</td>
</tr>
<tr>
<td>subordinate role</td>
<td>16</td>
</tr>
</tbody>
</table>

Proportion of firms agreeing that a major part of their key partners depend strongly on the Internet; Source: IW Future Panel (2011)
**Value Proposition**

Consisting of the bundle of key products and services of the company, the value proposition is the reason why customers turn to one company over another. If the value proposition depends strongly or fully on the internet, the central building block of the business model is tied to the web.

A total of 17 per cent of German businesses deliver a key product or service that is largely directly dependent on the internet. The value propositions of three quarters of businesses whose business models are dependent on the internet are largely directly dependent on the internet. Looking at this criterion in the manufacturing industries, only 11 per cent of businesses have a value proposition that is dependent on the internet. In the services industry considerably more, namely 23 per cent, have a value proposition that is dependent on the internet.

Overall, it is striking that smaller German businesses with less than 50 employees considerably more frequently deliver products or services that are oriented to the internet – 18 per cent compared to 7.5 per cent of German businesses with more than 50 employees. Younger businesses are much more digital when it comes to their value proposition. Of those businesses that are less than five years old, 23.3 per cent have value propositions that are dependent on the internet. Of those businesses that are more than five years old, only 15.8 per cent have key activities that are dependent on the internet.

### A major part of our value proposition depends directly on the Internet

Percentage of firms agreeing grouped by the Internet’s role

<table>
<thead>
<tr>
<th>The Internet plays a...</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td>76</td>
</tr>
<tr>
<td>important role</td>
<td>11</td>
</tr>
<tr>
<td>subordinate role</td>
<td>1</td>
</tr>
</tbody>
</table>

Proportion of firms declaring their main products / services strongly depend on the Internet; Source: IW Future Panel (2011)
Revenue Streams
Revenue streams can spring from different sources. They can be generated through one-off payments or monthly rates, for instance. However, the method of payment is irrelevant here. What is relevant, however, is whether revenue has come directly through the internet e.g. through payments in an online shop.

As a platform for transactions, the internet enables enterprises to generate revenue. In an average of 12 per cent of businesses in Germany, this online revenue represents the majority of income. Where the key activity is dependent on the internet, significant revenue is generated online in just under two thirds of businesses. In only 5 per cent of businesses in which the internet has an important role to play is the majority of income generated via the internet. In businesses in which the internet only has a subordinate role to play it is obvious that hardly any income is generated online. Nevertheless, it is possible for the partners of such businesses to purchase and sell their products online.

We generate a major part of our revenues online
Percentage of firms agreeing grouped by the internet’s role

<table>
<thead>
<tr>
<th>The Internet plays a...</th>
<th>Proportion of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td>61</td>
</tr>
<tr>
<td>important role</td>
<td>5</td>
</tr>
<tr>
<td>subordinate role</td>
<td>0</td>
</tr>
</tbody>
</table>

Proportion of firms declaring that a major part of their revenues are generated online; Source: IW Future Panel (2011)
Key Activities

Key activities describe the processes necessary to produce the bundle of products and services within the company’s value proposition. Without these processes the business model would cease to work.

The value-creating activities of 22 per cent of businesses are largely oriented to the internet. The internet is thus relevant to the manufacturing of products or the provision of services in just over one fifth of German businesses. Even in those businesses whose value proposition is not dependent on the internet, 16 per cent are dependent on the internet in this particular building block. Only in those enterprises whose business models are only weakly dependent on the internet is this building block hardly significant – in 85 per cent of businesses whose business models are dependent on the internet, by contrast, it has a big role to play.

In the manufacturing industries, 16 per cent of the value-creation processes of German businesses are largely internet-oriented; in the services industry that figure is nearly 30 per cent.
Cost Structure

For this study, with cost structure we mean the costs directly associated with the utilisation of the internet e.g. for infrastructure or personnel.

The Internet considerably affects the firm’s cost structure

Percentage of firms agreeing grouped by the Internet’s role

- **key role**: 93%
- **important role**: 67%
- **subordinate role**: 30%

In 55 per cent of German businesses work on and with the internet gives rise to significant costs, i.e. costs that are relevant to the business model. Even in those businesses in which the internet has a subordinate role to play internet costs arise in nearly one third of cases. Where the internet has an important role to play in a business, the costs are also significant in just over two thirds of cases.

Proportion of firms declaring that their cost structure is affected by the Internet; Source: IW Future Panel (2011)
We procure a major part of our key resources online
Percentage of firms agreeing grouped by the Internet’s role

The Internet plays a...

<table>
<thead>
<tr>
<th>Role</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td>72</td>
</tr>
<tr>
<td>important role</td>
<td>32</td>
</tr>
<tr>
<td>subordinate role</td>
<td>11</td>
</tr>
</tbody>
</table>

Proportion of firms declaring that a major part of their key resources are procured online; Sources: IW Future Panel (2011)
Taking a Closer Look

The results of the BM²D analysis showed the different roles the internet has to play in German firms depending on how strongly their business model depends on the internet. This Section will illustrate the structural differences between the three core groups of firms defined in the report.

The internet can have an influence on all aspects of a business model. That influence varies in strength depending on how dependent the business model is on the internet. It must, therefore, be clarified to what extent businesses with varying degrees of dependency on the internet differ in regard to structural variables. That is, for example, whether businesses in which the internet has a key role to play approach their economic activity differently than businesses that are less internet-prone.

In order to be able to more precisely describe businesses and their level of dependency on the internet, the areas listed below will be examined. These have time and again proved to be influencing factors or factors for success in the analyses conducted in the IW Future Panel:

- Age of businesses
- Employee qualifications
- Research and development (R&D), innovations
- Internationalisation and exports
Age of Businesses

The age of a particular firm shapes its corporate culture, its position in the market, and the role the internet has to play within its business model. It is commonly believed that young firms are the ones which emphasise the internet’s importance in their business models. This Section questions this prejudice.

If one believes the cliché, businesses that are entirely or very internet-friendly tend to be young businesses founded by so-called digital natives. The data from the IW Future Panel can at least partly do away with this prejudice.

On average, German businesses in which the internet has a key role to play are younger than companies in which that is not the case. However, 85 per cent of German businesses with business models that are dependent on the internet are more than five years old, and 64 per cent are even more than 10 years older. That means that it is by no means true that only start-ups founded by the digital native generation are especially internet-friendly. Rather, the business models of German enterprises are undergoing a process of transformation. The internet is making its way into the business models of even established firms.
Age of Businesses grouped by Internet-Dependency
Percentage of firms

5 years and younger

The Internet has to play a...

<table>
<thead>
<tr>
<th>Role</th>
<th>5 years and younger</th>
<th>6 years and older</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td>15</td>
<td>85</td>
</tr>
<tr>
<td>important role</td>
<td>13</td>
<td>87</td>
</tr>
<tr>
<td>subordinate role</td>
<td>10</td>
<td>90</td>
</tr>
</tbody>
</table>

Source: IW Future Panel (2011)
Employee Qualifications

Employee qualifications in businesses and therefore their demand for highly-skilled personnel will be of key importance in the foreseeable future. Demographic change will significantly reduce the number of potential employees. Even more so, highly skilled personnel will be in demand as more complex tasks require a better skilled workforce. Consequently, it is important to analyse how the role the internet has to play in a firm influences their demand for highly skilled personnel.

Employee qualifications in businesses can vary considerably depending on the branch of industry, main economic activity and product/service. The market for skilled workers is currently weak and businesses in numerous branches are facing a shortage of skilled workers. In addition, demographic change will make it even harder in future to find qualified workers. That is why it is important to at least ask about employee qualifications in regard to the newly defined subareas of German business.

Businesses that are dependent on the internet have a key activity (product or service) that is dependent on the internet. Employees need specialist know-how when it comes to the manufacturing or use of complex products and services. Taking a look at German businesses sorted according to the role the internet plays, it is striking that those with business models that are strongly dependent on the internet have considerably more highly qualified employees than those with business models that are less dependent on the internet. This speaks for a greater complexity of the economic activity and underlines the internet’s cross-cutting function: Internet-based ICTs are being integrated into more and more products.
Employee Qualifications grouped by Internet-Dependency
Percentage of firms

The Internet plays a...

Graduates without professional qualification

<table>
<thead>
<tr>
<th>Role</th>
<th>Graduates</th>
<th>without professional qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td>39</td>
<td>9</td>
</tr>
<tr>
<td>important role</td>
<td>31</td>
<td>51</td>
</tr>
<tr>
<td>subordinate role</td>
<td>24</td>
<td>59</td>
</tr>
<tr>
<td>with professional qualification</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

Source: IW Future Panel (2011)
Research and Development (R&D), Innovations

Research and development (R&D) has crystallised in numerous IW Consult studies as one of the key success factors for companies. Companies with strong and well-funded R&D departments can usually profit from a high number of innovative products and/or services that they bring to the market more successfully than their peers. So, they gain competitive advantages.

Given the aforementioned conclusion that businesses that use the internet very intensively across the entire business model employ a considerably higher share of graduates, it is fitting that these are also significantly more active in the field of R&D. On average, they invest more money, measured against their total revenue. It is only in downstream, though no less complex, construction activities that the less internet-friendly companies lead the way. The two activities are often the basic prerequisites for innovations. That applies both to innovative products and services and innovations in process design in the enterprise or in regard to marketing. The group of businesses whose business models are particularly dependent on the internet, however, stands out on account of the considerably higher share of revenue generated from new products and services. The same also goes for shares of revenue recorded in the IW Future Panel that are generated by means of market innovations and products/services with USPs.

More specifically, that means that using the internet more intensively across all building blocks appears to have advantages in regard to implementing and marketing developments in the company.

The internet can, in fact, help to boost the success of an innovation at various levels in the enterprise. On the one hand, the targeted use of the internet, when used as a research tool by high-qualified workers, can quickly bring knowledge into the business. This knowledge can be quickly distributed and used across the business, although the prerequisite is effective internal knowledge management. Here, too, the internet can support processes. Open collaboration systems, such as cloud solutions, enable employees to quickly share their ideas and develop them further with others. Most good ideas often fail in the early phase on their path to becoming an innovation.

But the internet can also provide assistance in later stages of the innovation process. In particular, an innovation can be made available to potential customers in a targeted fashion with relatively little effort once it is ready for the market. This targeted customer contact is a special feature of the internet.
## Research and Development (R&D) and Innovation Success grouped by Internet-Dependency

### Percentages

<table>
<thead>
<tr>
<th>We conduct…</th>
<th>Research</th>
<th>Development</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We conduct…</strong></td>
<td>39</td>
<td>66</td>
<td>38</td>
</tr>
<tr>
<td>5% or less of our revenues</td>
<td>64</td>
<td>72</td>
<td>82</td>
</tr>
<tr>
<td>The Internet plays a…</td>
<td>key role</td>
<td>important role</td>
<td>subordinate role</td>
</tr>
<tr>
<td>more than 5% of our revenues</td>
<td>36</td>
<td>28</td>
<td>18</td>
</tr>
</tbody>
</table>

### % of Revenue from innovative Products/Services

<table>
<thead>
<tr>
<th>% of Revenue from innovative Products/Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
</tr>
<tr>
<td>more than 5% of our revenues</td>
</tr>
<tr>
<td>important role</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>23</td>
</tr>
<tr>
<td>36</td>
</tr>
<tr>
<td>28</td>
</tr>
<tr>
<td>18</td>
</tr>
</tbody>
</table>

Source: IW Future Panel (2011)
Internationalisation and Exports

Internationalisation and exports stand for Germany’s international economic success. This Section analyses the link between the role the internet has to play in a firm and its success in terms of internationalisation and exports.

The internet provides easier access to international markets even for small businesses that otherwise often have to turn to marketing companies or similar institutions, which costs money. However, the results of the BM²D reflect this only to a small degree.

Around three fifths of businesses in which the internet has a key role to play are international players, i.e. they import or export products or services, have sites outside of Germany or engage in R&D abroad. This share hardly differs from other businesses. And businesses that are not dependent on the internet hardly differ from the two other categories. The same goes for the share of exports of total revenue, where there are hardly any differences in regard to level of use of the internet. Only expectations are more often positive in businesses whose business models are strongly dependent on the internet. And 61 per cent believe that the share of exports will increase in the future.

The internet is, therefore, less decisive as regards exports than is often claimed.
Internationalisation and Exports grouped by Internet-Dependency
Percentages

We are active internationally

<table>
<thead>
<tr>
<th>The Internet plays a...</th>
<th>Export &gt;15 % of gross revenues*</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td>61</td>
</tr>
<tr>
<td>important role</td>
<td>59</td>
</tr>
<tr>
<td>subordinate role</td>
<td>54</td>
</tr>
</tbody>
</table>

We* expect our exports to...

decrease

<table>
<thead>
<tr>
<th>The Internet plays a...</th>
<th>decrease</th>
<th>increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>key role</td>
<td>2</td>
<td>61</td>
</tr>
<tr>
<td>important role</td>
<td>5</td>
<td>56</td>
</tr>
<tr>
<td>subordinate role</td>
<td>5</td>
<td>48</td>
</tr>
</tbody>
</table>

*with respect to exporting firms; Source: IW Future Panel (2011)
A Closer Look at the Branches of Industry

So far, all results reported here reflected the situation of the German economy as a whole based on the IW Future Panel. To gain more in-depth insights into particular lines of industry and the role the internet has to play for them, a different sample of more than 13,000 German firms has been used. This sample represents the avant-garde users within each line of industry defined by their use of Search Engine Marketing (SEM).

The same industry effects as were revealed in the previous chapter will be revealed in this chapter in regard to the level of dependency of business models on the internet. In order to be able to identify the effects more clearly, this chapter draws on a sample of search engine marketing (SEM) users (total of more than 13,000 businesses) that are representative for Germany on account of industry affiliation and size (based on number of employees), but which differ on account of their basic high level of affinity with the internet.

The chart on the right shows the significant differences between the sample from the IW Future Panel and the sample of SEM users. Without taking account of the 18 per cent of businesses in Germany that do not yet have internet access, double the number of SEM users can be assigned to the group of businesses in which the internet has a key role to play. The group of businesses in which the internet has an important role to play is roughly the same size. Thus, there is a larger group of businesses whose business models are only weakly dependent on the internet in the IW Future Panel.
The Internet's role: A Comparison of IW Future Panel and German SEM-Users

Percentage of firms with Internet access

IW Future Panel

Business Model's Internet-Dependency

<table>
<thead>
<tr>
<th>Role</th>
<th>IW Future Panel</th>
<th>SEM-Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Very strongly</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Strongly</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>Moderately</td>
<td>39</td>
<td>41</td>
</tr>
<tr>
<td>Very moderately</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>Moderately</td>
<td>22</td>
<td>9</td>
</tr>
<tr>
<td>Only slightly</td>
<td>22</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: IW Future Panel (2011) and company survey of 13,193 firms in June 2011
Overall, manufacturing industry generates the highest revenues of any industry in Germany. Strong branches in this industry are, for example, metal product manufacturing, mechanical engineering and energy supply. There are also many businesses involved in the manufacturing of printed products and food and fodder.

If one looks at the Internet-pioneers of the manufacturing industry in Germany, it becomes clear that a strong ‘digital mainstream’ has emerged, that is firms whose business models are dependent on the internet at least to a moderate degree. The share of businesses whose business models are strongly dependent on the internet is, however, rather low in this branch of industry. Only one in four of these pioneering businesses belongs to this group. There are just as many businesses in which the internet has no significant role to play.

A colourful picture emerges in this sector in the individual business model building blocks. It is striking that, on average, 71 per cent of pioneering businesses in manufacturing industry have significant costs on account of the internet. Thirty-eight per cent of the businesses procure the majority of their goods online and nearly half cooperate intensively with partners that conduct a large part of their business online. By contrast, revenue generated online in the group of pioneers is low: only 19 per cent of total revenue is generated online.

The fact that businesses in this pioneering group do not use the internet very intensively for customer contact and customer relationship management when compared to other industries can be explained by the fact that this branch of industry is heavily involved in b2b business and is aimed less at private customers. That is why, in the services industry, for instance, use of the social media clearly exceeds that in the manufacturing industry (where only one in four businesses uses social media). This is also reflected in the question regarding customer segments. Just over one third of businesses stated that their customer groups are largely online. That differs very considerably to the grouping ‘commerce, hotel and catering industry, automobile repairs’, 48 per cent of whose customers are online.
Grouping by Business Model’s Internet-Dependency (left) and the Internet’s role (right)

Percentage of firms with Internet access; Source: company survey of 13,193 firms in June 2011

<table>
<thead>
<tr>
<th>Proportion of Online Revenue</th>
<th>Proportion of Firms using Social Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 per cent</td>
<td>24 per cent</td>
</tr>
</tbody>
</table>

The Internet affects a major part of…

Percentage of firms agreeing

- Customer Segments: 34%
- Channels: 60%
- Customer Relationships: 56%
- Key Partners: 47%
- Value Proposition: 27%
- Revenue Streams: 28%
- Key Activities: 37%
- Cost Structures: 71%
- Key Resources: 38%
Looking at the pioneers in the German construction industry, it emerges that the internet has the least dominant role to play in these enterprises’ business models compared to other pioneers in their industry groups. A total of 15 per cent of businesses in the construction industry have business models that are only slightly dependent on the internet; 23 per cent are weakly dependent on the internet. At only 20 per cent, the group of businesses in which the internet has a key role to play in the construction industry is the smallest compared to other industries.

Since the majority of customer segments of only 30 per cent of businesses use the internet for their business activities, it is no surprise that customer contact in this industry is the least internet-friendly; the same goes for customer relationship management. Use of social media is just as low as the share of total revenue generated online.
Grouping by Business Model’s Internet-Dependency (left) and the Internet’s role (right)

Percentage of firms with Internet access; Source: company survey of 13,193 firms in June 2011

<table>
<thead>
<tr>
<th>Proportion of Online Revenue</th>
<th>Percentage of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 per cent</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proportion of Firms using Social Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 per cent</td>
</tr>
</tbody>
</table>

The Internet affects a major part of...

Percentage of firms agreeing

- Customer Segments: 30
- Channels: 56
- Customer Relationships: 49
- Key Partners: 41
- Value Proposition: 22
- Revenue Streams: 22
- Key Activities: 34
- Cost Structures: 57
- Key Resources: 29
Transport, Logistics and ICTs

Looking at the pioneers in the ‘transport, logistics and ICTs’ industry grouping in Germany it emerges that businesses have digitised their business models to the same extent as the manufacturing industry group, although their business models are not strongly dependent on the internet. This group comprises different branches of industry, such as land transport and transport by pipelines, postal, courier and express services, as well as strong branches in the ICTs sector, such as ICT service and information service providers.

On average, one in four firms have a value proposition that is directly dependent on the internet. That is low in comparison to the pioneers in other industries, and only the construction industry has fewer products that are dependent on the internet. Looking at business models, this industry grouping comes last when it comes to online customer relationship management. This is also recognisable in the low use of social media and is probably due to the strong b2b focus of this industry grouping.

Given that only 19 per cent of total revenue is generated online in this group, it demonstrates the lowest affinity with online trade. Nevertheless, an average of 44 per cent of businesses are in contact with partners that use the web for their own economic activity.
Grouping by Business Model's Internet-Dependency (left) and the Internet’s role (right)
Percentage of firms with Internet access; Source: company survey of 13,193 firms in June 2011

Proportion of Online Revenue
- 19% per cent

Proportion of Firms using Social Media
- 22% per cent

The Internet affects a major part of...
Percentage of firms agreeing
Business Services

Business services include branches such as real estate and housing, freelance, academic, technical and other business services. This industry grouping, which is characterised by its provision of services, comprises tax advisors, engineering offices, travel agencies and recruitment agencies.

Looking at the pioneers in this group, which are characterised by greater affinity with the internet, it is striking that use of the internet has become very widely established. Of all the branches of industry investigated, the share of businesses whose business models are strongly dependent on the internet is very high: nearly 50 per cent. Business services are far ahead of other industries in nearly all business model building blocks.

The internet has a great influence on the key activity (product or service) in nearly one in two businesses in this sector. In no other branch of industry is that influence as marked as here. For example, the internet has a big role to play in 62 per cent of the businesses’ procurement. Businesses in the banking and insurances sector follow, 13 percentage points behind. The use of social media has a role to play in nearly one in two of these businesses, which is reflected in their extremely internet-oriented customer contact and customer relationship management. Service providers, therefore, in particular use the internet for reaching their customers.

What is interesting in this sector is the relatively small group of enterprises whose business model is only very weakly dependent on the internet. Only 5 per cent of the businesses surveyed in this sector are offline – the smallest share in all sectors.
Grouping by Business Model's Internet-Dependency (left) and the Internet's role (right)
Percentage of firms with Internet access; Source: company survey of 13,193 firms in June 2011

<table>
<thead>
<tr>
<th>Proportion of Online Revenue</th>
<th>Proportion of Firms using Social Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>27 per cent</td>
<td>46 per cent</td>
</tr>
</tbody>
</table>

The Internet affects a major part of...
Percentage of firms agreeing

- Customer Segments: 45%
- Channels: 68%
- Customer Relationships: 67%
- Key Partners: 58%
- Value Proposition: 49%
- Revenue Streams: 49%
- Key Activities: 56%
- Cost Structures: 79%
- Key Resources: 62%
Looking at the pioneers in the group comprising commerce, the hotels and catering industry and automobile repairs in Germany, it is evident that the group whose business models are dependent on the internet is just as large as in the business services group. Nevertheless, the share of enterprises whose business models are very weakly dependent on the internet (12 per cent) is still high compared to other sectors. Taking a closer look at this relatively heterogeneous group, the German hotel and catering industry uses the internet the least. Official statistics reveal that only 57 per cent have internet access. The average share of online revenue of the total revenue (27 per cent) is clearly driven by businesses in trade.

Taking a closer look at the individual business model building blocks, the majority of customer segments of 48 per cent of businesses is online, but nevertheless the internet is used as a channel only to a moderate degree when compared with other sectors. The share of social media users is significantly lower than in other sectors, such as the banking and insurances sectors, and the business services group. It is also interesting to look at cost structure: Despite the large number of digitised businesses, in 36 per cent of the businesses hardly any costs arise for work on or with the internet.
Grouping by Business Model’s Internet-Dependency (left) and the Internet’s role (right)

Percentage of firms with Internet access; Source: company survey of 13,193 firms in June 2011

Proportion of Online Revenue

- 27 per cent

Proportion of Firms using Social Media

- 35 per cent

The Internet affects a major part of...

Percentage of firms agreeing

- Customer Segments: 48
- Channels: 66
- Customer Relationships: 60
- Key Partners: 47
- Value Proposition: 38
- Revenue Streams: 38
- Key Activities: 50
- Cost Structures: 64
- Key Resources: 37
Banks and insurances form a very service-oriented group that includes insurances, reinsurance companies, pension funds (excl. social insurance schemes) and financial services and associated activities.

The pioneers in the banking and insurance industry use social media slightly more frequently than business services do. These use the internet as their channel for reaching customers a great deal. It is interesting to note that only just over one third of businesses state that the majority of their customers actively use the internet. But 70 per cent of these businesses use the internet to reach the majority of their customers. The share of businesses whose work on and with the internet gives rise to costs is relatively high. This is often also dependent on the high density of computer workstations and the tendency for activities in this industry to be knowledge-intensive. The share of businesses that do the majority of their procurement online is also high, at just under 50 per cent. Orders are less frequently large-scale orders of raw materials than is the case in manufacturing industry. Instead they tend to buy operating resources, which they can often do in internet marketplaces that specialise in b2b trade.
Grouping by Business Model’s Internet-Dependency (left) and the Internet’s role (right)

Percentage of firms with Internet access; Source: company survey of 13,193 firms in June 2011

Proportion of Online Revenue

- 23 per cent

Proportion of Firms using Social Media

- 47 per cent

The Internet affects a major part of...
Percentage of firms agreeing

- Customer Segments: 39
- Channels: 70
- Customer Relationships: 57
- Key Partners: 41
- Value Proposition: 33
- Revenue Streams: 30
- Key Activities: 39
- Cost Structures: 71
- Key Resources: 49
The Internet’s Importance for Germany’s Economy

The study at hand was the first to assign economic significance to the internet. To that end the perspective was switched from the supplier to the user. The study assessed to what extent the business models of German enterprises are dependent on the internet in order to function properly. For the businesses that means that the internet plays a key, important, subordinate or no role.

While around 18 per cent of businesses in Germany still do not have internet access, the internet has an important to a key role to play in 50 per cent of businesses. The economic significance of the internet is primarily reflected in terms of the revenues (46 per cent) and number of employees (46 per cent) of those businesses that use the internet a lot. The relevance of the internet is, however, on no account limited to specific industries, but cuts across all sectors. Taking a closer look at the business models of these enterprises also provides a deeper understanding of the effects involved and provides further points of attack for the qualitative macro-economic importance of the internet for German businesses.

It becomes clear that significant costs arise in regard to work on and with the internet for businesses across all industries. It is equally as unsurprising to find that the internet is usually most important in regard to customer contact (Channels) and customer relationship management (Customer Relationships). Advertising clearly follows consumer behaviour; the more time consumers spend on the internet, the more important it is to address them there and not on TV or in the print media. The same also applies to the b2b sector. Businesses are increasingly using online channels for their procurement. Employees spend more time on the internet. That is why it makes sense and is target-oriented to address these customers online. The relevance of the internet in regard to cooperation with key partners is also high.
Sample distribution according to respective groups
Percentage of firms with Internet access agreeing

We expect to grow our business in the next 3 to 5 years

Source: IW Future Panel (2011) and company survey of 13,193 firms in June 2011
These first three points already indicate the qualitative relevance of the internet. Businesses’ cost structures are shifting. Since the late 1980s strong investments have been made in setting up and maintaining IT structures in businesses. The more IT resources are outsourced, the lower and more plannable the involved costs. Taking a comparative view, the costs are shifting from hardware to the internet; IT departments will continue to be streamlined. Maintenance will be carried out centrally by server system providers. The same goes for the loading of software updates. Terminals will also become less and less complex. Local storage media will become less relevant. Purchasing decisions will be made on the basis of operability and compatibility, and the same will apply to services. It is clear that the developments referred to in the above will take time, but they are definitely foreseeable.

The advertising market, by contrast, has for some time been undergoing fundamental change that is also reflected in the business models of German enterprises. The internet is increasingly being used as the preferred channel for contacting customers. Those advertising channels that used to dominate are having to fight ever harder for their customers. At the macroeconomic level the internet opens up new competition that creates greater balance between small and large, national and international businesses. This development has its advantages for Germany, at least for that part of industry that understands internet processes and approaches its customers in a targeted fashion there and can, possibly, also address them over and above their own particular region. But businesses from other regions as well as other countries can do the same. The competition will, thus, become fairer overall, but on no account simpler. Developments will happen more quickly and competitors will also pop up from previously irrelevant regions or markets.
And, just as quickly, previously unknown businesses can become partners even if they are based in far-away countries. The internet holds considerable potential in regard to cross-border cooperation. In order to be able to effectively shape such cooperations, systems must be compatible. The magic word is ‘standards’. Both German and European politicians and businesses have some catching up to do in this area, because those who master the standards of the future will also master the markets of the future.
Methods
This Section presents briefly the methodological back-
ground to the study at hand.

The System Behind the Segments:

For each of the nine business model building blocks as defined by Osterwalder and Pigneur (2010), the firms in the surveys were asked to indicate the internet's importance on a Likert-scale ranging between 0 and 4 points. Zero points referred to “no significance” and 4 points referred to “high significance”. From these data, an index was computed by summing all points over the nine business model building blocks. Cronbach’s Alpha was >.900 and all items loaded on common factor in an exploratory factor analysis (EFA). This indicated homogeneity amongst the nine items. The segments were constructed as follows: Segment 1: 32 points or more; Segment 2: 27 to 31 points; Segment 3: 18 to 26 points; Segment 4: 9 to 17 points; Segment 5: 5 to 8 points; Segment 6: 0 to 4 points; Segment /: Firms without internet access (from official statistics).

The Two Samples:

The sample for the analyses representative for the German economy (with some exceptions in the social service sector) was taken from the 17th IW Future Panel. The sample of SEM-Users came from the “Faktor Google” study conducted in 2011 by IW Consult on behalf of Google Germany (more information on this study can be found at www.faktorgoogle.de). Both samples were weighted by size (number of employees) and line of industry to match the German overall population of businesses (commercial register). Additionally, both samples were corrected for possible biases concerning their online sales activities using the official statistics from the Statistisches Bundesamt Germany (Federal Statistics Office).