The Bases of Successful Market Entry: the Liability of Size and of Newness in E-commerce

by Thomas Ehrmann, Florian Haas and Rainer Harms, University of Muenster, Germany

Abstract

Even though e-commerce almost disappeared from public discussion, it still assumes a vital role in the strategic management of most enterprises. New entry in e-commerce, whether as a new business segment of an established company or as a new enterprise, is likely to deal with the liabilities of size and newness. The aim of this paper is to discuss if those factors have an impact on the implementation and success of B2C e-commerce. We chose the online book market as our reference market and drew a random sample of retailers and publishers with an online shop. The quality of the web presence, indirect success (number of links to a particular site) and direct success (turnover of the web shop) were compared in subsamples constructed by the use of median splits according to age and size. Younger companies and larger companies were found to have a web presence of higher quality and were more successful than older or smaller companies. We conclude that the liabilities of newness do not seem to have an adverse performance impact in e-commerce. However, when a market entry is considered, new players must ensure that they can commit enough resources to build a high quality web presence.

Thomas Ehrmann
(ehrmann@ug.uni-muenster.de)

is Professor for Business Administration at the University of Muenster, Germany. Before that he was Senior Manager with Price Waterhouse and director of strategy with a big telecom firm. His research focuses on strategic management, network industries and entrepreneurship.

Florian Haas
(haas@ug.uni-muenster.de)

is research assistant within the Ph.D. program at the faculty of Business Administration at the University of Muenster, Germany. He received his degree in Industrial Engineering (M.S.I.E.) at the University of Karlsruhe, his actual work focuses on performance measurement with mathematical programming approaches, especially Data Envelopment Analysis.

Rainer Harms
(harms@ug.uni-muenster.de)

is research assistant within the Ph.D. program at the faculty of Business Administration at the University of Muenster, Germany where he graduated as an economist in 2000. His main research interest is entrepreneurial management, both conceptually and empirically. He also works on geographical clustering.

Introduction

In the run-up to launching new business, there are various levels of freedom available to the participating enterprises. The levels of freedom relate not only to the contractual form of market entry that is selected (complete independence, franchisee etc.), but also to the selection of industry sector. There are four basic options with respect to product or process innovation for the sector or product domain in which the enterprise founder wishes to be active with his new venture (Picot et al. 1989, p.259).

These various options are associated with different market entry strategies, again with differing modes of reaction from the enterprises already established in the market. The classic market-entry considerations relate to positioning advantages in existing industries, which can be achieved through product innovations or product differentiation (in market niches, for example). Another possible means of innovation is to improve the manufacturing process of well known products substantially, through process innovation.

An empirical analysis of the bases of market entry success in the internet book trade is useful for three reasons. Firstly, such empirical evaluations are conducted far less often than conceptual ones. Secondly, both established firms and start ups have access to the Internet as an additional channel for distribution. This provides an interest-

ing research opportunity because this additional channel can be analysed in a simple comparative analysis as an investment project, which is either managed by a start up or an established firm. Thirdly, we are dealing with a market and industry in which established enterprises have not yet succeeded, through using optimal technologies or establishing long-term contractual relationships, in blocking
the entry of small firms. Thus, the strategies and performance of start-ups and incumbents in a market can be analysed with the objective of gaining more precise insight into successful strategies for start-ups.

Although no longer so prominent in the media as it used to be, presumably as a result of the recessional environment, e-commerce still assumes a central role in the strategic management of most enterprises. This is not surprising, because the intelligent application of e-commerce can create comparative competitive advantages through differentiation and thus secure the existence of the enterprise and potentially achieve revenue increases (Backhaus 1999, p. 26). In this context, e-commerce sellers must highlight the benefits they offer: the advantage in contrast to conventional ‘stationary’ business must be clear, as well as their advantages compared to other electronic offerings in the market.

In market entry, start-ups in particular are beset with particular disadvantages, which arise from their limited size and age. As early as 1965, Stinchcombe drew attention to the difficulties faced by smaller and younger enterprises (Stinchcombe 1965): for a number of small and medium-sized enterprise, relative resource scarcity is an important background against which a successful market entry occurs (‘liability of size’). For young enterprises, there is the additional problem of lacking confidence of suppliers and customers (‘liability of newness’). This applies to some degree to new business segments as well, even though there may be a transfer of reputation from established enterprises to the new business segments.

It can be expected that these factors will also exert an impact in the context of market entries in e-commerce, whether for interdependent enterprises or new business segments of existing enterprises.

The study is structured as follows: after a short discussion of online book selling, the hypotheses to be investigated are introduced. These relate to the significance of ‘liability of newness’ and ‘liability of size’. The methodology of the investigation is also presented and subsequently applied. Finally, the results are discussed, and some implications for new business in this area are presented.

**The structure of the German online book trade sector**

The potential for penetrating, through e-commerce, the value creating system of the book market or supplementing existing business (e.g. in the form of corporate venturing) has been exploited extensively in practice: even though the growth of internet booksellers slowed down from a rate of almost 100 per cent between 1998 and 1999 to twenty per cent between 2000 and 2001, it can still be considered a high-growth market. This is confirmed by the fact that individual turnover has increased by 130 per cent between 1999 and 2000 and by forty nine per cent between 2000 and 2001 (Börsenverein 2002). With a total turnover in the book trade of about 9.4 billion euro in 2001, online trade already comprises three per cent of total industry turnover in bookselling and, considering the growth rates, is set to play an increasingly important role in the future.

**Figure 1: Changes in the value chain of the book trade sector**

![Figure 1: Changes in the value chain of the book trade sector](image-url)
In order to succeed in B2C e-commerce, good online communication is a general success factor (Böing 2001, p. 238). In the book trade, there are, relative to other industry sectors, few opportunities for differentiation with respect to price and product. The product selection is already determined by the focus on the book trade and pricing is largely determined by the resale price maintenance in the booktrade sector in Germany (Altobelli and Fittkau 1997, p. 409). However, firms can influence the quality and comprehensiveness of their internet presence quite substantially. For the researcher, this situation provides an excellent setting, because the influences of pricing and product selection on success are controlled for to a high degree.

The market structure of the German online book trade is characterized by a small number of high-turnover enterprises, a few with moderate turnover and a considerable number with very small turnover (Cybiz 2000, p. 99). There are three basic enterprise types: stationary dealers with online offers, publishers, and pure online dealers. For all types of booksellers, there is the option of linking up to portals such as Buchkatalog.de and/or Buchhandel.de.

Apart from the position in the value chain, an enterprise must consider the extent of its internet commitment. There is a wide range of possibilities between purely stationary business and purely online business. This positioning is fundamental to the strategy of the enterprise.

**Hypotheses**

**Implementation and success**

Changes in the value chain have created new opportunities for entrants and for those already in the market. But only a qualitatively high-value web will, over the long term, attract the attention of the network community and thus reach potential customers. Awareness of a web site can be reflected in the number of links to that particular web site. Advertising a web site has an attention-creating effect. This will only translate into economic success, however, if the web site can, through its quality, retain the attention of customers. It can, therefore, be assumed that a good web site leads to publicity in the form of foreign or external links to the page. The creation of awareness is already a success in itself, but only leads indirectly to higher turnover (Goldhaber 1997). For this reason, this factor can be named ‘soft success’. The following will, therefore, be assumed:

**H1:** A good web creates awareness in the form of a high number of foreign links to the page and thus to indirect success (‘soft success’).

The question can be considered as to the extent to which success depends directly on the quality of the web site. It can be assumed that the purchasing decisions of customers are influenced by the quality of information, delivery conditions, contact potential and attractive prices (Gupta 1997). These factors are included directly in our index of web quality, the Web Goodness Index (WGI). Therefore, the validity of the following hypothesis can be assumed:

**H2:** A good web impacts positively on internet turnover and this raises direct success.

If it can be demonstrated that the implementation of an attractive web site impacts positively on success, the question arises in particular, as to whether, against the background of liabilities of size and newness, there are systematic influence factors on the WGI or on success.

**Liability of newness**

In order to ascertain systematic differences between established companies and new entrants, it is important to consider the requirements of this particular market. In this respect, the competencies possessed by the actors play a central role. If the company has been into business before, these competencies can stem from the previous area of business, so that the age and origin of the new enterprise can be important.

It can be assumed that older firms have a broader and more established resource and competence base. This can be leveraged through establishing a new business area such as an online business. If there had previously been a conventional business, competencies such as knowledge about the goods assortment and customer needs can be exploited. These can also be used in the internet book trade. The arguments in favour of the advantages of older enterprises can thus be exploited by emphasizing the weaknesses that, in inverse, apply to younger enterprises. Thus, a lack of competence from previous business activities and a still insufficient coordination of current business may contribute to a lower level of success in implementing e-commerce. It can therefore be assumed that older enterprises will be more successful in the internet.

**H3:** The older an enterprise, the greater its success in the online book trade.

The study presented here also provides some insights into the relevant capabilities, viewed from other perspectives. The following question arises: is it the old competencies that dealers in particular have established, that are the most effective and can these factors be transferred to the new market? Or is it new competencies that can be established equally well or badly by both enterprise types? The competencies that have been established in the book trade relate in particular to assortment formulation and direct advice provided to final consumers. These competencies can be transferred to the internet and used there advantageously by dealers, in contrast to the situation for publishers.

**H4:** Traditional retailers with an online presence are more successful on the internet than publishers with supplementary electronic distribution.

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Liabilities of size

The relative advantages and disadvantages faced by small enterprises emerge in a comparison of specific advantages and disadvantages faced by larger enterprises. In particular, the differentiation advantages of small and large companies will be considered (Ehrmann, Haas, Harms 2002).

Differentiation advantages of small enterprises

Small enterprises are alleged to have a number of advantages (Mugler 1998, p. 38). Particularly with respect to innovations, which can lead to the establishment of a new business area or the introduction of new processes, SME’s are accredited with specific strengths (Meyer 2001). The ‘classic’ advantages of SME’s are:

- short decision paths (through flat hierarchies),
- customer proximity (through niche positioning),
- flexibility (through unbureaucratic structures and often through dynamic management) and
- high employee commitment (through corporate culture and the ‘immediacy’ of work).

These are also advantageous in the introduction of e-commerce, which constitutes an innovation in the way business is conducted. Especially in e-commerce, with its dynamic, still uncontoured market, the advantages can be particularly significant.

A substantial advantage that applies to smaller enterprises and their internet presence is the availability of standardized product or service offerings. For their desired internet presence, SME’s can apply off-the-shelf applications. These are considerably cheaper than the applications needed by larger enterprises (Upton 1998). This general observation also applies to e-commerce packages. Smaller firms can manage their goods flows with standard e-commerce offerings, whereas larger firms must generally have complex packages which can be adapted individually. This applies not only to the introduction of e-commerce offerings, but also to IT management, the costs and time investment of which rise with increasing demands. Although the availability of standard offerings makes the entry of SME’s into e-commerce considerably easier, there remains the danger that standardized offerings will eliminate the potential for achieving differentiation advantages.

On the other hand, small enterprises can realize a differentiation advantage, because they can select a business model which is oriented substantially around the internet. Stationary dealers can only supplement their existing business by going online. This limits their potential for implementing a business model oriented strictly towards e-commerce.

Differentiation advantages of large enterprises

Apart from the arguments in favour of the ability of small sellers to differentiate in e-commerce, small enterprises also have specific disadvantages. These include the so-called liabilities of size which are particularly prevalent in IT management.

Especially the high costs of IT management can constitute a problem for smaller enterprises. Certainly, the establishment of a qualitatively high-value advertising presence is by no means as expensive as the establishment of a regional or inter-regional stationary retail chain. Nonetheless, the development of an elaborate web site may require investments that are unaffordable for small enterprises (Vlades, Drakos and Berg 1999). Apart from investment costs, those of maintaining and managing the web presence must also be considered. This too, can entail relative disadvantages for small enterprises.

An advantage for larger enterprises can be found in the network economies inherent in e-commerce. If the utility of a good or service rises with the number of existing or expected users, there are network effects (Graumann 1993, p. 1331; Katz and Shapiro 1985, p. 424). Networks develop a positive dynamic – the more users a platform has, the more attractive it becomes for other potential users.

In the internet book trade, the formation of a so-called ‘web community’, which is characterized by network effects, can constitute a substantial growth in customer utility. If a seller creates a communication platform for customers, it is possible that reviews will be written by members and subsequently read by other potential customers. Furthermore, information and links to current topics and advertising can be presented in this area. Consumer utility is created by information that can support a buying decision. If communication between people with similar interests is facilitated, social needs are satisfied as well. The larger the number of participants, the more differentiated and broader the information provided and potential means of contact. Amazon.com provides a good example of how this can be achieved effectively. For some years now, it is possible to evaluate books and music and to indicate how useful the evaluations of other customers have been. For quite some time, users have been able to publish lists of their favourite books or works in a number of fields of interest.

Due to the network aspect, successful communities are necessarily relatively large. Network size is a major determinant of the economic success of a book seller, assuming that the customer will often order where he has gained information. Considering network effects, a seller will be keen to establish an optimal size for his network. In the case of competing networks, the time factor plays a large role. Because the prevail-
ing user basis is an entry criterion, winning users earlier on, will lead to more users over time. In this manner, there is a high level of competitive pressure in the early phase. Temporal and personal price differentiation, such as penetration pricing and gaining of lead users, may provide considerable assistance in the critical early phase of a network (Gramann 1993, p. 1333). Likewise, this can influence expectations with respect to the future number of users. Through penetration pricing and higher investment in the network, the seller can signal that he believes in a large network. For example Amazon.com entices customers to write reviews that increases the attractiveness of the platform by offering them bonuses.

It was argued earlier that a successful web community is, due to network effects, relatively large. This relates to the number of users as well as to the application of IT, which is necessary for the processing and administration of a large numbers of ‘hits’. In order to establish such a community, particularly in the early stage, high levels of investment will be necessary, especially when similar suppliers also wish to set up a net community. This can lead to a situation where there are few large enterprises that dominate a particular online market.

Even though there may be small enterprises that can also develop differentiated advertising offerings, the cost aspect in particular and network considerations as well, lead to the supposition that it is mainly large enterprises that can implement attractive web presences. Even though creativity can partially offset the lack of resources in smaller companies we assume that hypotheses five and six are correct:

**H5:** The larger the enterprise, the better the implementation of its internet presence.

**H6:** The more differentiated the internet presence, the more successful the company is.

**Methodology**

The investigation proceeded in two phases. Initially, on the basis of a two-phase\(^1\), simple random sample, twenty-seven book traders and thirty-three publishers with a presence in the internet were questioned in terms of the number of employees, turnover, share of turnover achieved in the internet, year of foundation of the business and the degree of digitalisation of their business. In order to facilitate subsequent comparisons, we considered a similar number of publishers and dealers in the study.

Furthermore, on the basis of the websites of the enterprises, the WGI was calculated. By using this index, the qualities of the online presences could be compared. This index was subdivided into one so-called basic communication index which provided the fundamental functions of e-commerce, and another sub-index for extended communication and additional attributes.

As a criterion for a successful e-commerce strategy and thus as an independent variable for the following tests as well, the quotient from the stated turnover in the internet and the total number of employees was selected consciously, in order to place enterprise success in relation to the available resources, so that they are comparable. This has the additional advantage that the efficiency of the strategy pursued by the enterprises forms the centre of attention.

**Implementation and success**

The assessment of web site quality is dealt with in the field of usability research, a relatively new field of research in which various methodological approaches are being pursued. A first methodological distinction can be made between expert surveys and user surveys with regard to web quality, however defined. Secondly, whether the evaluation criteria have been developed conceptually (ex-ante) or were ascertained empirically (ex-post), e.g. through methods of scale construction and factor analysis (Alexander / Tate 1999), is methodologically important. Unfortunately, in this discipline, the variety of approaches and the need to adapt the evaluation criteria to the specific object under discussion, render the results almost incomparable. By using generic evaluation criteria and adapting this method to a consideration of the particular qualities of the online book trade, we constructed a scoring model\(^1\) based on the factors ‘user friendliness’, ‘design’, ‘up to date’, ‘communication’, ‘content’ and ‘ordering procedure’. The web sites where subsequently evaluated by experts in the field of multimedia and e-commerce. Even though the factors used in this study have been derived at conceptually, the validity of our scoring model is supported by the fact that an empirical study dealing with web quality in a related field (CD shops) yielded similar factors (Balazs / Christophersen 2002).

**H1:** A good web created awareness in the form of a large number of external links to the site and this raises the indirect success (‘soft success’).

This hypothesis was established by means of Pearson’s correlations between the number of external (or ‘foreign’) links and the WGI. It was evident that there is a positive correlation between the WGI and the number of links from foreign pages. The Pearson correlation coefficient was established to be 0.485 and significant to a level of one per cent. To ensure that this appeal and use of links is not attributable to the factor that it is a special interest shop the correlation was calculated again, this time only for general interest shops. This value was not significant different to the first one, indicating that the product range does not influence the number of links from foreign pages. The impact of prices on the popularity of an online book store can be neglected for the German book market due to its strict price fixing.
This leads to a second hypothesis, that a good quality web has a strong reciprocal interaction with turnover which can be achieved with the site and is thus an integral component of successful implementation and a good, if not the only means of winning new customers and retaining old ones. Here too, Pearson’s correlation coefficient was used, this time between the net turnover per employee and the WGI. On the basis of the data obtained, it was evident that the WGI and the internet turnover per employee are strongly correlated with a value of 0.502. This is significant to a level of one per cent and indicates that a successful implementation of an online strategy can contribute towards business success. It should be noted however that this conclusion is still not yet comprehensive as there are other possible reasons for higher internet turnovers, e.g. marketing expenses.

**H2:** A good web impacts positively on internet turnover and this raises the level of direct success.

Liability of newness

In order to test this hypothesis, we used a segmentation in two groups according to the age. The enterprises were divided into two categories, whereby all enterprises which had been in existence less than ten years were allocated to the group of young enterprises. In this manner, a sufficient number of enterprises remained for the following investigation, without the definition of young enterprises being stretched excessively.

**H3:** The older an enterprise, the greater its success in the online book trade.

It is evident that, in many respects, younger enterprises have an advantage in e-commerce. This difference was tested by means of t-tests and was found to be highly significant.

This result contradicts the hypothesis of an age advantage in the online book trade. On the basis of these results, one can certainly talk of the ‘benefits of youth’.

**H4:** Traditional retailers with an online presence are more successful on the internet than publishers with supplementary electronic distribution.

In order to test the argument that (retail based) capabilities create an advantage in the internet, use can be made of the fact that in the investigation, there was a differentiation between dealers (including those with stationary business), and publishers. The fifth hypothesis was tested by comparing the two independent groups of traditional dealers and publishers with respect to the variables of internet turnover and internet turnover per employee, as indicators of a successful e-commerce strategy.

It was evident that internet turnover and internet turnover per employee do not vary substantially from one another between dealers and publishers. Thus, hypothesis four must be rejected. This suggests that neither of the two groups could achieve an advantage by conveying the classic capabilities through the internet. The capabilities needed to master internet technology and strategies do not seem to derive from the classic capabilities. A further objectively determinable resource in the context of this investigation is the age of the enterprise, which can also be seen as related to the knowledge and capabilities (such as experience) which is available to enterprises. This parameter is even slightly negatively correlated to the success of online distribution (Pearson’s correlation coefficient is -0.175).

For publishers, this can be interpreted as meaning that the disadvantages of lacking experience with end customers can be somewhat reduced. Some elements such as location, store layout and training of personnel in advising customers and in other business functions, can be advantageous in the real world, whereas in the internet, they have little relevance. Obtaining knowledge for a successful internet presence is, however, equally easy or equally difficult for both types of companies.
Another approach to interpreting this data is to dispute the disintermediation thesis. Following this thesis, one would suggest that publishers have a considerably higher web turnover than dealers. The cost advantage of bypassing the intermediate stages of trade should be reflected in dealers being forced out of the market. However, this cannot be confirmed empirically⁹.

In order to clarify the position of dealers and publishers, the success of the relevant factor WGI and the number of external links to the site, can be summarized again in table three¹⁰.

**Liabilities of size**

H5: The larger the enterprise, the better the implementation of its internet presence.

In order to test this hypothesis, the first step was a segmentation in two classes according to the number of employees¹¹. Therefore the enterprises were divided up into two groups on the basis of percentiles, where each group had roughly the same number of cases. It emerged that both groups of large and small publishers or dealers differed significantly on the five per cent level, with respect to the aggregated quality of the web site. The larger enterprises were able to achieve a higher WGI on average. The proof was obtained with the Mann-Whitney U-Test, which enabled a comparison of two samples, independently of distribution. The probability of error was 0.043. The exact results of the test are presented in table four.

The next step entails a detailed evaluation in which the WGI is subdivided in indices of basic and extended communication, respectively. The areas of basic communication, ordering options and payment are regarded as the constitutive service aspects of B2C e-commerce. Additional communication services can be used as means of differentiation and are grouped in the index of ‘extended communication’.

Also with respect to both of these groups, a comparison was made with the Mann-Whitney U-Test. This revealed a somewhat differentiated picture. While the assumption of difference in the basic services must be rejected, the difference between both groups was significant with respect to the extended communication options. This suggests that small enterprises are just as capable as large ones of providing the important basic function of e-commerce, but reveal deficits in terms of additional communication options and content. This significant difference can be explained by the fact that these areas lead to an over-proportional financial and personnel commitment compared to the basic functions.

H6: The more differentiated the online presence, the more successful the company.

In the next step, it was then possible to test empirically, by means of correlation analysis, the relationship between

<table>
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<tr>
<th>Table 3: Determinants of online strategy for publishers and dealers</th>
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<tbody>
<tr>
<td><strong>Type of business</strong></td>
</tr>
<tr>
<td>Publisher (n=33)</td>
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<tr>
<td></td>
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<tr>
<td>Dealer (n=11)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total (n=59, including the pure online dealers)</td>
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<tr>
<th>Table 4: The results of the Mann-Whitney U-Test in a comparison of the WGI's of smaller and larger enterprises</th>
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<tbody>
<tr>
<td><strong>Web Goodness Index (WGI)</strong></td>
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<tr>
<td>Publisher (n=33)</td>
</tr>
<tr>
<td>Dealer (n=11)</td>
</tr>
<tr>
<td>Total (n=59, including the pure online dealers)</td>
</tr>
</tbody>
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<tr>
<th>Table 5: The results of the Mann-Whitney U-Test comparing the elementary service and extended communication offerings of smaller and larger enterprises</th>
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<tbody>
<tr>
<td><strong>Added up indices basic communication, ordering options and payment</strong></td>
</tr>
<tr>
<td>Mann-Whitney U</td>
</tr>
<tr>
<td>Wilcon W</td>
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<tr>
<td>Z</td>
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<tr>
<td>Asymptotic Significance (two-tailed)</td>
</tr>
</tbody>
</table>

Grouping Variable: Category according to the number of employees
the level of turnover achieved per employee on the internet and the index of ‘extended communication’. The Pearson correlation is 0.398, this is significant on a five per cent level and indicates that a differentiated internet presence could lead to higher turnover. It has been argued that a differentiated web presence is easier to attain for larger companies. Nevertheless, smaller companies as well, can succeed when they use a differentiated web presence. Thus, the thesis of liability of size has to be attenuated somewhat.

**Conclusions**

The initial question was whether, using the example of the online book trade, the basic problem of start-ups, the liabilities of size and newness, also have an impact in B2C e-commerce. Proceeding from the assumption that the major success criterion in the online book trade is a good web presence, the initial question can be differentiated further. For one thing, are there direct age and size advantages in the formation of a web presence? Secondly, is there a direct connection between age respectively size and success?

In order to place these questions on a sound footing, the first step is to determine the quality of a web presence by means of the WGI. The impact on economic success of a high-quality web presence could be confirmed as significant. With respect to age, it could be ascertained that younger dealers and publishers have a significantly higher level of success in the internet. It would seem that the origin of the company is not significant, since the internet requires new capabilities. A clear correlation between the quality of the web site and enterprise size was evident.

We acknowledge that there might be some limitations to the findings of our study. First, the analysis is restricted to German firms which operate in a particular market setting. Future investigations may extend the scope of analysis by using an international sample of firms. A second issue results from the operationalisation of website quality. Advances in usability research and web design itself could necessitate additional measures, which might have an influence on our findings.

The implication for younger enterprises is that a planned new entry into the online market should proceed with as high a quality level as possible. This is an important and justified conclusion, because a high-value presence can be regarded as a means of differentiation with respect to competitors. However, entry decisions must be considered in the broad context of market and resource evaluation.

**Endnotes**

1 For market entry strategies, see also Ehrmann / Biedermann (2002).

2 The option of disintermediation can also be exploited through traditional mail order retail. Since the focus of this paper is not on disintermediation per se, but the success factors of market entry using e-commerce, it should be noted that ecommerce can be seen as a new retailing option for all players in the industry.

Table 6: The results of the linear regression illustrating the impact of age, WGI and number of employees on the internet turnover per employee

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet turnover per employee (R Square = 0.344; F significant at 1%; n = 38)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>-55650.090</td>
<td>35763.752</td>
<td>-1.556</td>
<td>0.129</td>
</tr>
<tr>
<td>Age</td>
<td>-439.307</td>
<td>186.946</td>
<td>-2.350</td>
<td>0.025</td>
</tr>
<tr>
<td>WGI</td>
<td>7195.690</td>
<td>2820.160</td>
<td>2.552</td>
<td>0.015</td>
</tr>
<tr>
<td>Number of employees</td>
<td>513.829</td>
<td>239.981</td>
<td>2.141</td>
<td>0.040</td>
</tr>
</tbody>
</table>
The enterprises are divided up into two groups, as suggested by Bamberg and Baur (1988) or Pfanzagl (1972). Initially, a questionnaire was sent out and a second round of questioning interviewed the non-responding companies by telephone. The presence of a so-called ‘nonresponse bias’, which limits the degree of representativeness of the study could be eliminated with the aid of various means comparisons, such as turnover in the sample firms and information provided by the German book trade association.

The problems associated with scoring models in general are familiar in literature. For example, the inclusions, omissions and weighting of factors are of subjective nature, and different combinations of factors can lead to different scores. It must also be taken into account that the WGI must be adapted when the state of the art in web design changes.

In this study, we followed the recommendations by Klaus / Röttger (1998). The evaluation catalogue can be obtained from the authors. In the ‘content’-category, the size of the web was operationalised by the number of pages in a web sites, which was evaluated using the program ‘Black Widow’ (Version 4.07).

However, there were no significant correlations between age and WGI, indicating that the relevant competencies for e-commerce can be acquired equally well by both age groups.

The non-parametric Mann Whitney U-Test was applied as the variables are not sufficiently normally distributed.

The Mann-Whitney U-Test revealed seventy for the pure internet turnover and ninety-four for the internet turnover per employee. Apparently clear differences in the means may be explained through outliers, which reflect the high variance, but are not statistically significant.

It must be taken into account that the resale price maintenance will certainly distort this effect.

Apart from the publishers and traditional dealers, the pure online dealers and those that have a close cooperation with an online dealer, form two additional groups. This also explains their higher number of external links and the high variance in the sample.

The enterprises are divided up into two groups on the basis of percentiles, where each group has roughly the same number of cases.

**References**


