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Dilettante, Venturesome, Tory and Crafts: Drivers of Performance Among Taxonomic Groups

Stanley W. Mandel
Wake Forest University

Jane S. Craig
University of Texas at Austin

Alex Stewart
Marquette University, alex.stewart@marquette.edu

Dilettante, Venturesome, Tory and Crafts: Drivers of Performance Among Taxonomic Groups[i]

Jane S. Craig
Department of Textiles and Apparel,
University of Texas at Austin,
Austin, TX
Stanley W. Mandel
Angell Center for Entrepreneurship, Wake Forest University,
Winston Salem, NC
Alex Stewart[ii]
College of Business Administration, Marquette University,
Milwaukee, WI

Abstract: Empirical research has failed to cumulate into a coherent taxonomy of small firms. This may be because the method adapted from biology by Bill McKelvey has almost never been adopted. His approach calls for extensive variables and a focused sample of organizations, contrary to most empirical studies, which are specialized. Comparing general and special purpose approaches, we find some of the latter have more explanatory power than others and that general purpose taxonomies have the greatest explanatory power. Examining performance, we find the types do not display significantly different levels of performance but they display highly varied drivers of performance.

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Introduction

Taxonomy as a Foundation for Empirical Advances

Our purpose is to demonstrate that small business research can advance by adopting McKelvey's (1982) methodology for an empirical taxonomies of firms. In opposition to the general practice in organizational research, he argued for sampling a restricted range of organizations with a broad range of variables. By using this approach, we demonstrate that the drivers of performance vary across different types of small businesses. These findings imply that further research with this approach could cumulate to a widely applicable taxonomy. Our findings also include a type of firm that we call the "Dilettante" type, which has not been previously reported.

Why does taxonomy matter? Let's imagine you are a consultant or advisor to small firms. You wish to base your counsel on empirical research as well as your experiential knowledge. Many prescriptions for small business managers are found in the "implications for practice" sections of scholarly journals. However, many of these contradict one another. For example, findings about the performance effect of formal planning on entrepreneurial firms have been inconsistent (Brinkmann, Grichnik, and Kapsa, 2010). For another example, sometimes venture capitalists contribute useful knowhow (Zahra, Neubaum and Naldi, 2007); sometimes they do not (Clarysse, Knockaert, and Lockett, 2007). You are left wondering which of these findings apply to the specific firms that you advise. With Roininen and Ylinenpää (2009, p. 517), you have noted that entrepreneurs are varied and "benefit from different kinds and degrees of assistance." You also concur with Frank's (1993, p. 39) call for more "'tailormade' solutions" in small business consulting. Unfortunately, consultants are often viewed as out of touch with the particular contexts of the clients' small firms (Dyer & Ross, 2007). One reason for this is the absence of a validated taxonomy, by means of which the advisor can tailor any advice to the patterns of the type of firm in question. In short, the business advisor is confronted with the problem of taxonomy.

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In principle, the solution requires the specification of populations in terms of a taxonomy of organization types. Absent a valid taxonomy, it is not possible to specify the types of organizations to which particular findings can be generalized. This need is is recognized in many fields of science, in which taxonomy is a "prerequisite for theorizing" (Bailey, 1994, p. 15; see also de Queiroz and Good, 1997; Gartner, Mitchell and Vesper, 1989). In business research, most of the early efforts and many recent efforts to classify firms or aspects of firms were purely conceptual, resulting in ideal types or *typologies* (as in Autio, 1995; Hartnell, Ou and Kinicki, 2011). However, various researchers in the 1960s and 1970s, such as those in the Aston School, also developed empirically based classifications, or *taxonomies* (Bailey, 1994; Sneath and Sokal, 1973; for reviews, see McKelvey, 1982, Chap. 11; Rich, 1992; Sanchez, 1993; Short, Payne, and Ketchen, 2008).

Towards the end of this period, one methodologist, Bill McKelvey, concluded that organizational scholars had much to learn from the better developed methodology of natural scientists. In a series of publications (McKelvey, 1975; 1978; 1982), he proposed a set of ambitious prescriptions for the development of organizational taxonomy. These publications have been cited 503 times through October 2012, according to the *Social Sciences Citation Index*. However, their advice has never been fully adopted, and partially so only by Ulrich and McKelvey (1990). Examples of citing McKelvey, but not using his approach, are articles by Hornburg, Workman and Jensen (2002) and Leask and Parker (2007).[3] Computer searches of the management literature reveal an ongoing interest in taxonomy. However, with these few exceptions recent classifications have failed to follow McKelvey's recommendations (Sanchez, 1993) and in some cases have failed to follow any empirical approach whatsover (Doty, Glick, and Huber, 1993; Rich, 1992).

Entrepreneurship Taxonomies: Narrow Dimensions, Broad Samples

We seek to reinvigorate empirical attention to taxonomy, which has a long tradition in the entrepreneurship field. In the earlier years

of entrepreneurship research, scholars were very active in numerical classifications of small firms, new business ventures, and entrepreneurs (e.g., Filley and Aldag, 1978; Gartner, Mitchell and Vesper, 1989; Lafuente and Salas, 1989; Woo, Cooper and Dunkelberg, 1991). In one of the earliest of these studies, Smith (1967) proposed a widely noted distinction between "Craftsman" and "Opportunistic" entrepreneurs, which has been adapted to varying extents by Braden (1977), Lorraine and Dussault (1987) and Smith and Miner (1983).

Most of these classifications have used a restricted range of variables specified for a focused purpose, such as classifying firms based on strategic or entrepreneurial posture. In this focused or specialized approach, the number of variables measured is in the range of one to two dozen (e.g., Anderson, 2012; Aragón-Sánchez and Sánchez-Marín, 2005; Covin, 1991; Covin, Slevin, and Covin, 1991; Morris, Schindehutte, Richardson & Allen, 2005; Westhead and Howorth, 2007). These studies are useful for specialized purposes, but violate the critical taxonomic principle of maximizing the *number of types* of variables, or "taxonomic characters," that are measured (McKelvey, 1982, pp. 15, 354, 367; also Miller, 1996). The use of a narrow range of variables would be akin to biological taxonomists classifying birds exclusively on the basis of their feeding habits. Classifying birds as a function of their feeding habits could be a legitimate exercise but would not result in a classification of birds. Neither is this approach well suited to a multidimensional topic such as entrepreneurship (Gartner, Mitchell and Vesper, 1989; Miller, 2011).

Although most classificatory studies have restricted the range of taxonomic characters, virtually all of them have attempted to sample from a wide range of types of organizations. Apparently the rationale has been to emulate the taxonomist's sampling of the full range of organisms. However, McKelvey noted (1982, p. 340) that "the total population at hand is too large for a single study" (also Miller, 2011). Taxonomic samples should be narrow as to geography and by industry (1982, pp. 24, 342-244). This prescription is echoed in calls for sensitivity to regional and other contexts in research (Fletcher, 2011; Steyaert and Katz, 2004; Williams, 2010). Further, in the early stages of taxonomic development, the research strategy should be

incremental. Sampling should "begin with populations where the workplace and management competencies are fairly simple [and] thoroughly understood… small businesses such as retail stores and restaurants, schools, hospitals, [or] fabrication and assembly manufacturing operations" (McKelvey, 1982, p. 343). Focusing on narrow populations such as these directs the research toward subtle differences at the sub-species level that are not initially obvious among populations. Further, unlike heterogeneous samples, restricted samples result in sufficiently large subsamples of particular taxonomic units.

A Pragmatic Approach to McKelvey's Method

> Some of the practices advocated by McKelvey, such as using a stratified probability sampling plan for selecting observers, and using a non-stratified random sample from a population of all organizations (McKelvey, 1975) have been dismissed as impractical (Sanchez, 1993). However, two of his prescriptions are essential in the early stages of taxomic development (McKelvey, 1982; Ulrich and McKelvey, 1990; personal communications with McKelvey). These are a comprehensive coverage of taxonomic characters (variables), and a meaningful, delimited sample. For example, Ulrich and McKelvey used 78 variables in a study of the United States and Japanese electronic industries. In the present study, we used 135 variables in a study of Texas manufacturers of women's and children's apparel and accessories.

Hypotheses

The hypotheses tested are meant as explorations of the potential of McKelvey's (1975; 1979; 1982) general taxonomic principles, as operationalized in Ulrich and McKelvey (1990). First, we expect that groupings (technically, taxa) resulting from general purpose taxonomic research are distinct from groupings resulting from special purpose taxonomic research. We would be most surprised if this was not found, because it is well known that different classification criteria result in different groupings (Woo, Cooper and Dunkelberg, 1991).

*H1***:** *Groupings resulting from general purpose taxonomic research are not the same as those resulting from special purpose taxonomic research.*

A large-scale meta-analysis (Ketchen et al., 1997) proposed that general purpose taxonomies should demonstrate a stronger relationship with performance than more narrowly based special purpose taxonomies. Further, this hypothesis, like *H1,* appears to be self-evident because the use of more variables always affords more opportunities to explain variance. This intuitive expectation might not hold, however, because each taxonomic approach independently clusters the data. It might seem equally intuitive that a clustering based upon specifically business-related variables, such as use of managerial time, might prove to be more amenable to explanations of business performance than a clustering based on a mishmash of variables.

*H2***:** *The taxonomic characters that generate general purpose taxonomies have greater predictive ability with respect to the performance of firms in those taxonomies than taxonomic characters that generate special purpose taxonomies with respect to the performance of firms in those taxonomies.*

The literature has not settled on consensual taxonomic results at the fine-grained level of analysis used in this study. However, it has achieved a loose consensus in broad-brush formulations. Perhaps the most widely used are the distinctions between organic and mechanistic systems (Burns and Stalker, 1961) and, in the entrepreneurship literature, Craftsman and Opportunistic entrepreneurs (Smith, 1967; Filley and Aldag, 1978; Gartner, Mitchell and Vesper, 1989; Lafuente and Salas, 1989; Lee & Denslow, 2005). A related distinction in taxonomic studies can be seen between more and less entrepreneurial firms (Covin, 1991; Khan and Manopichetwattana, 1989; Miller, 1983). None of these familiar approaches were based on McKelvey's approach. Therefore, we cannot predict whether our results will conform to prior theory. However, our results should be comprehensible on a post hoc basis; otherwise they would not provide scientific or practitioner support for this approach. For the general purpose taxonomic results we expect that:

*H3***:** *Groupings will be comprehensible on a post hoc basis.*

The literature on taxonomy advocates testing the stability of the primary sample by comparison with a holdout sample (Bailey, 1994; Harms, Kraus, and Schwarz, 2009; Sanchez, 1993). Although this test is the norm, it is no substitute for longitudinal testing. Results from clustering a holdout sample are nevertheless useful as qualifications to the results from the primary sample. Realistically, one cannot expect complete replicability, due to the polythetic nature of empirically derived taxa. This means that observations share most, but not all, characteristics. In polythetic taxonomy, no particular taxonomic character is necessary and it can be the case that none is sufficient to assign a unit to a grouping (or taxon) (Aldrich and Ruef, 2006; McKelvey, 1982, pp. 43-45). Nonetheless, we expect that:

H4: Groupings will be stable in the sense of being replicable in a holdout sample.

In strategic management research, clustering studies (such as strategic group analysis) have generally failed to find significant performance differences between populations (Barney and Hoskisson, 1990; Zahra and Pearce, 1990). Between-group performance differences have most often been found, not for general organizational taxonomies, but for specialty taxonomies (e.g. customer-supplier relations in Hornburg, Workman and Jensen, 2002), entrepreneurial orientation (Jambulingam, Kathuria and Doucette, 2005), or technology strategies (Hung, Liu and Chang, 2003). However, this limitation has not always held for taxonomies in organization theory (e.g., Pinto and Pinder, 1972) and entrepreneurship research (e.g., Miner, 1997; Westhead, 1990). Small and entrepreneurial firms might be expected to display performance differences due to lower levels of institutionalization and homogeneity than the corporations studied in strategic management. As a result, performance may be less homogenous as well.

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H5: Groupings will differ in organizational performance.

Differences in the causes or drivers of organizational performance across groupings have been found in a few prior studies (e.g., Pinto and Pinder, 1972, and Miller, 1983). It has also been found for the strategic types of Miles and Snow (1978), although these findings have invoked very narrow sets of variables (such as sales force strategies in Slater and Olson, 2000, and CEO profiles in Thomas, Litschert and Ramaswamy, 1991). Given this scarcity of prior indications, we propose this final hypothesis largely as an act of faith in the taxonomic enterprise. After all, if this hypothesis does not hold, the very rationale for taxonomic study – that is, the problem of generalization of relationships – also fails to hold (Miller and Friesen, 1984). As Miner (1997) and Clark, Berkeley and Steuer (2001) argued, it is important to seek for different drivers of performance because only when these are known can prescriptive advice be offered that fits the organizational type.

H6: Groupings will differ in the causes or drivers of organizational performance.

Method

Data and Questionnaire

Data for this study were obtained by means of a survey instrument that was mailed to the 578 firms in the industry that had tax numbers in the State of Texas at the time of mailing in 1991. Of the 424 firms actually reached (net of inactive firms and bad addresses), 200 provided usable responses (180 by mail and 20 by telephone). The response rate based on the sample reached was 47%. This is a relatively high response rate considering the generally small size of the firms and the length of the instrument. (See Craig, 1992, Table 3.1 for the instrument, and Mandel, 1996 for the decomposition of the theoretical population to the ultimate sample of organizations used in this study, and many details not reported for reasons of space.)

The variables reflected in the 135 items of the instrument were chosen based on four criteria. First, variables were chosen if we

believed, based on the industry experience of the first author, that they have particular importance in the theoretical population (Hass, Hall and Johnson, 1966). For example, respondents were asked about industry-specific channels of distribution and the firm's negotiating success with these channels.

Second, variables were chosen for their inclusion in four scales used in special purpose taxonomies from the entrepreneurship literature. The scales incorporated into the instrument measure entrepreneurial orientation (nine items from Covin, Slevin and Covin, 1990), strategic tactics (20 items from Covin 1991), managerial time allocation (13 items from Woo, Cooper and Dunkelberg, 1991), and reasons for business ownership (13 items adapted from Scheinberg and MacMillan, 1988 and Shane, Kolvereid, and Westhead, 1991). All scales were found to be reliable with Cronbach alphas of 0.76, 0.75, 0.84, and 0.78 respectively.[4]

Third, variables were chosen so as to include all broad categories of taxonomic characters found in the literature. We included variables for all categories generally recommended for general purpose taxonomic studies, such as organizational, strategic, and managerial (process) variables (Bailey, 1994: 80; McKelvey, 1982: 353-365; Sanchez, 1993). Consistent with both taxonomic practice (above) and entrepreneurship research, we also included items for individual and environmental variables (Gartner, Mitchell and Vesper, 1989; Lafuente and Salas, 1989; Woo, Cooper and Dunkelberg, 1991). Nine categories of taxonomic characters were measured. Finally, items were retained or reworded based on responses to a pilot survey.

Respondents were also asked three questions about perceived organizational performance. Performance was meant to be used as a dependent variable and, for this reason, not a clustering variable. The use of subjective measures of performance is the only approach typically available in the study of small and privately held firms. Fortunately there is some reason to expect convergence with objective measures (provided that, as in the present study, respondents are not asked to make external comparisons; see Dess and Robinson, 1984). Still, the use of subjective measures is a limitation that should be borne in mind (Sapienza, Smith and Gannon, 1988).

Data Reduction by Principal Components Analysis

In taxonomic studies, the data are factor analyzed prior to clustering. Formation of components from indicants is an intermediate step, converting raw data into a form that can be efficiently used in clustering algorithms and generating results that are easier to interpret (Moreno, Castillo and Masere, 2007; Westhead and Howorth, 2007). Components are a meaningful, parsimonious, and more abstract form of observables. To convert the indicants to principal component scores, we divided the dataset into nine groups for factor analysis, in order to represent the nine categories of organizational characters measured and to retain the relative weightings of the instrument. Then we factor analyzed the indicants using principal components. This procedure reduced the number of clustering variables – from 135 to 32 - while retaining underlying detail.

Determining Number of Clusters

The next step in the methodology of taxonomy was determining the natural number of clusters in the data. After first creating a holdout sample of 50 randomly selected firms, we clustered a primary sample of 150 utilizing Ward's hierarchical clustering method. This method minimizes within cluster variance over all clusters obtained by merging two clusters from the previous generation (SAS/STAT User's Guide, Vol. 1 and 2). No clustering method is uniquely the best. We chose Ward's method because it reproduces fairly consistent results in studies performed with known population distributions (Bailey, 1994, pp. 48-49, 57; Milligan and Cooper, 1985) and because it has been widely used in other organizational taxonomic studies (e.g. Anderson, 2012; Jambulingam, Kathuria, and Doucette, 2005; Korunka, Frank, Lueger, and Mugler, 2003; Moreno, Castillo and Masere, 2007; Westhead and Howorth, 2007).

We used six smoothing parameters (k) (Wong and Schaack, 1982) and three criteria for selecting the appropriate number of clusters: the Cubic Clustering Criterion, Pseudo F, and Pseudo T-square. Determining the number of natural clusters within the data requires an interpretation of the 18 graphs so produced. Four of the 18

outputs could reasonably be interpreted in two alternate ways, resulting in 22 values for the number of clusters. In nine of these cases, four clusters were identified. In five cases, five clusters were identified. In three cases, six were identified. Based on our reading of the output, the modal result of four clusters was selected as most plausible. As many as six clusters may exist in the population because the number of groupings that emerge from the combined primary sample and holdout sample was also six.

Determining Cluster Membership

To determine cluster membership we used a disjoint method that places an observation in only one cluster. The SAS procedure FASTCLUS employs the disjoint method by assigning an observation to a cluster by minimizing the Euclidean distance from the observation to the cluster mean. FASTCLUS is appropriate for procedures with known numbers of clusters (as determined above) and for large datasets. The dataset for this study is at the lower end of large. The outcome of this procedure is the computation of R-squared (RSQ) and RSQ/(1-RSQ) across the entire dataset (150 observations). The RSQ is associated with predicting the component, given the cluster. RSQ/(1-RSQ) is the ratio of between-cluster variance to within-cluster variance. The larger these values, the better the associated component is in explaining the separation of organizations into their respective clusters. Thus, we select the clustering components that were greater than the overall RSQ and RSQ/(1-RSQ) to help explain the meaning of various clusters. We used the remaining components secondarily to support the meanings attached to the clusters from the primary clustering variables. FACTCLUS also displays, for each clustering component and each population, means and standard deviations that were used to assign meaning to one cluster in contrast to another. (For the rationale of standardizing prior to clustering, see Leask and Parker, 2007.)

Caution is required in interpreting results of any non-overlapping clustering, such as Ward's method, because it creates an illusion of distinct or monothetic boundaries between groupings, whereas they are more realistically construed as fuzzy or polythetic. This is also a reason that any selection of cluster numbers is open to re-interpretation. It is also a reason we will use relaxed standards for reporting statistical significance. Wide ranges of significance levels are

used in empirical taxonomies, ranging from the relaxed to the exceedingly stringent (Rosenberg, 2007). Relaxed significance levels are used in cases of high variation (Perry, Christiansen & Perry, 1997) and measurement uncertainty (Capetta et al., 2010). As examples, the 85% level was used in natural science taxonomic studies by Guttiérrez, Franco, Crossa, & Abadie, (2003) and Popescu, Wynne, & Scrivani, J. A. (2004); Capetta et al. (2010) used 91% and 86% significance levels. The 85% level was used in the economics taxonomy by Montobbio (2003). In the present study, the 85% level is used due to high variation and the polythetic character (fuzzy boundaries) of socially derived taxonomies (McKelvey, 1982). Interpreting our results must therefore be more cautious than with more stringent levels.

Results

Hypotheses One through Four: Identifying the Clusters

Hypothesis one holds that groupings resulting from general purpose taxonomic research are not the same as those resulting from special purpose taxonomic research. We tested this hypothesis by replicating the procedures for determining general cluster membership for each of the four special purpose scales incorporated in the survey instrument. Because we were interested in comparing the allocation of firms to clusters based on special purpose versus general purpose taxonomy, we asked what percentage of overlap exists between the allocation of firms to Cluster 1 through Cluster 4 on the basis of clustering using only components derived from each of the four scales compared with using all components.

For example, if we cluster on the basis of only the entrepreneurial orientation scale (from Covin, Slevin and Covin, 1990), we find that of the 26 firms allocated to C1 using all components, the largest cluster comprises only 46% of the special purpose cluster. Similarly, the maximum percentage of C2 firms so assigned to the same cluster is 48%; the maximum percentage of C3 firms assigned to the same cluster is 40%; the maximum number of C4 firms assigned to the same cluster is 33%. If we cluster on the basis of the strategic tactics scale (Covin, 1991) the respective percentages are 58%, 42%,

40% and 34%. If we cluster on the basis of the managerial time allocation scale (Woo, Cooper and Dunkelberg, 1991) the respective percentages are 50%, 54%, 30% and 51%. If we cluster on the basis of the reasons for ownership scale (Scheinberg and MacMillan, 1988) the respective percentages are 58%, 44%, 48% and 41%. We conclude, therefore, that the results support the hypothesized difference in clustering results.

Hypothesis two holds that the taxonomic characters that generate general purpose taxonomies have greater predictive ability with respect to the performance of firms in those taxonomies than taxonomic characters that generate special purpose taxonomies with respect to the performance of firms in those taxonomies. We used step-wise multiple regression analysis to determine the variance explained of firm performance in each of the four clusters as independently delimited by the general purpose and the four special purpose components. In interpreting the results, as presented in Table 1, please bear in mind that the four populations are different for all five approaches.

Please insert Table 1 about here

Two inferences can be made based on these results. The first was unforeseen: some special purpose taxonomies have more predictive power than others in explaining performance. The strategic tactics variables from Covin (1991) have the highest and most consistent explanatory power. The second finding is that, as hypothesized, the greatest explanatory power is found in the general purpose taxonomy.

Hypothesis three holds that groupings will be comprehensible post hoc if not in terms of existing theory. Testing this hypothesis requires an interpretation of the scores on the 32 components among the four clusters found in the primary sample. Scores are expressed in standardized form and presented in Table 2. Our interpretation follows.

Please insert Table 2 about here

Four Populations: Dilettante, Venturesome, Tory and Craft

Dilettante firms. Cluster 1 is composed of "Texas apparel producers: Dilettante firms." This characterization holds for both meanings of "dilettante" in *Webster's New Collegiate Dictionary*: "1: an admirer or lover of the arts 2: a person having a superficial interest in an art or a branch of knowledge" – in this case, business. This characterization is based on the gestalt of the tendencies amongst the components, most of which are not significant or even marginally significant in themselves, although they may be significant in contrast with other groupings. For example, firms in this grouping are significantly smaller than in Cluster 3.

The 26 firms in this cluster tend to be small (z = -1.3) with female owners (z = 0.7) having relatively little experience either in their business (-0.4) or with entrepreneurship (z = -0.3). They pay relatively little attention to administration (z = -0.8) and they tend to be unsuccessful in business negotiations (z = -1.2). Their firms do not play an important role in their families' finances (z = -1.1), nor are their owners motivated by new product ideas or contributing to a company's success (z = -0.9). They lack familial or other role models (z = -0.7) but do seek respect from friends, recognition for achievements, and money to be made from a hobby or craft (z = 0.6). They are the most fashion-oriented of the groupings (z = 0.3). This pattern is the most sharply defined of the four and, in the context of this industry, marks these firms as Dilettantes.

This cluster is original to the taxonomic literature. For example, these are not "lifestyle" firms because they do not provide financial support for a lifestyle (Timmons, 1999, pp. 36-37). However, it may be that Dilettante firms, as their name implies, are found in niches with room for artistic expression. Soldresson, Fiorito and He (1998) studied home-based textile artists and found a pattern very similar to Cluster 1. The firms that they studied were overwhelmingly female and provided little financial support for their owners. The motivation for launching these businesses was "love of the work rather than [an opportunity to utilize] their business skills" (as above, p. 34).

Venturesome firms. Cluster 2 is composed of "Texas apparel producers: Venturesome firms." This modal cluster (n = 52) is operated more by professional managers and less by owners than any of the other clusters (z = -0.3), yet it is in many regards the most entrepreneurial. The managers of these firms seek to predict their industry environments (z = 0.6) and are motivated by new product ideas and contributing to a company's success (z = 0.5). Their managers successfully negotiate with stakeholders (z = 0.5), innovate and compete aggressively (z = 0.4) and advertise extensively (z = 0.4). The standard scores are rather low, but the overall pattern is a consistent one of a Venturesome firm.

Venturesome firms share certain features with "organic" systems, (Burns and Stalker, 1961). Burns and Stalker's typology – as befits a subtle argument rooted in fieldwork – refers to many fine-grained aspects of internal operations (systems, as they put it) about which our data are silent. Nonetheless, one could argue that Venturesome firms, like organic systems, cope with dynamic environments by flexibility and networking. It may be that textiles and clothing is an industry in which "entrepreneurial" firms perform the best (Chell and Haworth, 1992). However, the organic label does not capture the proactivity, innovation, or risk-taking dimensions found in Cluster 2, whereas these properties are emphasized in studies of firm-level entrepreneurial orientation (Covin, 1991; Lumpkin and Dess, 1996; Miller, 1983).

Tory firms. Cluster 3 is composed of "Texas apparel manufacturers: Tory firms." The 33 firms in this cluster are the largest firms in the sample (z = 0.7) and are managed by male managers (z = 0.7) who are risk averse (z = -0.7). They are risk averse in the senses of steering away from risky projects, bold adaptations, or bold decision making postures. They tend to be owner-managers (z = 0.8), continue family traditions (*z* = 0.5), and are reliant on external financing (z = 0.67). These last two standard scores are low despite high mean scores due to high dispersion; it appears that a small number of leveraged buyouts might be driving the ownership pattern. These firms place the least emphasis on production or craft activities (z = -0.8) and instead show some tendency to focus on administrative tasks (z = 0.4). These "Tory" firms share features with "mechanistic"

and similarly face simpler environments with hide-bound administrative orders (Burns and Stalker, 1961).

Crafts firms. Cluster 4 (n = 39) is composed of "Texas apparel manufacturers: Crafts firms." Like the Dilettantes, these are female-managed firms (z = 0.7). They are averse to innovation and competitive aggression (z = -0.9) and also to prediction of their industry environments (z = -0.7). They tend to be craft and production focused (Z= 0.4), to be the most likely to compete on quality (z – 0.3) and not to sell through wholesale channels (z = -0.5); that is, to sell directly or by retail. Although larger than the Dilettante firms they are the second smallest set of firms in the sample (z = -0.3).

These firms fit the pattern of the "Craftsman" entrepreneur (Smith, 1967; Smith and Miner, 1983; we substitute the term "Crafts" in order to be gender-neutral). They fit Smith's depiction very well, being relatively less educated [components 26, 31], rather oblivious to the larger business and social environment [components 5, 6, 9], but seemingly comfortable in their particular trade. On balance, they represent the "small business owner" as opposed to "entrepreneur" in the industry (Carland, Hoy, Boulton and Carland, 1984). They also represent the historical roots of the clothing industry in crafts-based firms (Fletcher and Hardill, 1995; compare Tregear, 2005, who distinguishes "craft" from "artisan" firms). We ought not be surprised to find this match with Smith's well-known "Craftsman" type, because niches for artisanal firms can be found in the particular industry sampled.

Stability of the Clustering

Hypothesis four holds that groupings will be stable in the sense of being replicable in a holdout sample. A holdout sample of 50 firms was analyzed in the same manner as the primary sample of 150 firms. (Components were derived from the total sample of 200.) As noted above, this test is no substitute for longitudinal testing. Moreover, 50 is a rather small sample once the constituent clusters have been distinguished. Therefore, the results from the holdout sample should be interpreted cautiously as qualifications to the results from the primary sample.

The results of clustering for the holdout sample are broadly similar to those for the primary sample: four groupings result from each, two comprised of large firms, two comprised of small. In neither sample do we find any conservative, professionally managed firms. Further, for two of the primary sample groupings the findings are replicated in the holdout. Dilettante firms and Venturesome, professionally managed firms emerge from both samples, with immaterial differences in the profiles. In the holdout results the Dilettante firms are marginally more similar to the Venturesome firms and relatively better represented (30% of the holdout and 17% of the primary sample). In the holdout results the Venturesome professionally managed firms are relatively less well represented (24% of the holdout and 35% of the primary sample).

In the two other groupings, the Crafts firms and conservative family firms (Tories), the reliability of the primary clustering is impugned. In both cases, the holdout sample reflects a much more Venturesome, but otherwise similar grouping, than in the primary sample. In both samples, Crafts firms comprise about one quarter of the firms. However, in contrast to those in the primary sample, those in the holdout sample are innovative and proactive. They register at the upper end of the scales for new ideas, product innovation and product diversity, competitive aggressiveness and networking. This finding of relatively entrepreneurial Crafts firms is consistent with findings of a subset of small creative firms - that could include some Dilettante firms - that are relatively Venturesome (Chaston, 2008; Fillis, 2002; Lee & Denslow, 2005; McCauley, 1998).

In both samples, relatively large family firms with concentrated ownership and valued family traditions comprise about one fifth of the firms. However, in contrast to those in the primary sample, those in the holdout sample are entrepreneurial. Their owners actively scan the environment and engage in networking and bargaining activities, take risks and innovate in broad product lines, and are motivated by new ideas and organization building. This finding is consistent with the typology of modes of professional family firms in Stewart and Hitt (2012).

Based on the holdout sample results, the population of Texas apparel producers may include two types of Crafts firms: Crafts small business owners and Crafts entrepreneurs. Similarly, there may be two types of large family firms: conservatives or Tories, and Venturesome family firms. There may also be two types of large Venturesome firms: Venturesome non-family firms and Venturesome family firms. These two groupings form distinct clusters in the same aggregated sample. The Venturesome family firms differ on more components than those related to family status (e.g., concentrated ownership and familial role models). They are smaller and much more committed to new ideas and organization building than their professionally managed counterparts. They are more competitively aggressive and active in environmental scanning. The managers of non-family Venturesome firms have more formal education and small business experience, and are more focused than the family firm managers on advertising and product innovation.

Hypotheses Five and Six: Performance Implications

Hypothesis five holds that groupings will differ in organizational performance. The result here is straightforward. The groupings differ, with the Venturesome firms performing the best and both Dilettantes and Tories performing the worst. Our finding that the Venturesome cluster had the highest performance is consistent with the finding by Chell and Haworth (1992) that the most "healthy" clothing firms are also the most opportunistic. However, between-group performance differences are *not* statistically significant, as evidenced by the mean performance expressed in Z scores in Table 3. This finding of insignificant between-group performance is consistent with the findings of McNamara, Deephouse, and Luce (2003) and Pereira-Moliner, Claver-Cortés and Molina-Azorín (2011).

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Please insert Table 3 about here

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Hypothesis six holds that groupings will differ in the causes or drivers of organizational performance. It is evident from a perusal of Table 3 that this hypothesis was supported. The four groupings have very different patterns of variables and hence of managerial

backgrounds and activities that drive their performance. This can be seen by examining those components that have at least a very marginally statistically significant ($p < 0.15$) effect on performance for member firms of each of the groupings.

An unforeseen finding is apparent if we compare the positive and negative drivers of performance with the mean values on those components for each grouping. For the two lowest performing groupings, Dilettantes and Tories, performance is enhanced by behaving as a grouping nonconformist (consistent with suggestions in Harms, Kraus and Schwarz, 2009 and McNamara, Deephouse and Luce, 2003). This is consistent with Fiss's (2011) recognition that for some organizations typological *inconsistency* may be preferable to consistency. For example, Dilettante performance is significantly enhanced by negotiating successfully, which is on average very weak in this grouping. Paradoxically, a lack of entrepreneurial experience (which is typical for this grouping) is marginally significantly associated with better performance. We could interpret this to mean that people with entrepreneurial experience would have a hard time running a Dilettante firm. However, this finding might reflect a higher level of artistic ability among owners with less business experience.

Tory performance is enhanced by conforming to the type in terms of a relatively low focus on advertising, but by nonconforming in terms of a greater emphasis on quality, on risk and boldness, and by focusing less on administration. Better performance is also marginally significantly associated with nonconformity in terms of focusing less on external funds and less on operations.

For the type with average performance (Crafts firms) performance is enhanced significantly by conforming to a lack of small business experiences. It is marginally significantly enhanced by conformity with a quality focus, and low levels of diversification and of multiple preparatory experiences. It is very marginally significantly enhanced by conformity with low levels of environmental scanning and a high importance placed on profit for the family. The two areas for nonconformity are both marginally significant and unlikely to be changeable in practice: performance is enhanced by being younger

and less experienced and by not having a cohabitant involved in the business.

For the type with the highest performance (Venturesome firms) performance is consistently improved by conformity to grouping norms, with the statistically significant exception calling for less aggressive competitive behavior. Nonconformity by means of increasing the number of distribution channels is very marginally significant. However, conformity with motivation by ideas and organization building is significant and conformity with successful negotiations is very significant. Conformity with a high importance placed on profit for the family is marginally significant.

Discussion

Limitations

Both the contributions and the limitations of this study stem largely from the design and execution of the survey instrument. This study shares the well-known limitations of surveys, such as the cross-sectional rather than longitudinal data. This is arguably especially problematic in taxonomy (McKelvey, 1982, Chap. 10), although it has never been resolved in a large sample study. Further, surveys fail to capture the range of everyday activities and stakeholder interactions that help shape organizational forms (Steyaert and Katz, 2004). It has other limitations that are not always found in surveys. The sampling frame failed to represent at least one population known anecdotally to exist in the needle trades. We failed to obtain responses from ethnic minority firms, stereotypically Asian and predominantly home-based (although not all "hidden" firms are ethnic minority firms, Williams, 2010). This is not a trivial lacuna for a taxonomic study. Moreover, it is not probabilistic, although it is quite inclusive of Texas apparel manufacturers.

As with other taxonomic studies (McKelvey, 1982, Chap. 11), the findings lack generalizability. They should be seen as demonstrations of the potential for taxonomic approaches as used in natural sciences and as indicators of one particular industry in Texas quite some years ago. Moreover, these limitations demonstrate the

considerable obstacles in the way of taxonomic progress. One is the need for large samples. We were able to delineate subtypes of firms (family and non-family Venturesome firms, and entrepreneurial and non-entrepreneurial Crafts firms) only with the use of the full sample (n = 200 rather than 150). The need for large samples is problematic with the large numbers of items needed in the questionnaires, which depresses response rates. For example, Perreira-Moliner and colleagues (2011) had a response rate of 7.6%. Quite possibly major progress can only be made by national statistical agencies that are mandated to collect the data.

Contributions

Despite various limitations, the pragmatic use of McKelvey's methods has demonstrated their longer-term potential by showing that taxonomic research could guide managerial prescriptions based on the type of firm. Implications for managerial actions for each type of firm are different and contribute to the question of the performance effects of conformity or nonconformity to organization norms. For example, McNamara, Deephouse and Luce (2003) suggested that firms that do not fully follow the pattern or recipe of groups may outperform conformists. Similarly, Harms, Kraus and Schwarz (2009) argued that the most entrepreneurial firms might be the most nonconformist as a result of their entrepreneurial character.

In the case of the Dilettantes, we found little to recommend for their owners other than training in negotiations. Perhaps it is unsurprising that these small and weak firms lack many means of improvement. However, our findings may well underestimate the ways in which creative business advisors could help these firms. Their managerial limitations are reflective of many women-owned firms, particularly those in the "technical/crafts" area, whose owners lack either managerial or startup experience (Coleman, 2002; D'Souza & Kemelgor, 2008/2009; Lee & Denslow, 2005). There is no reason to assume that they do not care to improve in business performance and they may well gain from training (Joyner, 2005; Paige, 2009).

Tory firms are the second worst performing, but significantly larger than the Dilettantes (z = 2.0). For these firms, several

recommendations are possible, all of them implying a less conservative and administrative orientation. For the average performing Crafts firms, findings suggest that they should continue much as they have in the past. Although it is disappointing not to find a recommendation for changes, this may not be surprising as they are the most traditional mode of apparel manufacturer (Fletcher and Hardill, 1995). However, for both Tory and Crafts firms, advisers should remember that these findings apply to the majority of such firms, whereas the holdout sample found evidence of more entrepreneurial firms that were otherwise similar to these two types. For these more innovative firms, different recommendations presumably apply. For the Venturesome firms the main recommendations are to stay the course but to try to moderate their competitive aggressiveness and perhaps to seek more channels of distribution.

This study has demonstrated the potential for taxonomic research based on the practices of science as advocated by McKelvey (1975, 1978, 1982). We attribute our findings of distinctive strategic recommendations based on type of firm to the unusual dataset that adhered to McKelvey's prescriptions. Therefore, the most general contribution of this study is a demonstration of a solution to a long-standing challenge: to specify the types of organizations to which particular findings can be generalized (Freeman, 1986). Such specification is needed both for theory development and for practical application of research. The more specific contribution is demonstrating how patterns related to performance can be determined not just at the firm level, but at the group or configuration level (Short, Payne and Ketchen, 2008). Moreover, this study has demonstrated the possibility that small firm advisers could some day be able to identify organizational types and match them with strategic prescriptions. As a result, they would be better able to offer "tailormade" rather than generic solutions to their clients.

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Table 1: Comparison of predictive characteristics of special purpose versus general purpose taxonomies as measured by R^2 of components in step-wise regression analysis

	Total Sample	Clusters			
		1	2	3	4
General purpose	0.148 ***	0.302 *	0.405 ***	0.708 ***	0.590 ***
Entre'l orientation	0.051 **	NS	NS	NS	NS
Time allocation	NS	NS	0.372 *	NS	0.083 *
Ownership reasons	NS	NS	NS	0.265 *	0.070 +
Strategic tactics	0.073 **	0.128 +	0.100 +	NS	0.276 **

Key: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$

Table 2: The clusters as depicted by significant clustering variables

Component, number of variables	R^2	C1 (n=26) Dilettante	C2 (n=52) Venturesome	C3 (n=33) Tory	C4 (n=39) Crafts
1. Size and legal, 4	0.41	-1.3[a]	+0.2	+0.7	-0.3
2. Negotiating, 4	0.33	-1.2	+0.5	-0.2	+0.0
3. Female owner, 3	0.31	+0.7	-0.0	-0.7	+0.7
4. Ideas; org. bldg., 2	0.28	-0.9	+0.5	-0.6	+0.1
5. Environ. scanning, 3	0.28	-0.1	+0.6	-0.3	-0.7
6. Compet. aggress., 2	0.25	+0.1	+0.4	-0.3	-0.9
7. Π import. to family, 3	0.21	-1.1	+0.1	+0.3	+0.1
8. Operations focus, 4	0.20	+0.1	+0.2	-0.8	+0.4
9. Family tradition, 2	0.17	-0.7	-0.1	+0.5	-0.4
10. Founded or bought, 3	0.17	-0.1	-0.3	+0.8	-0.1
11. Admin. focus, 6	0.16	-0.8	+0.2	+0.4	-0.2
12. Min. ext. depend, 2	0.15	-0.7	+0.3	-0.1	+0.4
13. Ext. funding, 2	0.15	-0.4	-0.0	+0.7	-0.2
14. Self-actualization, 3	0.14	+0.2	+0.2	-0.7	+0.1
15. Risk and boldness., 3	0.12	-0.3	+0.1	-0.7	+0.3
16. Advertising focus, 4	0.11	-0.4	+0.4	-0.4	-0.2
17. Seeks recognition, 3	0.11	+0.6	+0.1	-0.5	-0.0
18. Org. age, 2	0.10	-0.4	-0.2	+0.5	+0.0
19. Wholesale, large FT ethnic empl. base, 3	0.09	-0.0	+0.2	+0.3	-0.5
20. Seeks fin'l indep., 2	0.06	-0.3	+0.0	+0.4	-0.1
21. Competes on quality, 2	0.06	-0.5	-0.0	-0.1	+0.3
22. Fashion focus, 2	0.06	+0.3	+0.1	-0.3	-0.1
23. Diversif. of prods, 2	0.05	-0.1	+0.2	-0.3	-0.1
24. Owner age, exper., 2	0.05	-0.4	-0.2	+0.3	+0.0

25. Number of channels, 4	0.05	-0.1	-0.1	+0.4	-0.1
26. Learned from multiple, sources., 3	0.04	-0.1	+0.3	-0.1	-0.2
27. Entrep'l experience., 3	0.03	-0.3	+0.0	+0.0	+0.2
28. Product innovat., 4	0.03	-0.1	-0.1	-0.1	-0.5
29. Customer service, 3	0.02	-0.3	-0.1	-0.1	+0.1
30. Cohab. also in bus., 2	0.02	-0.1	-0.0	-0.1	+0.3
31. Years of education, 2	0.02	+0.1	+0.1	-0.2	-0.2
32. Experience in small bus. and supervisor, 2	0.01	+0.1	+0.0	-0.1	-0.1

[a] Standardized means ($\mu = 0$; SD = 1) for clustering components in order of significance

Table 3: Variables Affecting Performance by Cluster

Variables are at least very marginally significant ($p < 0.15$) when performance is regressed against all other (32) clustering components by (4) clusters and for the (n = 150) entire sample.

<u>Cluster One, Dilettante firms (n = 26)</u>	
Model R^2	0.302
Mean standardized performance	z = -0.288
Entrepreneurial experience	
Parameter estimate	z = -0.897
Partial R^2	0.100
Probability > F	0.083+
Conformity with cluster	Conformity
Negotiating success	
Parameter estimate	z = +0.406
Partial R^2	0.202
Probability > F	0.021*
Conformity with cluster	Nonconformity
<u>Cluster Two, Venturesome firms (n = 52)</u>	
Model R^2	0.405
Mean standardized performance	z = +0.272
Ideas/Org. building	
Parameter estimate	z = +0.367
Partial R^2	0.138
Probability > F	0.034*
Conformity with cluster	conformity
Negotiating success	
Parameter estimate	z = +0.400
Partial R^2	0.115
Probability > F	0.003**
Conformity with cluster	conformity
Profit for family important	
Parameter estimate	z = +0.245
Partial R^2	0.101
Probability > F	0.072+
Conformity with cluster	conformity
Competitive aggressiveness	
Parameter estimate	z = -0.251

Partial R^2	0.120
Probability > F	0.042*
Conformity with cluster	nonconformity
Number of channels	
Parameter estimate	z = +0.245
Partial R^2	0.109
Probability > F	0.103++
Conformity with cluster	nonconformity
Cluster Three: Tory firms (n=33)	
Model R^2	0.708
Mean standardized performance	z = -0.140
Advertising focus	
Parameter estimate	z = -0.245
Partial R^2	0.051
Probability > F	0.049*
Conformity with cluster	conformity
Quality focus	
Parameter estimate	z = +0.591
Partial R^2	0.209
Probability > F	0.007**
Conformity with cluster	nonconformity
Risk/boldness	
Parameter estimate	z = +0.803
Partial R^2	0.108
Probability > F	0.035*
Conformity with cluster	nonconformity
Administrative focus	
Parameter estimate	z = -0.586
Partial R^2	0.134
Probability > F	0.004**
Conformity with cluster	nonconformity
External funds	
Parameter estimate	z = -0.517
Partial R^2	0.063
Probability > F	0.090+
Conformity with cluster	nonconformity
Operations focus	
Parameter estimate	z = -0.208

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Partial R^2	0.035
Probability > F	0.090+
Conformity with cluster	nonconformity
Cluster Four: Crafts firms (n = 39)	
Model R^2	0.590
Mean standardized performance	z = 0.001
Small business experience	
Parameter estimate	z = -0.797
Partial R^2	0.090
Probability > F	0.034*
Conformity with cluster	conformity
Quality focus	
Parameter estimate	z = +0.317
Partial R^2	0.283
Probability > F	0.094+
Conformity with cluster	conformity
Diversification	
Parameter estimate	z = -0.459
Partial R^2	0.090
Probability > F	0.052+
Conformity with cluster	conformity
Multiple experiences	
Parameter estimate	z = -0.488
Partial R^2	0.046
Probability > F	0.095+
Conformity with cluster	conformity
Environmental scanning	
Parameter estimate	z = -0.219
Partial R^2	0.038
Probability > F	0.108++
Conformity with cluster	conformity
Profit for family important	
Parameter estimate	z = +0.375
Partial R^2	0.045
Probability > F	0.119++
Conformity with cluster	conformity
Owner age and experience	
Parameter estimate	z = -0.768

Partial R^2	0.075
Probability > F	0.064+
Conformity with cluster	nonconformity
Cohabitant in same business	
Parameter estimate	z = -0.434
Partial R^2	0.057
Probability > F	0.055+
Conformity with cluster	nonconformity

Key
p < 0.01 **
p <0.05 *
p < 0.1 +
p < 0.15 ++

[i] An earlier version of this study was presented at the national Academy of Management meetings, Boston, 1997. We acknowledge in particular the helpful advice of Bill McKelvey regarding taxonomic method, Paul Reynolds regarding survey method, and Roy Howell regarding classification method. Errors are of course of our own making.

[ii] Corresponding author.

[3] Baum, Schwens, and Kabst (2011) and Pereira-Moliner, Claver-Cortés and Molina-Azorín (2011) used focused samples, but also focused sets of variables

[4] Alphas of 0.60 are acceptable for research in general and alphas of 0.75 when differences between groups are examined – as here (Cronbach, 1951; Tinkelman, 1971).