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Measurement of International and Product Diversification in the Publishing Industry

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Corporate diversification has become an integral part of the strategy of many publishing companies. These diversification strategies may include both product diversification and international geographic diversification. This study demonstrates the diversification strategy of large-sized publishing companies. A number of measures and techniques are used to measure the diversification of these companies. We construct an additional measure to show the international diversification of the publishing companies. The findings indicate the existence of a set of common underlying dimensions or factors between a few measures, although no evidence of unidimensionality amongst all diversification measures exists. The various diversification indicators measure different aspects of diversification of publishing companies. Our data show that the publishing companies diversify into related activities and businesses and that, in particular, North American publishing companies do not diversify internationally.

Corporate diversification has become an integral part of the strategy of many publishing companies. These diversification strategies may include both product diversification and international geographic diversification. Nowadays, the information and communications landscape is a playing field much larger than the traditional publishing sector, and many companies have to redefine their "core" businesses. In particular, the use of new information and communication technologies has introduced a new phase in the evolution of the traditional media industry.

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New technologies such as the Internet make it possible to combine traditional and new businesses with an additional element that was missing in the earlier markets: interactivity. In other words, publishing is now part of the global information and communications industries and interacts with many different fields within this group of industries and technologies.

Due to trends in business globalization, convergence of different information and communications markets, technological and demographical developments, and the economic need for an increasing critical mass, companies have adapted to these changes and responded quickly to create or to sustain their competitive advantages. The wave of mergers and acquisitions in the media landscape during the 1990s is an indication of the popularity of diversification as a viable corporate strategy for publishing companies. Companies have expanded horizontally, vertically, and globally to maximize their competitive advantages and to strengthen their product portfolio. The leading companies in this area have indeed preferred to diversify into a number of unrelated businesses and related businesses that are centered on their traditional core business (Kranenburg, Cloodt, & Hagedoorn, 2001). In general, these companies have followed a strategy of gradual diversification into related new businesses. In addition, the strategy of these companies has changed toward a focus of expansion in foreign markets. An important element is found in the preference for the location of acquired companies in specific regions. For instance, European companies are becoming more focused on acquiring specialized North American companies that have a competitive advantage in state-of-the-art technologies (Bennett, 1999).

The purpose of this article is to establish a better understanding of the diversification strategy of companies operating in a media industry, considering the various developed measures on diversification. In the industrial organization and management literature, many measures are developed to demonstrate the diversification level of companies. The majority of measures are focused on product diversification (Jacquemin & Berry, 1979; Kim, 1989; Rumelt, 1974; Varadarajan & Ramanujam, 1987). However, empirical evidence shows that many leading media companies are expanding internationally to exploit emerging opportunities for international business, by finding new markets and additional sources of inputs (Gershon, 2000; Holtz-Bacha, 1997; Kranenburg, Cloodt, & Hagedoorn, 2001). Therefore, it also seems important to look at the international nature of diversification.

The sample of the companies that we study consists of large-sized publishing companies from Australia, Europe, and North America. We investigate the unidimensionality among the various diversification measures, while also taking the time dimension into account. Hence, in this study, we make a distinction between diversity, which measures the extension to which firms are simultaneously active in many distinct businesses at a point of time, and diversification, which measures changes in diversity over time. Because of the increasing importance of international expansion, we construct an additional measure to show the interna-

tional diversification of these companies. This measure is related to Varadarajan and Ramanujam's (1987) two-dimensional measure based on broad and mean narrow spectrum diversity.

This article is organized as follows. The next section describes the literature on various diversification measures. The data set will be described in the following section, after which we present the results of this study. The last section covers the discussion of the results and some major conclusions to be drawn from of this study.

THEORETICAL BACKGROUND OF DIVERSIFICATION MEASURES

Development and maintenance of competitive advantages involve managerial decisions regarding what activities, businesses, and technologies the company should target for investment, relative to the investments made by competing companies (Geringer, Beamish, & daCosta, 1989). The type of diversification strategy that is used by the firm partly depends on the relatedness of these new products, markets, and technologies with its present ones. Product diversification, defined as expansion into product markets new to the company, has been a highly popular strategy among large and growing companies. However, given the degree of international activities of most companies, both in sales and in production, many are confronted with the choice for international or domestic diversification. This choice implies not only that companies have to decide whether they intend to operate in other businesses domestically or internationally, but that once a choice for international diversification is made, companies still have to consider a certain concentration on particular countries or international regions (Hitt, Hoskisson, & Ireland, 1994).

The literature explains the reasons for a diversification strategy according to a number of motives. Diversification may facilitate the deployment of resources and thereby enhance efficiency. The effective and efficient resource deployment encompasses two fundamental elements of any company's strategy: the range and relatedness of the products sold and the company's relative emphasis on foreign versus domestic operations (Geringer, Beamish, & daCosta, 1989). Amihud and Lev (1981) and Markides (1995) motivate corporate diversification in terms of the reduction of dependence on a few products and markets while limiting the effects of uncertainty in markets and technological developments. Thus, the essence of diversification is taken to be an expansion into new businesses and markets, requiring the development of new competences or the augmentation of existing ones. Another motive that is more intangible refers to the aspiration and goals of top management. Managers can also motivate diversification with the reduction of the probability of bankruptcy in order to provide job security and preserve their firm-specific human-capital investment (Amit & Livnat, 1988).

The sheer volume of research on diversification is an indication of the importance and relevance of the topic. Reflecting this phenomenon is the corresponding rise in the number of measures and techniques of firm diversification (Sambharya, 2000). The most accepted and most popular measures of diversification are based on discrete and continuous business count approaches (e.g., Jacquemin & Berry, 1979; Kim, 1989; Varadarajan & Ramanujam, 1987) and on the categorical (strategic) approach as popularized by Wrigley (1970) and Rumelt (1974). However, the literature is inconclusive in showing which diversification measure has to be used. Previous studies show that findings may depend upon the kind of measure that is used. Hoskisson and Hitt (1990) give a detailed overview of the measurement problems involved in using diversification measures. Clearly each of the methods of measuring corporate diversification has unique advantages and problems. Given the measurement differences, it is important to first study the existence of possible discrimination between the various measures before some inference with regard to corporate diversification can be made (Chatterjee & Blocher, 1992; Sambharya, 2000).

Diversification Measures

The categorical (strategic) approach. The categorical (strategic) approach is a subjective way of measurement. Central to this method is the conceptualization of the core activities of the company. Building on the work of Wrigley (1970), Rumelt (1974) categorized four major diversification strategy categories of large companies. These major categories are single business, dominant business, related business, and unrelated business. These categories provide a spectrum of diversification strategies of companies that diversify significantly into related businesses compared to companies that remain essentially undiversified. The categorization can be based first on the specialization ratio (Rs), which expresses the proportion of a firm's revenues attributable to its largest single business in a given year, and second on the related ratio (Rr), which expresses the proportion of a firm's revenues attributable to its largest group of related business. Specialized business diversification means that a company is basically committed to a single business ($Rs \geq 0.95$ & $Rr \geq 0.70$). Dominant business diversification refers to companies that diversified to only a limited extent from the single business ($0.70 \leq Rs < 0.95$ & $Rr \geq 0.70$). Related diversification of nonvertically diversified firms involves expansion into businesses related to the company's core activities ($Rs < 0.70$ & $Rr \geq 0.70$). Unrelated diversification of nonvertically diversified firms includes entry into businesses and markets unrelated to a company's previous activity ($Rs < 0.70$ & $Rr < 0.70$). Rumelt subdivided these four main categories further into subcategories characterizing the different diversification strategies of companies. This further differentiation is based on the pattern of linkages among the business lines of firms (see Rumelt, 1974, p. 11–32).

This approach has two major disadvantages. First, it demands detailed business-level information from numerous fragmentary sources such as annual reports, newspapers, specialized business reports, and other publications; in other words, this method is very time-consuming. Second, the categorical approach is based on understanding the underlying logic behind the firm's intentions and the assumed relatedness between businesses. Hence, this measurement depends very heavily on the qualitative assessment of diversification patterns.

The business count approach. The argument in support of business count measures has drawn on the objectivity of the measurement method. These measures of diversification are built on established classification systems in which each of a firm's establishments is classified according to its primary classification or activity. Examples of established systems are the Standard Industrial Classification (SIC) system, which classifies all types of economic activities, and the regional classification system, which divides the world into regions. In addition, these objective measures deal with the degree of diversity, whereas the categorical (strategic) diversification measure focuses on the type of diversity. These business count models can therefore investigate within group differences. Continuous measures are variants of the formula diversification = $\sum m_i W_i$, where m_i is the percent of a firm's *i*th classified group revenues or sales, and W_i is an assigned weight summed over all a firm's classified groups (Chatterjee & Blocher, 1992). One of the most popular objective methods is the modified Berry–Herfindahl index (Montgomery, 1982). It relies on a classification system to assess the extent of the firm's operations in different classified groups. The modified Berry–Herfindahl index can be defined as follows:

$$\textit{Berry–Herfindahl diversification} = 1 - \left(\sum_j \mathrm{m}_{ij}^{\,2}\right) / \left(\sum_j \mathrm{m}_{ij}\right)^2 \quad j = 1, \ldots, \mathrm{M},$$

where m_{ij} = proportion of *j*th classified group to *i*th firm's total sales, and M is the number of classified groups in which a firm operates. In this measure, if a firm operates in a single classified group, the Berry–Herfindahl index of diversification is zero and it becomes close to 1 if the firm's total sales are divided equally among any number of classified groups.

Another continuous count method for measuring diversification is the entropy approach. The entropy measure of diversification weights each m_{ij} by the logarithm of $1/\mathrm{m}_{ij}$ and can be defined as follows:

$$\textit{Entropy index of total diversification} = \sum_j \mathrm{m}_{ij}\, \mathit{ln}\left(1/\mathrm{m}_{ij}\right) \quad j = 1, \ldots, \mathrm{M}.$$

This measure is designed to decompose the total diversification measure into managerially meaningful elements of total diversification: unrelated and related diversification, international (related and unrelated) market diversification (Jacquemin & Berry, 1979; Kim, 1989). The modified Berry–Herfindahl diversification index

cannot be decomposed as directly as entropy measure in additive elements that define the contribution of diversification at each level of classified group aggregation to the total. Like the modified Berry–Herfindahl index of diversification, the entropy index of total diversification also yields a score of zero for single classified group firms and becomes greater with increasing levels of diversification.

Another popular business count method is the discrete two-dimensional categorical diversification measure developed by Varadarajan and Ramanujam (1987). It is a simpler and more objective method of Rumelt's category measure. A feature of this conceptualization is that it does not require data on sales or revenues of activities, but still provides insights into both the degree of diversification and its direction. This method distinguishes between two distinct patterns of diversification to capture Rumelt's classification: mean narrow spectrum diversification (MNSD) and broad-spectrum diversification (BSD). Varadarajan and Ramanujam define BSD as the number of 2-digit SIC codes in which a firm concurrently participates. MNSD is defined as the number of four-digit SIC codes a firm operates in divided by the number of two-digit SIC categories in which the firm participates. This method treats BSD and MNSD as the two dimensions of a four-cell matrix, where each cell represents the totality of a firm's past diversification activities in various two- and four-digit industry categories. The matrix contains the following cells: firms with very low diversity are classified in cell A, B contains related diversified firms, C represents unrelated diversified firms, and firms with very high diversity are grouped in cell D.

In analyzing global diversification, however, this measure is not satisfactory because it is not able to deal with international market dimensions. It is therefore important to construct a measure for international diversification. Using the two-dimensional conceptualization of diversity developed by Varadarajan and Ramanujam (1987), we suggest a diversification measure across international geographic areas. Our conceptualization treats geographic market areas as the primary classified groups, defining also the mean narrow spectrum international diversification (MNSID) and the broad-spectrum international diversification (BSID). The employed international-count measure of diversification is built on the modified Eurostat (2003) classification (see the appendix). The BSID is defined as the number of superregions in which a firm concurrently operates, whereas the MNSID measure is defined as the number of subregions in which a firm operates divided by the number of superregions in which it participates. The MNSID represents the diversification of a company into geographic areas closely related to each other, that is, regions within a broader area. On the other hand, BSID—across superregions—represents diversification into areas either unrelated to or less closely related to each other. We can also present a two-dimensional matrix in which each cell represents the totality of a firm's past diversification activities in various super- and subgeographic areas. Figure 1 shows the two-dimensional conceptualization of international diversity.

Broad Spectrum International Diversity*	*High*	Cell C: International unrelated-diversified firms	Cell D: Firms with very high international diversity
	Low	Cell A: Firms with very low international diversity	Cell B: International related-diversified firms
		Low	*High*
		Mean Narrow Spectrum International Diversity**	

FIGURE 1 Classification system of international diversification strategies. *Note.* *Broad spectrum international diversity is defined as the number of superregions in which a firm concurrently participates in. **Mean narrow spectrum international diversity is defined as the number of subregions a firm operates in divided by the number of superregions the firm participates in.

A desirable feature of our proposed conceptualization is that it does not require data on international sales or revenues of geographic markets. However, it still provides insights into the degree of internationalization, that is, high versus low, and the direction of internationalization, that is, predominantly concentrated in one geographic area or predominantly internationally diversified.

DESCRIPTION OF SAMPLE AND DATA

For the empirical analysis of product and international diversification in the publishing industry we have chosen large-sized publishing companies from Australia, Europe, and North America. According to Worldscope, the selected companies are among the highest revenue generating companies in the industry. Another argument for choosing large-sized companies is the current level of competition between these companies and the importance of their international activities. The years under investigation are 1999 and 2002. We have selected 32 companies that are active in the publishing industry. Missing data on divisional revenues and primary business codes or a categorization of revenues that did not correspond with our classification system reduced the number of observations available for most of our analyses to 30 companies. The sample consists of 1 Australian, 15 European, and 14 North American companies. The data set is mainly compiled from information published by the companies and some additional sources. Data on (international) geographic presence and revenues as well as revenues per activity are based on annual reports. The following eight categories of industrial activities are used in this study: books, magazines, newspapers, entertainment, marketing, education,

the Internet, and other activities. The international revenues are classified under domestic, Europe, North America, and the rest of the world. Due to the limitation of the available data, we could not classify the revenues in smaller categories. We obtained information on the numbers of two- and four-digit SIC categories in which companies operated from Worldscope and Osiris.

We use the revenues per activity and geographic area to calculate the continuous diversification measures. The computation of the discrete count measure for the product diversification is based on two- and four-digit SIC codes, and the international diversification measure is based on the modified Eurostat/European Union classification (see the appendix). We classify firms into the four cells using the mean values of BS(I)D and MNS(I)D as cut-off points to establish low–high splits along each dimension as proposed by Varadarajan and Ramanujam (1987). The revenues per activity and the SIC codes are also used to classify the diversification strategy of the companies according to Rumelt's categories. Given the available data we are only able to classify companies in the four main diversification strategy categories. The basic statistical techniques used for comparing the various diversification measures in our study are Pearson correlations and chi-square statistics.

RESULTS

Table 1 reports the calculated diversification measures of the publishing companies based on their activities. The first group of columns reports the diversity of the publishing companies in the year 1999, and the second group reports the diversity in 2002. The Rumelt measure demonstrates that the majority of the firms are diversified in related businesses. A few companies are basically committed to a single business or diversified to only a limited extent from the single business. Lagardère is the only company following an unrelated diversification strategy. It is also active, for example, in the automobile industry, aerospace industry, and defense industry. The indicated Rumelt classification for 2002 is generally similar to the classification of 1999. Only a few companies have changed their diversification strategy into a more related one or a dominant business one. It seems that the Varadarajan and Ramanujam (V&R) classification differs slightly from the indicated Rumelt's classification. Based on the SIC-codes, V&R results for 1999 classified 19 publishing companies into the C category, which indicates unrelated diversified firms, while the findings of 2002 classified the firms more equally between the four cells.

The continuous diversification measures, the Berry–Herfindahl index, and the entropy index show similar diversity of the publishing companies and also a movement in the same direction over time. The values of the Berry–Herfindahl and the entropy measures are between 0 and 0.76 and between 0 and 1.50 respectively. The publishing companies Knight Ridder and Trinity Mirror operated

TABLE 1
Measurement Results of Activity Diversification of Publishing Companies for 1999 and 2002

	Year 1999						*Year 2002*					
Company	*Rumelt*	*SIC BSD*	*SIC MNSD*	*SIC V&R*	*BH*	*Entropy*	*Rumelt*	*SIC BSD*	*SIC MNSD*	*SIC V&R*	*BH*	*Entropy*
Axel Springer (Germany)	RBD	1	5.00	B	.57	0.96	RBD	1	1.00	A	.65	1.26
Banta (U.S.)	RBD	4	1.25	C	.66	1.08	RBD	5	1.40	C	.73	1.34
Belo (U.S.)	RBD	3	1.00	C	.50	0.74	RBD	4	1.50	D	.52	0.81
Bertelsmann (Germany)	RBD	5	1.60	C	.76	1.50	RBD	2	2.00	B	.66	1.22
Canwest (Canada)	SBD	1	2.00	B	.00	0.00	RBD	1	1.00	A	.49	0.69
Daily Mail and General Trust (England)	DBD	3	1.33	C	.23	0.46	RBD	2	1.00	A	.48	0.79
Emap PLC (England)	DBD	3	1.33	C	.45	0.77	RBD	1	2.00	B	.49	0.90
E. W. Scripps (U.S.)	RBD	3	1.33	C	.53	0.87	RBD	2	2.00	B	.55	0.87
Gannett (U.S.)	DBD	3	2.33	D	.24	0.40	DBD	3	2.33	D	.21	0.37
Hollinger (Canada)	RBD	1	2.00	B	.50	0.70	RBD	1	2.00	B	.50	0.69
Independent News & Media (Ireland)	SBD	3	1.67	C	.00	0.00	RBD	1	1.00	A	.64	1.14
Knight Ridder (U.S.)	SBD	3	1.67	C	.00	0.00	SBD	2	1.00	A	.04	0.10
Lagardère (France)	UBD	5	1.40	C	.13	0.25	UBD	2	1.50	B	.61	1.12
Lee Enterprises (U.S.)	DBD	3	1.00	C	.36	0.54	DBD	2	1.00	A	.34	0.57
McGraw-Hill (U.S.)	RBD	4	1.25	C	.49	0.68	RBD	3	2.00	D	.50	0.69
Meredith (U.S.)	RBD	3	1.67	C	.65	1.08	DBD	3	2.00	D	.38	0.57
The News Corporation (Australia)	RBD	3	1.67	C	.58	1.15	RBD	3	1.67	D	.52	1.05
Pearson (England)	RBD	4	1.25	C	.65	1.21	RBD	2	1.00	A	.54	1.02
Primedia (U.S.)	RBD	1	3.00	B	.55	0.94	RBD	2	1.50	B	na	na
Reader's Digest (U.S.)	RBD	2	1.50	A	.48	0.67	RBD	5	1.80	D	.65	1.07

(*continued*)

TABLE 1 (Continued)

	Year 1999						Year 2002					
Company	*Rumelt*	*SIC BSD*	*SIC MNSD*	*SIC V&R*	*BH*	*Entropy*	*Rumelt*	*SIC BSD*	*SIC MNSD*	*SIC V&R*	*BH*	*Entropy*
Reed Elsevier (England/The Netherlands)	RBD	2	2.00	B	.50	0.69	DBD	2	2.50	B	.32	0.50
Sanoma WSOY (Finland)	RBD	3	1.33	C	.73	1.43	RBD	3	1.33	C	.71	1.37
Schibsted (Norway)	RBD	3	1.33	C	.48	0.68	DBD	1	1.00	A	.38	0.77
The Thomson Corporation (Canada)	RBD	3	2.00	D	.50	0.86	RBD	1	1.00	A	.60	1.00
Trinity Mirror (England)	SBD	1	1.00	A	.06	0.13	DBD	1	1.00	A	.07	0.17
United News and Media (England)	RBD	3	1.67	C	.62	1.04	RBD	1	1.00	A	na	na
VNU (The Netherlands)	RBD	3	1.67	C	.58	1.03	RBD	1	1.00	A	.61	1.00
Washington Post Company (U.S.)	RBD	4	1.50	C	.58	0.98	RBD	4	1.50	D	.73	1.34
Wegener Arcade (The Netherlands)	RBD	3	2.00	D	.73	1.35	DBD	1	2.00	B	.40	0.69
Wolters Kluwer (The Netherlands)	RBD	3	1.67	C	.71	1.30	RBD	1	1.00	A	0.74	1.37

Note. The nationality of the company is in parentheses. SIC BSD = standard industrial classification broad-spectrum diversification; SIC MNSD = standard industrial classification mean narrow spectrum diversification; SIC V&R = standard industrial classification Varadarajan and Ramanujam classification; BH = Berry–Herfindahl; B = related-diversified firm; A = firm with very low diversity; C = unrelated-diversified firm; D = firm with very high diversity; RBD = related business diversification; SBD = single business diversification; DBD = dominant business diversification; UBD = unrelated business diversification.

mainly in one business, newspapers, in the periods 1999 and 2002, whereas the companies Independent News & Media and Canwest became more diversified. Bertelsmann was the most diversified publishing company in 1999 and Wolters Kluwer in 2002. However, the values of these indexes may be dominated by the category of other activities. For instance, these findings now suggest that the company Lagardère is a low diversified firm, although it operates in many unrelated businesses. In general, the majority of selected companies have their main activities in the information and communications markets, and therefore the continuous measures seem to be a good indication of the diversified activities of the publishing companies.

With regard to the international-based diversification, the Berry–Herfindahl and entropy indexes again show similar results. Table 2 reports the calculated diversification measures of the publishing companies based on their international activities. The first group of columns reports the international diversity of the publishing companies in the year 1999, and the second group reports the international diversity in 2002. The values of the Berry–Herfindahl and entropy indexes are between 0 and 0.71 and between 0 and 1.28 respectively. The findings show that, in particular, the U.S. publishing companies—Belo, E. W. Scripps, Knight Ridder, Lee Enterprise, Meredith, and Primedia—mainly focus their activities on their home market. The publishing companies from other countries are more internationally focused. The highest internationally diversified companies are Bertelsmann, Largardère, Hollinger, and VNU with minimum Berry–Herfindahl and entropy values of 0.61 and 1.03 respectively. The international diversity values are relatively stable over time, which indicates that the publishing companies did not change their international diversification strategy in the last couple of years. This is also confirmed by the international geographic spectrum diversification results (see column international V&R). Based on the geographic areas, the evidence shows that the number of companies with a very low international diversity and internationally diversified firms has been the same for the investigation period. However, a few international geographic diversified publishing firms have changed their international diversification strategy. For instance, VNU changed from an internationally related diversified firm into a very high internationally diversified firm.

The purpose of this study is not only to show the diversity of publishing companies but also to compare the various diversification measures. In order to discover whether these different diversification indicators are related to each other, statistical methods are used to analyze the existence of a relationship between the indicators. The first test to investigate the comparison between the various measures is the Pearson correlation coefficients.

Table 3 reports the Pearson correlation coefficients among the business count measures that were utilized in the study. The results show that the relationship between entropy and the Berry–Herfindahl indexes are positive and significant. The

TABLE 2
Measurement Results of International Diversification of Publishing Companies

	Year 1999					*Year 2002*				
Company	*BSID*	*MNSID*	*INT V&R*	*BH*	*Entropy*	*BSID*	*MNSID*	*INT V&R*	*BH*	*Entropy*
Axel Springer (Germany)	2	2.00	B	.23	0.39	1	3.00	B	.28	0.45
Banta (U.S.)	3	1.00	A	.23	0.47	3	1.00	A	.27	0.53
Belo (U.S.)	1	1.00	A	.00	0.00	1	1.00	A	.00	0.00
Bertelsmann (Germany)	7	2.29	D	.71	1.28	7	1.86	D	.70	1.25
Canwest (Canada)	4	1.00	C	.52	0.80	5	1.00	C	.13	0.29
Daily Mail and General Trust (England)	5	1.40	C	.27	0.56	6	1.50	C	.34	0.66
Emap PLC (England)	6	1.17	C	.62	1.08	6	1.50	C	.47	0.80
E. W. Scripps (U.S.)	1	1.00	A	.00	0.00	2	1.00	A	.00	0.00
Gannett (U.S.)	5	1.00	C	.09	0.18	5	1.20	C	.22	0.38
Hollinger (Canada)	1	1.00	A	.62	1.03	1	1.00	A	.62	1.03
Independent News & Media (Ireland)	4	1.00	C	.55	0.93	3	1.33	A	.59	0.99
Knight Ridder (U.S.)	1	1.00	A	.00	0.00	1	1.00	A	.00	0.00
Lagardere (France)	7	1.57	D	.70	1.28	4	3.50	D	.70	1.28

Lee Enterprises (U.S.)	1	1.00	A	.00	0.00	1	1.00	A	.00	0.00
McGraw-Hill (U.S.)	7	1.71	D	.32	0.61	3	1.67	B	.32	0.61
Meredith (U.S.)	1	1.00	A	.00	0.00	1	1.00	A	.00	0.00
The News Corporation (Australia)	6	2.17	D	.41	0.74	4	2.00	D	.38	0.69
Pearson (England)	4	1.00	C	.58	1.07	5	2.20	D	.45	0.89
Primedia (U.S.)	2	1.00	A	.00	0.00	2	1.00	A	na	na
Reader's Digest (U.S.)	6	1.67	D	.50	0.69	6	1.50	C	.50	0.69
Reed Elsevier (England/The Netherlands)	6	1.17	C	.62	1.13	4	1.25	C	.54	1.03
Sanoma WSOY (Finland)	5	1.60	D	.15	0.34	5	1.60	D	.54	0.88
Schibsted (Norway)	1	3.00	B	.49	0.69	1	3.00	B	.51	0.75
The Thomson Corporation (Canada)	5	1.20	C	.31	0.65	5	1.60	D	.33	0.67
Trinity Mirror (England)	1	1.00	A	.01	0.04	1	1.00	A	.01	0.04
United News and Media (England)	3	1.00	A	.56	0.91	3	1.00	A	.52	0.87
VNU (The Netherlands)	3	1.67	B	.68	1.22	7	2.71	D	.61	1.11
Washington Post Company (U.S.)	6	1.00	C	.48	0.67	2	1.00	A	.08	0.17
Wegener Arcade (The Netherlands)	1	3.00	B	.24	0.41	1	2.00	B	.19	0.33
Wolters Kluwer (The Netherlands)	4	1.50	D	.52	0.81	4	1.50	C	.55	0.86

Note. The nationality of the company is in parentheses. BSID = broad-spectrum international diversification; MNSID = mean narrow spectrum international diversification; INT V&R = international Varadarajan and Ramanujam; BH = Berry–Herfindahl; B = related-diversified firm; A = firm with very low diversity; D = firm with very high diversity; C = unrelated-diversified firm.

TABLE 3
Pearson Correlations of Business Count Diversification Measures for 1999 and 2002

Variables	*M*	*SD*	*BHI*	*BSD*	*MNSD*	*IEM*	*IBHI*	*BSID*	*MNSID*
Year 1999									
EM	0.783	0.421	0.974**	0.286	0.087	0.134	0.111	0.089	0.378*
BHI	0.460	0.230		0.229	0.095	0.109	0.100	0.036	0.347
BSD	2.867	1.074			–0.487**	0.299	0.246	0.444*	0.178
MNSD	1.714	0.751				–0.060	–0.054	–0.097	0.146
IEM	0.599	0.430					0.985**	0.601**	0.221
IBHI	0.347	0.252						0.556**	0.242
BSID	3.667	2.218							0.073
MNSID	1.402	0.579							
Year 2002									
EM	0.874	0.349	0.964**	0.206	–0.165	0.476*	0.488**	0.355	0.347
BHI	0.502	0.184		0.222	–0.095	0.458*	0.466*	0.368	0.257
BSD	2.100	1.213			0.324	–0.245	–0.235	0.042	–0.259
MNSD	1.468	0.485				0.049	0.044	0.061	–0.176
IEM	0.594	0.405					0.987**	0.605**	0.514**
IBHI	0.339	0.236						0.565**	0.510**
BSID	3.333	2.023							0.209
MNSID	1.564	0.700							

Note. BHI = Berry–Herfindahl index; BSD = broad-spectrum diversity; MNSD = mean narrow spectrum diversity; IEM = international entropy measure; IBHI = international Berry–Herfindahl index; BSID = broad-spectrum international diversity; MNSID = mean narrow spectrum international diversity; EM = entropy measure.
*Correlation is significant at the .05 level (two tailed). **Correlation is significant at the .01 level (two tailed).

high correlation is to be expected because these indexes are based on almost the same information. However, the evidence does not show a significant relationship between the international and the activity-based Berry–Herfindahl and entropy indexes. It is interesting to see that there is a positive statistical significant correlation between the international Berry–Herfindahl and entropy indexes and the BSID measure. Thus, the correlation findings indicate that it does matter which business count method is used to measure the degree of diversification of publishing companies. It seems that the different diversification indicators measure dissimilar aspects of diversification.

The chi-square test is used to compare the Rumelt's diversification classification and the V&R classification of the publishing companies. Table 4 demonstrates the chi-square results for 1999 and 2002 concerning the Rumelt results and the activity- and international-based V&R results. It shows a strong relationship between the activity-based measures, also over time. However, no relationship exists between the international measure and the two activity-based measures in both years. This test demonstrates that the activity-based and international-based nonmetric measures are two completely different measures in determining diversification levels of publishing companies.

TABLE 4
Chi-Square Test for Comparison Between Rumult's and Varadarajan and Ramanujam's Diversification Classifications

	Year 1999			*Year 2002*		
Diversification Indicators	χ^2	*df*	*Asymptotic Significant*	χ^2	*df*	*Asymptotic Significant*
Rumelt	33.2	3	0.000	35.6	3	0.000
Varadarajan and Ramanujam activity measure	28.4	3	0.000	8.1	3	0.043
Varadarajan and Ramanujam international measure	2.8	3	0.423	4.4	3	0.221

Note. Expected cell frequency is 7.5.

DISCUSSION AND CONCLUSIONS

We have applied various diversification measures to indicate the activities, international geographic diversity, and diversification strategy of publishing companies. Statistical analyses are applied to compare the various diversification measures with each other. Not only do these different analyses indicate similar developments, they also complement each other in terms of specific information that is generated. In that sense this study provides a rather comprehensive picture of recent diversification developments in the international publishing industry and its large-sized players.

What we have learned is that the large-sized publishing companies from Australia, Europe, and North America do indeed diversify into a number of activities and businesses related to information and communication services and products. We also notice that the diversity of publishing companies varies between both years. A few companies changed their diversification strategy in the period under investigation, although the majority of publishing companies followed an unchanged diversification strategy. No distinction can be made between the product diversification strategies of companies coming from different geographic areas. However, a clear distinction can be made when looking at the international diversification strategy of these companies. A relatively large number of North American companies mainly focused their operations on their home market. They did not follow such an international diversification strategy, whereas companies from the other areas did follow an international diversification strategy. Due to the large home market, it is possible that these North American companies do not have to focus on international markets to maintain their competitive advantages or to survive. Furthermore, because the momentum of new technological developments and new businesses largely lies in the United States, companies from outside North America have no alternative but to also focus outside their home markets. In particular the leading European companies have gone through a transition from tradi-

tional companies, mainly operating in their domestic markets, to companies that also operate in important international markets.

Our findings regarding the different diversification measures, indicating the level of diversified activity and the degree of internationally based diversification in this sample, are inconclusive. A disparity was found between the set of diversification measures. It is clear that the activity-based diversification indicators measure other aspects of diversification than the international-based measures. Even within these two groups, their indicators measure different aspects of diversification. The Berry–Herfindahl and entropy indexes represent somewhat different aspects of diversification than the two spectrum diversification measures. Furthermore, the two nonmetric activity-based diversification indicators, Rumelt's classification and the V&R's classification, measure likely similar aspects of diversification. The international-based nonmetric measure does not. The international-based group is comprised of measures that can be used interchangeably to measure diversification, although the relationship with MNSID is weak.

This study reveals the strengths and weaknesses of various product and international diversification measures. Although one measure may be more appropriate than the other for particular research, when considering all issues involved in variable selection and measurement, no indicator is clearly superior to the others. It is obvious that a single measure may not be able to capture all the nuances and subtleties of any given diversification strategy. Our findings confirm the results from other studies that have suggested the use of multiple measures of diversification in the measurement of strategy variables (Hoskisson & Hitt, 1990; Sambharya, 2000).

Our findings do imply that there is need for additional, context-informed analyses. Further research could consider a number of topics relevant for understanding the measurement of diversification. An obvious item for further research is to investigate the impact of the current indicators in the publishing industry. Clearly each of the methods of measuring product and international diversification measures a particular aspect of diversification. Given the measurement differences, it is important to decide which measures to take before some inference with regard to corporate diversification can be made (Chatterjee & Blocher, 1992).

As part of the continuous effort to build better theories and improved models to understand the motives for diversification, it is appealing to focus on the effect that the diversification strategies of publishing companies, both activity- and international-geographic oriented strategies, have on their performance. Publishing companies are confronted with the decision of how to deploy their resources for competitive advantage. They can diversify based on relatedness of businesses or activities to increase their performance or they can achieve the same result through international geographic diversification.

Finally, it is important to note that our findings relate to very large publishing companies from Australia, Europe, and North America. Further research should

test the relevance of our findings for a sample of small and medium-sized publishing companies or for publishing companies from other geographic areas.

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APPENDIX

The geographic classification of the world was developed by the European Union for classifying all regions of activities for the EU members. As far as possible, this classification system should conform to the actual structure of the world based on the treaties and trade associations.

TABLE A
Geographic Classification of the World Into Super- and Subregions

Superregions	*Subregions*
Europe	European Union, Central and Eastern European Countries, and European Free Trade Association
Middle East	Mediterranean Countries in the Euro-Mediterranean Partnership, The Gulf,[a] and Commonwealth of Independent States
North and Central America	North American Free Trade Association, and Central America
South America	The Andean Community, Mercosur, and Caribbean[b]
Africa	West Africa, Central Africa, East Africa, The Horn of Africa, Indian Ocean Islands, and Southern Africa[c]
Asia	Northeast Asia, South Asian Association for Regional Cooperation, and Association of Southeast Asia Nations
Australia and Pacific	Australia and Pacific[d]

[a]Iraq, Iran, and Yemen are grouped into the Gulf region, because of proximity. [b]Cayman Islands, Puerto Rico, and Virgin Islands are classified as Caribbean (Lanic, 2003). [c]Chile is classified in the Mercosur as it is geographically closest to it. [d]Because of its geographic proximity, Guam is grouped together with the Pacific region. Source: Eurostat/European Union (2003).