TURNING DIGITAL: DIVERSIFICATION IN UK DESIGN CONSULTANCY SERVICES

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Abstract

Why do small firms in emerging industries choose to diversify? Theories of strategic management suggest that diversification is driven by search for exogenous market opportunities, deployment of slack resources, or the exploitation of current knowledge. Institutional organization theory suggests that firms may diversify for reasons unrelated to performance, such as by mimicking similar firms. We analyse the diversification of small UK design consultancies into the field of digital design between 1996 and 2009, a period characterized by the dot-com 'boom', 'bust' and recovery. Panel data analyses reveal that financial performance had little causal impact upon diversification. Instead, most firms diversified into digital design triggered by internal growth aspirations or by the following of similar firms. We contribute to the literature on small firm growth and diversification by highlighting the interactive nature of strategic and institutional drivers to diversification, and their relationship with firms' internal growth aspirations.

Keywords: Diversification, Business Services, SMEs, Market Entry

JEL Classification: L25, L26, L84

1. Introduction

Research on new and small firm's diversification has generated a variety of theoretical proposition concerning how, when, and under what conditions a firm will choose to engage in new business areas. Central to the literature originating in Strategic Management is the view of diversification as a performance-enhancing or risk-minimizing strategy. In their fundamental paper, Chatterjee and Wernerfelt (1991) proposed that diversification is triggered by slack resources accumulated in current operations. They suggest that resources that are physical in nature, related to the firm's prior knowledge, or those related to external finances, are associated with diversification into related areas, whereas internally generated resources are associated with diversification in less related areas.

Institutional organization theory maintains a distinct view of firm activities whereby these are not the outcome of performance-based decisions by managers, but rather a consequence of the managers' response to behavioural norms and isomorphic pressures in a given industrial field (Baum & Oliver, 1992). This line of theory addresses the *interaction* between strategic competition and institutional forces (c.f. Baum & Oliver, 1992; Chen & Hambrick, 1995; Dacin, 1997; Roberts & Greenwood, 1997). Institutional research has shown that both processes of diversification and de- diversification can be triggered by forces not directly related to performance, but rather to processes of 'mimicking' or 'cognitive coherence' (Lu, 2002; Zuckerman, 2000). However, the substantial research on isomorphic pressure has for the most part focused on large firms, and furthermore this research has as yet offered only a few models where performance-related and isomorphic-related variables are considered jointly in order to explain small firms' strategic decisions.

In this paper we follow Deephouse's (1999) lead in seeking to reconcile strategic and institutional streams of literature by investigating the interactive nature of strategic and institutional variables. In his study of commercial banks, Deephouse's presented a theory of 'strategic balance' suggesting that, in order to balance the need for strategic uniqueness and institutionalized conformity, firms should strive to be 'as different as legitimately possible'. Deephouse's study focused on large organisations in a well established industry. Although such research is dearly called for in the literature (c.f. Aldrich & Fiol, 1994), there is a dearth of studies investigating how institutional factors shape the emergence and growth of small firms in rapidly evolving, creative industries. Our theoretical arguments are considered in the context of the design consultancy sector, a growing industry that is driven by both a 'business logic'

and an ‘artistic logic’, encompassing both profit-seeking behaviours and the pursuit of creativity, status and reputation.

We analyze the rise of digital design amongst design consultancies operating in the United Kingdom between 1996 and 2008, all of the firms being small to medium size. In the early part of this period, the total number of consultancies offering digital or multimedia design grew rapidly. It then doubled over time up until the dot-com ‘bust’ in 2001, after which it first declined then stabilized. The rise of digital design provides interesting historical insights into the evolution of a service sector that is guided on the one hand by firms’ profit-seeking objectives and on the other by the development of institutional norms through which ‘the value of artistic design’ is shaped and legitimised as the market grows over time. We analyze the decision to diversify into digital design through logit models using an original unbalanced panel dataset constructed from archival and primary data sources. Our analyses reveal that economic/financial performance had no causal relationship with diversification. Rather, design firms diversified into digital design by ‘following others’ or in accordance with high internal growth expectations (c.f. Wiklund & Shepherd, 2003).

2. Theory and hypotheses

Models of firms’ diversification generally posit that diversification is dependent on the attractiveness of a business opportunity and the firm’s capabilities to enter a new area (Ramanujam & Varadarajan, 1989). Some authors have suggested that innovations will tend to generate diversification endogenous to the firms’ own area of activities in similar domains. In other words, firms learn from their experience with certain activities or technologies, and on the basis on these experiences they decide to explore related domains. Kim and Kogut (1996), for example, suggested that firms diversify in response both to endogenous changes in their technological capabilities and to exogenous changes in market opportunities. In addition, some studies suggest that firms diversify for non-economic reasons such imitation and following the spread of institutional norms. David and Strang (2006), for example, examined the diversification of management consultancies into Total Quality Management (TQM) around the TMQ boom era in the mid 1990s. They showed that consultancies might be ‘fashionably’ spurred to enter this market through a demand-driven rather than capability-driven process. Following clients’ queries on these fashionable niches – ‘C*an you do TQM?*’, in the same way they might ask ‘*Can you do digital design?*’ – consultancies became aware of a growing demand and associated window of opportunities, even though they may not have had fully developed capabilities to engage in it. David and Strang’s study also showed how ‘fashionable diversification’ can be a precursor to structural

change in that, while at first a small number of specialist consultancies offered TQM services, as awareness spread across the field many generalist consulting firms rapidly entered the same market. The rise of digital design amongst UK design consultancies offers an interesting opportunity to examine the evolution of a service sector that is guided by both economic and institutional norms, norms including the formation and acceptance of aspects such as 'the value of artistic design'. We do not imply here that 'fashionable' diversification necessarily lacks productive substance. The study by Cole (1999) showed that new business practices are often adopted in imitative fashions but may subsequently persist and in the long run come to create more innovative and effective workplaces. What we want to distinguish among the factors that might induce small design firms to diversify is a set of variables related to some economic characteristics (i.e. prior performance) of firm's behaviours from one of variables indicative of the inter-relations of their current activities and reference groups (i.e. the behaviour of similar neighbouring firms).

2.1 The relationship between scope of activities and diversification

If diversification depends both upon the attractiveness of business opportunities in other business areas and relevant capabilities to enter this area, one could ask what types of capabilities would facilitate diversification? Specifically, financial slack and other tangible resources together with prior knowledge of relevant business areas are thought to spur diversification into related areas (c.f. Chatterjee & Wernerfelt, 1991). Having already ventured into different activities, firms will have acquired an experience of extending their portfolio of activities, potentially facilitating further venturing into new activities. For small services firms, often lacking a strong resource base or long history of business activities, this line of experience often entails a path dependent process of business 'trial and error' as they extend their scope of operations into nearby areas, jointly learning to develop the relevant capabilities necessary to compete in these areas (Bingham & Eisenhardt, 2005). We believe this logic to be especially true in professional service firms such as design consultancies that are characterized by strong reliance on human capital and interaction with key customers, interaction that may spur the identification of additional business opportunities to serve these customers (David & Strang, 2006). We therefore posit the following first hypothesis:

***Hypothesis 1a*: A firm's scope of activities will positively affect the probability that it diversifies into digital design.**

Further, we believe that not only the *scope* of activities but also the *type* of prior activities will influence diversification by firms. Being engaged in 'nearby' activities where compatible production, service and technological capabilities

are utilised offers potential to capture new entrepreneurial opportunities through 'local' search (Fiet, 2007) and/or 'serendipitous' discovery in related domains (Dew, 2009). Engagement in similar activities is also plausible from a learning or risk-minimizing perspective (Winter, 2003): the opportunity costs of developing and exploiting similar capabilities might favour the decision to diversify in related domain. New firms in the advanced service industries often engage in business activities related to the specific skills embedded in their founding team (Wennberg, 2009). While establishing their core business, they might strive to expand their range of operation as soon as higher value-added opportunities emerge in nearby business areas. For example, the study by David and Strang (2006) showed how being active in related areas influenced firms' willingness to engage in providing TQM consultancy. In the design context, we believe that activities related to 2D design - such as corporate communications, branding, packaging and print design – constitute a set of activities that could enhance firms' likelihood of identifying additional business opportunities in digital design. By contrast, firms that are focused on three dimensional design – such as product or exhibition design – would be less likely to identify opportunities in the digital design space, particularly as applied to developing internet websites. We therefore posit the following hypothesis:

Hypothesis 1b: Firms' activities in closely related activities will positively influence the probability of their diversification into digital design.

2.2 The relationship between similar firms' activities and diversification into digital design

Institutional organizational theory posits that the firms' decision about its line of activities is not necessarily triggered by performance-related variables easily observed by managers. From this perspective, diversification can be driven by managers seeking to adhere to behavioural norms and isomorphic pressures specific to the market in which they operate (Baum & Oliver, 1992). Institutional models of firm diversification suggest that firms might enter into other areas by mimicking the strategic decisions of other, similar firms (Lu, 2002). This suggests a 'herding logic' by which firms' entry into submarkets such as digital design is stimulated by the entry of similar firms. Also research in organizational ecology suggests that competition is influenced by the perception that firms have of the market in which they are operating: firms compete with – and compare themselves with – organizations that are similar or proximate on some dimensions such as price – or other economic characteristics – or geographical location (Barnett & Carroll, 1987; Baum & Mezias, 1992). This common theoretical construct in these are arguments pertains the *firm's identity* – i.e. how it perceives itself or how it is perceived by relevant actors

(Kogut & Zander, 1996). A strong received sense of what a firm does or should be doing as its core activity might induce inertia and hamper the firm's mobility across areas of business. In the context of design, firms that define themselves as 'product design firms' are mainly interested in developing new products and could eschew other opportunities, however closely related these might be (Shane, 2000). Exploratory interviews with around 30 design consultancy firms operating in the UK revealed that holding such a strong sense of identity was not uncommon. For example, many firms that did not engage in digital design felt strongly attached to their identity as a '3D product design firm'. As a consequence of this, a number of firms choose not to diversify even when there is sound economic rationale for doing so. An institutionally posited counterforce to such inertia pertains to the mimicking behaviour where comparison to other similar firms (Miller & Prentice 1996). Similar firms have a similar identity, and the firm may therefore choose to diversify into digital design without abandoning its 'core identity' if it perceives that firms with similar identity are moving towards design. Institutional research has shown that when firm initiate changes that challenge or 'extends' their perceived identity, this often triggers changes in the competitive behaviour of structurally similar firms (Durand, Rao & Monin, 2007). This leads us to suggest that in addition to internal factors such as scope and business line scope and similarity, entry will also be triggered by then move of similar firms towards digital design:

***Hypothesis 2*: Entry into digital design by structurally and geographically similar firms will positively influence other firms' diversification into this submarket.**

2.3 The relationship between performance and diversification into digital design

The major theoretical models of diversification have been constructed around and empirically tested on large incumbent firms (e.g. Chatterjee & Wernerfelt, 1991). The theoretically salient question for research on small firms' growth through diversification then pertains to whether factors documented to influence diversification by large firms, such as access to relevant resources or knowledge, are salient also for new and small firms' diversification. Extant research shows that this is sometimes the case (Coviello & Munro, 1997), but not always for firms in service industries (Capar & Kotabe, 2003). For small firms whose strategic orientation is by and large a function of the founder-manager entrepreneur(s), aspirations to grow and extend the business should at least as important as access to resources and the knowledge necessary to

achieve this objective (Covin & Slevin, 1991). Our third hypothesis therefore state:

Hypothesis 3: **Firms' level of growth expectations will positively affects the probability of entry into digital design.**

Central to research on entrepreneurial behaviour in new and small firms is 'the pursuit of opportunities regardless of the resources under control' (Stevenson & Jarillo, 1990). For small firms, aside from current performance, growth aspirations are believed to influence their growth strategies. In an empirical study of 500 Swedish SMEs, Wiklund and Shepherd (2004) found that small business managers' expectations to expand their business activities were positively related to actual growth, but also that growth was magnified with the knowledge of the small business managers, as well as the dynamism of their business environment. However, in contrast to the large firm model presented by Chatterjee and Wernerfelt (1991), Wiklund and Shepherd's study did not reveal any significant effect of financial resources on firm diversification. This suggests that for new and small firms, diversification might be more of opportunity-driven than resource- or capability-driven nature. Small firms have limited financial slack (George, 2005), and can be expected to react more swiftly to external opportunities if they operate according to an opportunity-seeking entrepreneurial behaviour (Covin & Slevin, 1991). We can therefore expect a moderation effect between small firms' growth expectations and how they react to the behaviour of similar firms, leading to our final set of hypotheses:

Hypothesis 4a: Firms' level of growth expectations will positively moderate the effect of scope of activities on diversification into digital design.

Hypothesis 4b: Firms' level of growth expectations will positively moderate the effect of neighbouring activities on diversification into a digital design.

3. Data and methods

The data for this study are drawn from a longitudinal study of the development of the U.K. design consultancy sector. The U.K. design consulting industry is renowned for its creativity, whilst its economic performance has been improving steadily over the last two decades (Toivonen, 2004). The wider growth in professional services in the UK and elsewhere is related partly to deregulation and the outsourcing of pre-production services by private and public companies (Piore & Sabel, 1984), as well as to the expansion of total demand for design services for a broader set of goods and services produced with increasingly high percentages of knowledge inputs relative to traditional

production factors. From an economic perspective, the growth of the design consultancy sector is related to increasingly dynamic 'markets for knowledge' (Antonelli, 1999) driven by (i) technological change and advanced information communication technologies, which reduce transaction and interaction costs (ii) deverticalisation of marketing and product development activities from within the boundaries of corporations; and (iii) increasing specialisation of independent firms in the production of tacit competence and knowledge.

Since its early development in the 1950s when design emerged as a cottage industry, the activity of design consultancy in UK grew through the 1960s and 1970s in both total market size and average firm's size. In the 1980s the emergence of branding and also the graphics and communication side of design significantly contributed to further expansion of the sector via organic firm growth as well as through mergers and acquisitions. This also led to increased acceptance of design as a legitimate business of comparable status to financial, advertising, marketing and R&D services. The period from the mid-1990s to late 2000s was a turbulent period for the design consulting industry in the UK and elsewhere. Technical change significantly influenced the sector: virtually all design consultancies become extensive users of information technologies for the design process by the mid to late 1990s. Also on this basis, the explosive rise of the internet in the late 1990s provided new opportunities for digital design – especially for consultancies involved with 2-dimensional (2D) design tasks focused on helping clients to promote themselves, and to finding new ways to promote themselves, their products and services, through digital platforms (Kiani, 1998). In this demand-driven environment, design consultancies found strong incentives to enter the new field of digital design. Throughout the period of study, the total number of consultancies offering multimedia/digital design doubled from 39 to 72 during the period 1996 - 2001, after which it declined to around the mid-50s.

The dataset used in this paper draws primarily on Design Week's annual listing of the 'Top 100' design consultancies operating in the UK. Design Week is a London based weekly trade journal for the design industry which was established in 1986. It first published a ranking of the 'Top 100' Design Consultancies operating in the UK in (October) 1987. By 1996 the DW Top 100 listing was therefore well established in the industry. We begin our analysis from 1996 due to a slight change in format introduced in that year, and because this was the first year in which the survey asked about engagement in digital design.[1] In addition, we draw on various other data sources such as the Financial Analysis Made Easy (*FAME*) data as well as information collected by the British Design Innovation trade body about its members of UK-based design consultancies, for auxiliary information on firm status and geographical location etc. To supplement our secondary data sources and gain an understanding of the

industry, we also interview over 20 managers/entrepreneurs and designers using mostly open-ended questions. The managers and designers were both very senior, having virtually been around since the creation of the industry, and those fairly new to the industry. All interviews took place at the firms' premises and lasted between 30 minutes and 2 hours. These interviews indicated the presence of both a 'business logic' and an 'artistic logic' (such as creativity, status and reputation) in the industry and influencing the strategic decisions taken by design consultancies, helping us to guide and 'contextualize' our theorizing as we were analyzing the evolution and growth of design consultancies in the secondary data sources. By combining these sources we were able to create a rich longitudinal dataset of most design consultancies active in the United Kingdom from the mid-1990s to late 2000s. Although we have exact date of founding and eventual disbandment of all firms, information on all firms could not be gathered for all years since some firm's at times dropped out of the Design Week survey, despite its central standing in the design field as a virtual 'need to be in for a design consultancy in order to exist'. Specifically, some firms with operations also in the United States chose not to participate during the years 2003-2005 when firms adhering to the Sabannes-Oxley Act became much more reluctant to reveal financial and other corporate information. Hence, our data set constitute an unbalanced panel of firm-year observations where all firms are included if they are active for at least two consecutive years, but with some gaps in the data for non-responding firms.[2] Still, most of these firms are quite small, ranging in size from very small proprietorships (2 employees) to mostly small and medium-sized firms with a mean(median) size of 47(28) employees. Four larger firms are also in the dataset, these are 'leaders' in the emerging industry and ranges from 713 to 814 employees. Exclusions of these four firms from our analysis did not substantially alter the results. We therefore decided to keep them in the analysis.

Dependent variable

Entry into digital design. The key variable we use to test strategic and institutional mechanisms of diversification indicates whether design firms decide to engage in digital design. This variable was defined based on Design Week's annual listing which notes details of business activities employed by each firm. To avoid measurement errors we excluded all firms that appeared only once in the dataset, allowing for at least a two-year period to measure the effects of our theoretically derived predictor variables on the dependent variable in the subsequent year.

Independent variables

Number of business lines. The Design Week journal collects information on a firm's engagement in a number of business disciplines in each year, including

graphics, packaging, corporate identity, printing, lighting, textiles, furniture, architecture, interiors, retail, exhibitions and digital design. In testing Hypothesis 1a, we include here the total number of business lines that a firm participates in, so as to capture the firm's degree of diversification in business activities and its associated economies of scope.

Similar business lines. The line of arguments drawn from institutional organization theory suggested that firms' propensity to diversify into digital design will be enhanced by their own activities in closely related business disciplines as well as the activities of those firms that are structurally proximate to them. In particular, we believe corporate communications and branding to be close to digital design (whereas firms that design products, exhibitions and interiors are more distant to digital design and thus are expected to be less likely to enter). Our second independent variable therefore contains three dummy variables that indicate whether a firm was active in, on a yearly basis: (1) ***Corporate identity/communications***, (2) ***Packaging and branding,*** (3) ***Corporate Print and literary products.*** The identification of these design areas as being proximate was based on our understanding of the industry developed by reading trade journals and interviews with experienced designers.

Entry by similar firms. Firms that are similar along an identity related dimension such as the type of activities engaged in, or firms that are spatially proximate, have been shown to be more likely to influence each other (Barnett & Carroll, 1987; Baum & Mezias, 1992). Thus, design consultancies whose competences are close to those of other firms entering digital design should more likely to enter this space. To examine the potential of diversification as a mimicking behaviour we constructed an index counting all firms based in the same region and with similar activities in one or more of the eleven different design spaces listed by Design Week. We noted which of these 'similar' firms that diversified into digital design in the previous year, summing the number of entrants to create an ordinal scaled variable counting the number of similar entrants at T-1.

Growth expectations. Firms with high expectations of growth are more likely to seek out new opportunities (Wiklund & Shepherd, 2004). Willingness and expectations to grow operations have been found to be strongly correlated with realized growth in general (Wiklund et al., 2003), hence we could expect this also be the case for growth in specific new services areas. To measure small Design consultancies internally generated growth expectations we used the Design Week journal questions on expected growth in fee income in the following year, with positive figures indicating projected income growth whilst negative values implying projected loss. One potential objection to this measure is that expectations are 'real' and distinct from aspirations as expectations can be confounded with managers' already discounted plans to expand. We do not,

however, think this is a major concern for two reasons. First, given the nature of the Design industry since digital design and branding have the shortest lead times in the design industry, followed by literature and print, and then interiors and product design which has the longest lead time. Second, our knowledge of the data and first-hand qualitative knowledge of some of the firms included in the survey do not lead us to suspect that growth expectations are in fact already envisioned plans. In fact, when asking managers about their forecasts and planned expansions, our evidence indicate that managers of Design Consultancies acted quite opportunistic in their expansion behaviour.

Control variables

***Firm productivity*.** Strategic models suggest that diversification is triggered by firm performance or underutilized resources. We use revenue per employee to measure performance as this measure is widely accepted as the most important performance measure in business services, which are labour and skill intensive. Performance is maximised when, per employee, firms sell a large number of hours at high hourly rates (Arora et al., 2001).

Firm exit. A problem with studying the relationship between performance and diversification is the risk of bias related to truncated samples where high variation in performance by the surviving firms can be expected (e.g. Denrell, 2003). In the sample used for this study, 36 firms (10.4%) disappeared during the period of observation. This indicates that if only surviving firms are included there is a risk that the variables affecting both survival and diversification will be biased downward in regressions predicting diversification (Delmar & Shane, 2004). To correct for this selectivity bias, we estimated a Heckman-type selection model to create the selection correction variable ***'inverse mills ratio'***. A good selection correction variable should contain at least one variable that predicts survival, but not diversification. The variable is firm turnover. Not reaching a sufficient minimum efficiency scale in terms of turnover is a key reason for firms to disband operations or merge with other firms because operating at a suboptimal scale strongly limits the type of projects a design consultancy may bid for. We therefore estimated a probit model including all variables in the main analyses for high predictive ability, using this to construct the 'inverse mills ratio' which was subsequently plugged back in the main model to parcel out the possibility of selection bias. The probit model results are reported in Appendix 1.

Age. We control for firm age as older firms are likely to have a stronger identity and less amenable to diversification into unknown areas (Hoskinsson & Hitt, 1998; Barnett & Carroll, 1987).

Firm size. We control for firm size, both in terms of *employees* and *turnover*.

Design qualifications. To approximate for the relative quality and reputation of design firms, we derived a variable measuring the *ratio between the number of qualified designers* (i.e. holding a college degree in design or equivalent) *and total number of employees*.

Modelling approach

Our data constitute a repeated panel of firm observations. We considered using panel data analysis but the inclusion of additional lags would lead to significant loss of usable observations, especially for the type of small firms that we have a particular interest in. We therefore employed a pooled cross-sectional logit model to estimate the effects of our predictor variables on entry into digital design**.** To control for autocorrelation within firm observation over years, we conservatively used the Huber-White estimator of variance to obtain consistent standard errors. All independent variables were lagged one year to lessen problems with endogeneity (Hamilton & Nickerson, 2003).

We use a hierarchical regression approach to investigate how the coefficients change with the introduction of new variables. For each set of block models, we introduced the theoretically derived predictor variables. We also computed marginal effects to ensure that all findings can be given a meaningful interpretation. To guard against the risk of multicollinearity, variance inflation factors (VIF) were computed: these vary from 2.91 to 4.64, except for the fully saturated model which shows values of up to 5.70, all below the generally accepted critical values. The list of variables and their modal values are displayed in Table 1. The full correlation matrix is displayed in Table 2.

Table 1: List of Variables and Descriptive Statistics

Variable	Mean	Min	Max
Entry into digital design	0.20	0	1
Firm productivity	77.51	244	6067
turnover	3835.16	100	45423
Firm staff	46.54	2	815
Firm age	14.47	1	38
Design fees /total turnover	0.72	0.24	9.69
Number of business lines	2.94	1	9
Neighbouring business: corporate identity	0.42	0	1
Neighbouring business: packaging and branding	0.47	0	1
Neighbouring business: print and literature	0.65	0	1
Growth expectations	15.66	-10	200
Entry by similar firms	1.89	0	16
Number of business lines X growth expectations	45.41	-30	840
Entry by similar firms X growth expectations	28.09	-150	750
Region: Midlands	firm count =19		
Region: Southeast England	firm count =49		
Region: North England	firm count =11		
Region: London	firm count =144		
Region: Wales and Scotland	firm count =9		
Region: Other	firm count =112		

Table 2: Variables and Correlation Matrix

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Entry														
2	Inverse Mills Ratio	-0.117*													
3	Firm productivity	-0.035	0.058												
4	Log(firm turnover)	0.120*	-0.214*	0.033											
5	Firm staff	0.115*	-0.177*	-0.047	0.653*										
6	Firm age	-0.055	-0.095*	0.055	0.321*	0.216*									
7	Qualified designers per employee	-0.009	0.036	0.049	-0.023	0.004	0.048								
8	Number of business lines	0.398*	0.158*	-0.0643*	0.068*	0.052	0.009	-0.149*							
9	Neighbouring Business: Corporate identity	0.287*	-0.121*	-0.015	0.074*	0.088*	0.059	-0.006	0.377*						
10	Neighbouring Business: Packaging and Branding	0.341*	-0.047	-0.055	0.081*	0.010	0.014	-0.141*	0.558*	0.487*					
11	Neighbouring Business: Print and Literature	-0.085*	0.133*	0.001	-0.033	-0.031	0.049	0.077*	0.280*	-0.004	-0.038				
12	Growth Expectations	0.124*	-0.082*	-0.038	-0.101*	0.041	-0.300*	-0.008	-0.018	-0.044	-0.005	-0.104*			
13	Entry by similar firms	-0.02	0.083*	0.030	-0.020	-0.045	-0.021	0.045	-0.062*	0.061	-0.030	-0.046	0.025		
14	Number of business lines X Growth Expectations	0.249*	0.004	-0.045	-0.073*	0.011	-0.250*	-0.069*	0.415*	0.132*	0.242*	0.063*	0.760*	-0.014	
15	Entry by similar firms X Growth Expectations	0.045	0.021	0.004	-0.047	-0.041	-0.151*	0.015	-0.062*	0.028	-0.023	-0.1027*	0.400*	0.726*	0.246*

4. Results

Table 3 shows the full set of logit models on diversification into digital design. The first model (Base model) shows the baseline control variables and the predictor variable for firm-specific characteristics (Number of business lines, Neighbouring Business lines and Growth Expectations). The second model (Mimicking Model) introduces the predictor variable 'Entry by similar firms' and the third model (Model) introduces the two interaction effects 'Growth expectations and Number of business lines', and 'Growth expectations and Entry by similar firms'. To ensure that we do not under-specify the model, all hypotheses tests and computations of marginal effects were carried out against the fully saturated (Interactions) model.

Table 3: Logit Models of Entry into Digital Design

	Base model		**Mimicking Model**		**Interactions Model**	
Firm productivity	-0.001		-0.001		-0.001	
	(0.001)		(0.001)		(0.001)	
Inverse Mills Ratio	-5.252	***	-0.409	**	-0.402	**
	(0.069)		(0.133)		(0.131)	
Log(firm turnover)	0.002		0.001		0.001	
	(0.002)		(0.001)		(0.001)	
Firm staff	0.001		0.001		0.001	
	(0.002)		(0.002)		(0.002)	
Firm age	-0.017		-0.019		-0.023	*
	(0.010)		(0.010)		(0.011)	
Qualified designers per employee	0.467	*	0.435	*	-0.434	*
	(0.206)		(0.191)		(0.184)	
Number of business lines	0.672	***	0.647	***	-0.733	***
	(0.076)		(0.076)		(0.098)	
Neighbouring Business: Corporate identity	0.783	***	0.788	**	-0.817	***
	(0.229)		(0.229)		(0.229)	
Neighbouring Business: Packaging and Branding	0.633	*	0.601	**	-0.596	**
	(0.250)		(0.250)		(0.252)	
Neighbouring Business: Print and Literature	-1.386	***	-1.327	***	-1.326	***
	(0.233)		(0.229)		(0.229)	
Growth Expectations	0.022	***	0.022	***	-0.041	**
	(0.005)		(0.005)		(0.014)	
Entry by similar firms			0.090	*	0.230	*
			(0.037)		(0.082)	
Number of business lines X Growth Expectations					0.005	*
					(0.002)	
Entry by similar firms X Growth Expectations					0.002	
					(0.001)	
Constant	-5.181	***	-4.376	***	-4.734	***
	(-0.701)		(-0.343)		(-0.416)	
Firm-Year Observations	1,048		1,048		1,048	
Unique Firms	344		344		344	
Log-Likelihood Value	-289.211		-289.852		-295.031	
Pseudo R-2 (McFadden's)	0.331		0.339		0.342	
BIC Value	-4593.11		-4609.12		-4611.02	

Notes: *** p<0.001, ** p<0.01, * p<0.05, Robust standard errors in parentheses. Region dummies included but not reported.

Hypothesis 1a posited that small firms' scope of activities should positively affect the probability of diversification into digital design. The results described in Table 2 show that we find unequivocal support for this hypothesis in that the coefficient for 'Number of business lines' has a strong positive impact on the probability of entry into the digital design field (0.733, p <0.001). Calculation of marginal effects reveal that for each business line a small design firm is currently active in, the probability for entering digital design in the subsequent year increases by a very substantial 76.3%.This leads us to conclude that scope of activities is indeed a strong predictor of entry. What *type* of activities would spur further diversification into digital design? Hypothesis 1b stated that being active in related activities should positively affect design firms' probability of diversification into digital design. Based on the understanding of the design industry we have gathered from the specialised press (i.e. trade journals) and repeated interactions experienced designers (i.e. interviews and meetings), we used as an indicator of relatedness the observed firm's activity in corporate identity/communications, packaging and branding, or corporate print and literary products. Our results from table 3 show clearly that being active in corporate identity/communications has a strong affect on entry into digital design (0.817, p <0.001).[3] Being active in packaging and branding is also associated with an increased probability of digital design entry, but to a slightly less degree (0.596, p <0.01)[4]. Finally, and somewhat unexpectedly, we find that being active in corporate print and literary products is *negatively* associated with digital design entry (-1.326, p <0.001).[5] We return to ponder this finding in the discussion section. Overall, the findings from the three variables for related business lines lead us to conclude partly support for hypothesis 1b with two out of three hypothesized effects present.

The second hypothesis predicted that entry into digital design by structurally and geographically neighbouring firms will positively influence small firms' diversification into digital design. This variable is introduced in model two in Table 3, and reveals that the entry of similar firms spur the focal design firm to also enter (0.023, p <0.01). However, the effect is markedly weaker than the effects of internal firm factors. Calculation of marginal effects reveals that for each similar firm (on the estimated scale between 0 and 16) that enters digital design, the probability that the focal firm will also enter in the subsequent year increases by 2%. This supports, although rather weakly, hypothesis 2.

Hypothesis 3 predicted that entry into digital design would be enhanced by firms' expectations to grow in the imminent future. Table 3 clearly shows across all model specification that growth expectations exert a strong effect on the probability of entry into digital design (0.041, p <0.01). Since this variable amounts to a percentage projected view on growth in the coming year (between

-10% and +200%) calculations of marginal effects indicate that each percentage projected growth value raises the probability of entry into digital design by +3.8%. This leads us to confer strong support in favour of hypothesis 3.

We now turn to investigate the hypothesized interaction effects. Hypothesis 4a predicated that the level of growth expectations in small firms would also positively moderate the effect of scope of activities on diversification into digital design. The final model in the right hand column of Table 3 introduces both interaction effects and reveals that for firms with several business lines, levels of growth aspirations further enhance the probability of entry into digital design enter (0.005, p <0.05). [6] However, we find no support for hypothesis 4b in that the level of growth expectations did not seem to have any relationship on the effect between a firm's neighbouring activities and the probability of diversification into digital design.

Table 4: Summary of Hypotheses

Hypothesis	***Hypothesis***	***Measure***	***Expected sign***	***Results***
1a	scope of activities	Number of activities at t-1	+	Supported
1b	neighbouring activities	Presence in 2D at t-1	+	Partly Supported
2	Entry into DD by neighbouring firms	Firms similar in region and number of activities	+	Supported
3	Growth expectations	Expected growth in revenues	+	Supported
4a	Growth expectations * scope of activities	Expected growth in revenues X scope of activities	+	Supported
4b	Growth expectations * entry by neighbouring activities	Expected growth in revenues X entry by neighbouring firms	+	Not supported

Concluding, all hypotheses, independent variables, and main findings are summarized in table 4. The overall findings lend support to our notions that the *internal* factors suggested by strategy and entrepreneurship research are strong predictor for small service firms' diversification: both strategic resource deployment in terms of scope of business lines and business line relatedness (Hypotheses 1a & 1b) and internal growth aspirations (Hypothesis 3) showed strong support. In addition, the view of strategic decisions being driven by *external* factors as suggested by institutional organization research also conferred support in that the entry by structurally similar firms were shown to significantly predict diversification into digital design (Hypothesis 2). Our marginal effects postestimation results also indicated that overall, internal influences of a strategic or entrepreneurial nature are stronger in nature on small services firm' diversification patterns than external institutional influences. We were also interested in the potential boundary conditions of these internal and external factors. However, the final hypotheses revealed that while firms' growth expectations positively enhanced the positive influence of business line scope on the probability of diversification into digital design, it has no meaningful relationship with entry by structurally similar firms.

5. Discussion

In this paper we drew upon a large longitudinal data set constructed around archival and qualitative data from the United Kingdom design industry to test a strategic institutional model of small service firms' diversification. We found that small firms' scope of activities strongly affect the probability of diversification into digital design, and also that being active in the neighbouring activities of corporate identity/communications as well as packaging and branding facilitated the probability of digital design entry. This lends support for the strategic view of diversification as being dependant on opportunity attractiveness and the potential of capability redeployment in a new area. We were somewhat surprised to find that being active in corporate print and literary products was *negatively* associated with digital design entry. Our qualitative evidence indicate that despite its aesthetic similarities with digital design, print and literary is a strongly established and highly specialised niche and it is possible that this niche do not lends itself to identifying lucrative business opportunities by relating these activities to digital design. It is also possible that for technical/market reasons, corporate print and literary being a *product* market could inhibit the potential synergies or transfer of capabilities necessary for small design consultancies potential to extension into the service market of digital design. Also the firm's internal level of growth expectations exhibited a strong positive effect on the probability of engaging into digital design. We also found the entry into digital design by structurally and geographically neighbouring firms to positively influence diversification, albeit to a lesser

degree of magnitude than the effects of internal firm factors. Hence, our study documents that both internal factors such as strategic business line relatedness and entrepreneurial growth orientation, as well as external factors such as the legitimacy conferred by the entry structurally similar firms, matters for the diversification of small services firm.

We were also interested in the potential boundary conditions of these internal and external factors. However, while we found that firms' growth expectations positively enhanced the positive influence of business line scope on the probability of diversification into digital design, it has no meaningful relationship with entry by structurally similar firms. This suggests that growth expectations – an internal factor related to the level of entrepreneurial orientation in a small firm (Wiklund, 1999) – can act as a positive moderator of other, perhaps more factual or fungible, firm-level capabilities. However, growth aspirations does not seems to exhibit the interactive nature of a internal variable able to moderate or influence external pressures and influences on firm diversification. For the managers of small service firms with growth in mind, these findings suggests that while managers might not be able to enhance or moderate their susceptibility to institutional influences by their aspirations or business line deployment, such internal factors might nevertheless still be stronger predictors of factual diversification than the indirect influence posed by external institutional norms.

Given the increasing reliance on services and especially knowledge-intensive services on modern economies, the design consultancy sector is an ideal context for studying how the interaction of financial and institutional norms shapes the evolution of small firms in a dynamic industry. This research is also of relevance for general models of small firm growth since the strategic decision to diversify into new business areas is an important co-determinant of the short and long-term growth trajectory of small firms.

Notes

1 Aside from first asking about digital design, in 1996, Design Week began ranking consultancies on their fees income, rather than by their number of designers. The basis of the ranking has remained very consistent since 1996.

2 In our main analyses we included all firms. However, we also conducted robustness tests excluding the 4 large firms, and alternatively, all firms where there is a 'gap' in the panel of observations and information could not be collected from FAME or elsewhere. These analyses, available upon the request, did not reveal any meaningfully different results.

3 Calculation of marginal effects for dummy variables are somewhat less meaningful since it simply shows the comparative difference on the probability of entry between firms being active in a specific business line and firms that are not. In this case (corporate identity/communications) that effect amounts to +80.1%

4 Marginal effects for the dummy variable: + 64.6%

5 Marginal effects for the dummy variable: -137.7%

6 Calculation of marginal effects for interaction variables with high negative as well as positive values are less meaningful since they do not tell anything about the specific data points but are more revealing in terms of the *region* where growth expectations enhances the positive effects of a firms' scope of activities (number of business lines) on diversification into digital design.

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APPENDIX

Appendix 1: Probit Models on Firm Exit

	Base model	
Firm productivity	0.001	
	(0.001)	
Log(firm turnover)	0.002	**
	(0.002)	
Firm staff	0.001	
	(0.002)	
Firm age	-0.002	
	(0.010)	
Qualified designers per employee	0.467	*
	(0.206)	
Number of business lines	-0.225	***
	(0.095)	
Neighbouring Business: Corporate identity	0.497	
	(0.216)	
Neighbouring Business: Packaging and Branding	0.027	*
	(0.236)	
Neighbouring Business: Print and Literature	0.154	
	(0.213)	
Constant	-6.234	***
	-0.512	
Firm-Year Observations	854	
Unique Firms	344	
Log-Likelihood Value:	-111.79636	
Pseudo R-2 (McFadden's)	0.1579	

Notes: *** p<0.001, ** p<0.01, * p<0.05, Region dummies included but not reported