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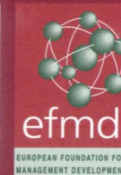
Annual Review of Progress in Entrepreneurship
Research: Volume 2, 2002-2003

Edited by David Watkins, Southampton Business School

ARPENT

Volume 2 2002-2003

David Watkins – Editor



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Annual Review of Progress in Entrepreneurship Research: Volume 2, 2002-2003

Contents

- 3 Foreword, *Olivier Aptel, Audencia, France*
- 5 Annual Review of Progress in Entrepreneurship Research: Capturing an Expanding Field, *David Watkins, Southampton Business School, UK*
- Part 1 – Critical Reviews of Key Topics in Entrepreneurship**
- 13 Research on Entrepreneurship and Small Business in Africa, *Wim A. Naudé & J.J.D. (Klaas) Havenga, Potchefstroom University, South Africa*
- 37 Thirty Years of Research into SMEs: Trends and Counter-Trends in the Quest for Disciplinarity, *Olivier Torrès, University of Montpellier (ERFI-GREG) and EM Lyon, France*
- 85 Corporate Venturing: Development, Diversity, Success and Failure, *David Molian, Cranfield School of Management, UK*
- 114 Understanding the Entrepreneurial Process, *Marijke van der Veen & Ingrid Wakkee, NIKOS, University of Twente, NL*
- Part 2 – Entrepreneurship, Innovation and Small Business Conferences, 2002 and 2003**
- 153 New Frontiers Between Small and Large Firms: New Interactions, New Relationships: Report on the 32nd Entrepreneurship, Innovation and Small Business Conference, *Mariarosa Lunati, CERAM, France*
- 165 Abstracts of Papers presented at 32nd Entrepreneurship, Innovation and Small Business Conference
- 191 How Users build the Innovation Partnerships they Need, *Bernard Kahane, ISTM Noisy le Grand, France & Daphne Getz, Samuel Neaman Institute, Technion, Israel (Best Paper Award)*

- 208 The Euro-Effect and Restructuring the Frontiers between SMEs and Large Firms: the Case of the Defence Industry, *Rachel Bocquet, Université de Savoie, France and Jean-Paul Laurencin, Université de Grenoble II, France*
- 225 Entrepreneurial and Professional Management in Small and Medium Sized Enterprises: Combining Creativity and Technical Skills: Report on the 33rd Entrepreneurship Innovation and Small Business Conference, *Gianluca Colombo & Francesco Sacco, SDA Bocconi & Università dell'Insubria, Italy*
- 237 Disruptive Innovation: Fuelling Emerging Markets, *Chris Hendry, Paul Harborne and James Brown, City University, UK (Best Paper Award)*
- 258 Combining Creativity and Technical Skills: An Entrepreneurial Learning Agenda for Universities, *Christina Hartshorn, SEEDA, UK*
- 278 The Network Enterprise: Ten Years of Experience at the Bombardier Chair, 1993-2003, *Pierre-André Julien, Louis Raymond and Georges Abdul-Nour Université du Québec à Trois-Rivières, and Réal Jacob, HEC Montréal, Canada*
- 299 Entrepreneurialism, Managerialism and Paternalism as Clashing Ideologies in Family Business Systems, *Matti Koiranen, University of Jyväskylä, Finland*

Part 3 – The Current State of Entrepreneurship Research

- 311 Identifying Current Trends in Entrepreneurship Research: A New Approach *David Watkins, Southampton Business School, UK & Diana Reader, Bath Spa UC, UK*
- 325 Abstracts from Selected Entrepreneurship Niche Journals, 2002-2003 *David Watkins, Southampton Business School, UK & Diana Reader, Bath Spa UC, UK*



Entrepreneurship and innovative thinking are fundamental parts of a successful manager's profile. The efmd has developed a range of activities in the area of entrepreneurship, including this annual review. The support of such an initiative is coherent with Audencia's strategic orientation in this direction.

As our school mission states, we are committed to allowing our students to become “... entrepreneurs and managers endowed with human qualities and high-level technical and scientific competence capable of making decisions throughout their life. Within their scope of action and decision-making, they have the capacity for vision, conviction and innovation ...”

We are convinced that entrepreneurship goes beyond the narrow scope of economic activities and the creation of a new business. It can apply to a wide variety of initiatives, be they private or public, economic or social, local or international.

The concept includes various key elements that highlight to specific forms of behaviour and competencies. While entrepreneurship could be defined as innovation and creativity in business, there are a host of other qualities entrepreneurs must possess. They must have a desire to take and keep the initiative, acting as a manager. Likewise, entrepreneurs need to foster growth through action, most of the time in a multicultural or multinational environment. Moreover, they must be prepared to search for added-value, whether a profit is expected or not.

Such qualities are also relevant to in-company activities where entrepreneurship translates into 'intrapreneurship'. In this case, the 'internal entrepreneur' promotes innovation for the benefit of the organisation. Here again the elements of risk inherent in entrepreneurship exist, the rewards as well.

In March 2003, Audencia Nantes School of Management officially opened a new 3000m² Centre for Entrepreneurs as a key part of its current five-year strategy plan. The state-of-the art building is used to create and foster long term bonds between students, firms and entrepreneurs.

The centre's role is to encourage exchange between students, firms, entrepreneurs and faculty to instil those studying at Audencia with the entrepreneurial spirit. As well as

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'Entrepreneurial and Professional Management in Small and Medium Sized Enterprises: Combining Creativity and Technical Skills'

Report on the 33rd Entrepreneurship Innovation and Small Business Conference, Milan, September 10-12th 2003

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BACKGROUND

Small and medium firms live a paradox: they tend to move towards a professional management model while large corporations conversely try to promote entrepreneurship within their management teams.¹ This simple observation was the starting point for the 33rd *Entrepreneurship Innovation and Small Business Conference* held at SDA Bocconi, Milan in September 2003 where about one hundred and fifty leading scholars and experts met to discuss this topic.

The Conference was organised into five tracks:

1. Managing the growth process
2. District models and networks of firms
3. Training and management consulting for SMEs
4. Family business, entrepreneurship and the role of professionals
5. The impact of e-business on existing SMEs.

The comparison between entrepreneurial and professional management is a classic theme in managerial literature and business practice. The two management models are not mutually exclusive, but combining the two is very difficult.² The dominance of entrepreneurial or technical aspects in different contexts drove the Conference debate.

Entrepreneurship is still the dominant theme and cuts across most studies in the SME field. In industrial districts Entrepreneurship may be demonstrated at the firm, cluster or regional level; it is also gaining more and more attention from the public authorities that have interest in fostering innovation and sustaining the growth of new

¹ Cf. Molian (2004), in this volume.

² See for example, Koiranen (2004), in this volume.

ventures. Many cases were discussed; firms and development agencies visited, and some general recommendations emerged.

INTRODUCTION

In his keynote speech David Watkins (2003) posed the question of the evolution of entrepreneurship studies as a matter of 'domain foundation' and discussed some of the issues regarding publication coverage. Showing us a quantitative analysis of clusters formed by sets of keywords coming from the *ARPENT* Abstracts Corpus, he concluded that:

- Textual analysis of the *ARPENT* abstracts corpus allows clustering, and that means coherent groups of subjects exist;
- No *unexpected* clusters come out from the textual analysis, showing that there possibly exists a clear enough domain border;
- The Abstract Corpus gives more *recent* results than citation-based studies;
- Few papers address themes that might be *expected* to be growing.

Using textual analysis, Watkins³ directed our attention to a different way of looking at entrepreneurship as a 'knowledge domain: not proceeding from a pre-set definition, but as a research project bounded by the efforts of its researchers, with definition coming – or not – from the coherence of their efforts.

Textual analysis is a very flexible tool that leverages information technology to analyse the content of large quantities of data. It looks for recurring words, idioms and frequent-phrases and the contexts in which they occur. As a result, it allows us to create a list of keywords and to analyse a text as content. Using textual analysis in conjunction with natural language processing (NLP) then allows us to find semantic structures and analyse a text as meaning. A 'semantic engine' processes text extracted from a document to identify individual sentences, phrases and nouns' and to assign a part of speech tag to each word of the text. Then it performs a syntactic analysis applying the grammatical rules, stored in its linguistic knowledge base, to analyse each sentence into single or multi-word syntactic structures, including noun phrases, verb phrases, prepositions, and conjunctions. The last phase is a semantic analysis that utilises the syntactic elements that were derived in the previous stage of processing to identify meaningful concept relationships of each phrase or sentence, specifically the subject-action-object relationships. Finally these structures are

³ A version of this appears as Watkins & Reader (2004) in the current volume.

normalised (plural nouns are converted to singular nouns, verbs to their infinitive form, etc.) and presented as an analysis of relevance or frequency.

The perspective offered by Watkins, combined with the challenge of using a new methodology was a temptation too strong to resist. So we have tried to summarise the findings from the Conference in a different way, hoping to offer a different but more insightful approach to the community of scholars in entrepreneurship. The analysis was performed in two stages. At the beginning, we processed the 64 papers⁴ received for the Conference.⁵ Then we created a version of the papers containing nothing other than their bibliographies and we executed a further analysis.

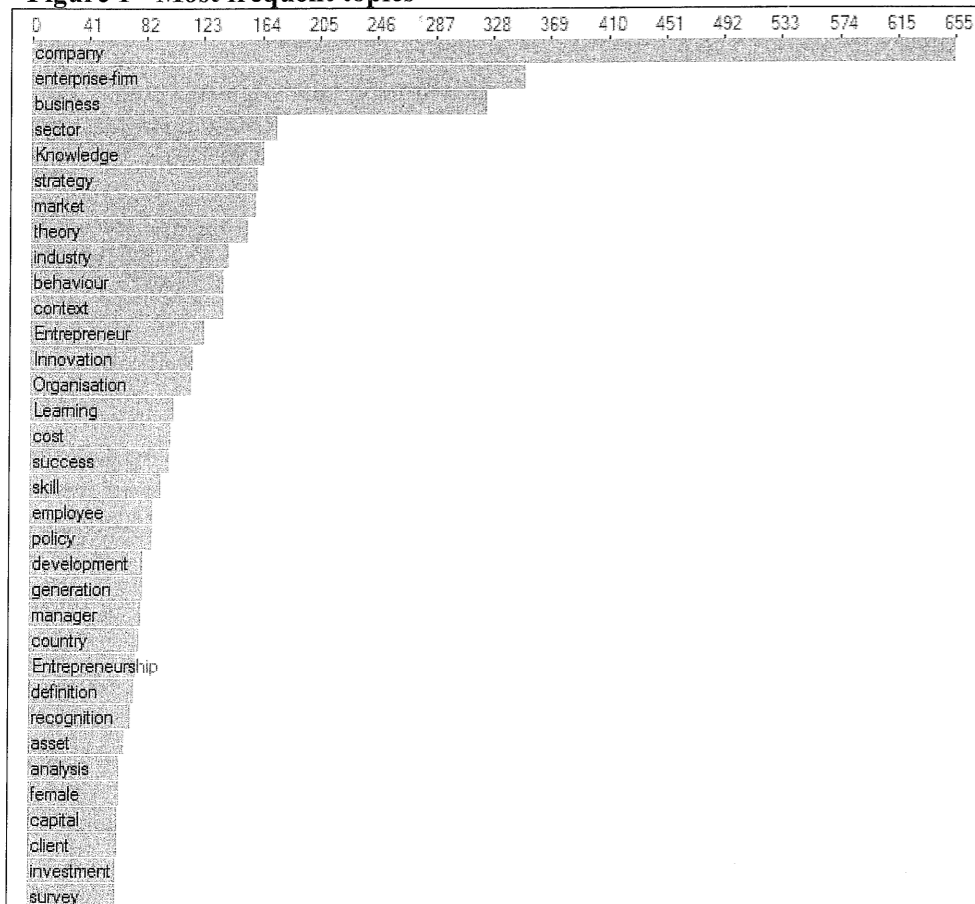
NOMEN OMEN: FROM WORDS THE CONCEPTS

Categorising nouns that have a common root and generating the synonyms lets the main topics of a paper emerge. In this way it is possible to build an index of topics and to give a quantitative measure of relative research attention expressed through the content of presented papers, as shown in Figure 1.

⁴ 65 papers were presented in the workshops during the Conference, but one was excluded from this analysis because it was a business case study (Lechner & Leyronas, 2003).

⁵ The analysis was executed using Knowledgist[®] v. 2.5 (Build 227) by Invention Machine. For their kind support in performing this analysis we are really indebted to Valerio Abate and Easy-Xnnvtrs.

Figure 1 - Most frequent topics



It is not really surprising to find among the most popular topics terms like 'company', 'business', enterprise' or 'firm' and 'sector'. The same is true for 'entrepreneur' or 'entrepreneurship': if they had been set as synonymous, they would have been ranked in fourth place. But it is far more interesting to find 'knowledge' before 'strategy' – and appearing in almost all the papers – with 'learning' not far behind. 'Innovation' appears more frequently than 'organisation', and 'skill' is very close to 'success'. Last but not least, it is worth noting the presence of 'generation' and 'female', two very characterising and specific terms in this list.

However a popular topic is not necessarily an important topic. If it occurred a number of times in the same paper, a simple measure of frequency would be inadequate to judge its importance. To avoid such a bias, we calculated a concentration index that weighed the frequency of a topic inside the *corpus* of papers with the number of papers in which it has been included (Table 1). In this way we can form a general idea of those subjects scholars' attention is focused on, and which ones are more

frequently discussed (numerous recurrence *per* paper and high concentration index); or by contrast which are those general themes that, although far from the 'core' of research, are recurring (few occurrences *per* paper and low concentration index).

Table 1: Topics: average concentration per document

Track	Topic	Topic frequency	N° of documents	Concentration (freq/documents)	Concentration index
-	knowledge	503	55	9,1	female
-	strategy	264	57	4,6	family-business
-	entrepreneur	341	64	5,3	innovation
-	innovation	448	47	9,5	knowledge
-	organisation	243	45	5,4	family-business or professional
-	learning	244	41	6,0	network
-	generation	90	24	3,8	district-cluster or network
-	female	143	12	11,9	district-cluster
-	survey	113	35	3,2	training or mgmt consulting
T 1	growth	358	55	6,5	growth
T 2	district-cluster	195	22	8,9	training
T 2	network	420	47	8,9	learning
T 2	district-cluster or network	420	47	8,9	organization
T 3	training	212	35	6,1	entrepreneur
T 3	management consulting	77	28	2,8	entrepreneurship
T 3	training or management consulting	290	43	6,7	professional
T 4	family business	244	23	10,6	strategy
T 4	entrepreneurship	251	48	5,2	generation
T 4	professional-consulting	235	46	5,1	survey
T 4	family business or professional-consulting	475	52	9,1	e-business
T 5	e-business	73	25	2,9	management consulting

This concentration index is naturally not a perfect indicator,⁶ but it does give a clearer idea of the focus of the Conference debate.

⁶ It is a simple average of dispersion that, if not weighted by its variance, could be misleading in the presence of big outliers. But this situation does not occur often in textual analysis.

We then made another selection based on the list of the most frequent topics as keywords. To this we added terms more closely correlated with the conference track subjects (Table 2). Finally, we performed a wider search including all the associations with the root-topics. In this way, 'family business' could either be considered as a stand-alone topic, or as part of 'family business succession' or 'successor in a family business'. Similarly, 'e-business' as a concept could either stand alone, or be part of 'e-business strategy', 'strategy in e-business' and, using synonymous, 'e-procurement' or 'e-procurement strategy' and so on.

TRACKS AND THEMES, THEMES AND TRACKS

The enlargement of the topic list to include the subject tracks gives some important insights into the areas of business discussed at the Conference. The least popular track was e-business. Only five papers were presented but we can find references to it in 25 documents with a low concentration. Some of the papers were interesting analyses of e-business impact like Gray (2003), or a business case study (Jones, 2003), but the subject is clearly not such a specific focus of interest as in the past and it is transforming itself from a stand-alone topic into an integrated element of other lead topics.

Table 2: Papers per track

Track title	# of papers	%
1. Managing the growth process	24	37%
2. District models and networks of firms	11	14%
3. Training and management consulting for SMEs	10	15%
4. Family business, entrepreneurship and the role of professionals	15	22%
5. Impact of e-business on existing SMEs	5	11%
Total	65	100%

The opposite is true of 'family business', which is present in 23 papers – more than all those included in the track – and very concentrated. From this perspective, family business has a strong attraction to scholars as a well identified thematic core. The most frequent association for family business is with 'succession', as in the case of Vento-Vierikko & Lamminpää (2003) who evaluated the critical factors behind the success of a Finnish programme of training for family succession, or in the large study by Malinen & Vento-Vierikko (2003) on using the business plan as a tool for preparing succession. Closely connected to this topic is the term 'generation', present in 24 papers; this is also the main topic of Corbetta, Lassini & Marchisio (2003), who presented the results of a two year research project examining the use of training

programmes to enhance entrepreneurial capacities in family business over extended periods of time, as well as papers by McPherson (2003) and Koironen (2003).⁷

Moreover, these papers on 'succession' also overlap another *core* association: training programmes and/or the role of the professional, which was a separate main track in the Conference. Elsewhere on the training theme, Connolly, O'Gorman & Bogue (2003), analyse the phenomenon of Recent Graduate Entrepreneurs (RGEs), a new category of entrepreneur, defined as the graduate who becomes self-employed within a short time of leaving university. Similarly, and intersecting with the entrepreneurship theme, Pulci (2003) studied the needs in tailor-made training interventions for small businesses, while Hartshorn (2003)⁸ advanced some suggestions for combining creativity and technical skills in university education. Training is more strongly associated with 'need', 'succession' and 'entrepreneur' or 'entrepreneurship' but is located at some distance from 'management consulting', the other part of the track. However, both appear at a *low concentration* in many papers – respectively 35 and 46 – despite the fact that only ten papers were presented in the specific track.

Another aspect that emerges strongly in the topic frequency is 'knowledge', ranked in fifth place. 'Knowledge', as with 'family business' and 'innovation', is a transversal subject (55 papers include the topic) and a core focus of certain papers that belong to different tracks. One might think *a priori* that its best position should be close to training, but it is not: only two papers are to be found at this intersection. Instead, 'knowledge' largely overlaps 'family business', 'districts' and 'managing growth'.

'Innovation' has the same characteristics and cuts across almost the same themes as 'knowledge'; also, the overlap between 'innovation' and 'knowledge' itself is not an empty set (five cases), although it is far from significant. These two factors develop in different directions: 'knowledge' is associated with 'knowledge assets', 'knowledge creation/development', or 'knowledge transfer', whereas 'innovation' associates with 'innovation process', 'innovation networks', 'innovation diffusion' and 'innovation strategy'. The former tend to be associated with micro-economic concerns (Kirk, 2003; Surlemont, Johnson & Nlemvo, 2003; Luce, 2003), the latter with policy making and/or larger study samples (Hendry, Harborne & Brown, 2003⁹; Spilling, 2003; Pittino & Visintin, 2003).

The 'district models and networks of firms' track is an interesting case of subject clustering. It is formed from two different parts: districts or clusters on the one hand, and networks of firms on the other. Districts are a well-identified topic and show a high concentration. But the subject of 'networks of firms – perhaps partly because of the strong attention paid to the topic already at the 2002 EISB Conference – is at the

⁷ Reproduced in modified form in this volume.

⁸ Reproduced in modified form in this volume.

⁹ Reproduced in modified form in this volume.

same time more frequent (47 papers compared to 'districts' 22) and more concentrated. 'Networks' are always present as a topic when discussing 'districts', but the opposite is not the case. 'Districts' or 'clusters' tend to associate with 'industrial', 'regional', 'development', 'networks', 'formation' (Alberti, 2003; Bernasconi & Jolly, 2003; Parolini & Visconti, 2003), whereas 'networks' are associated with 'networking', 'social', 'support' and 'model' (Kirk, 2003; Kondo, 2003; Velamuri & Locke, 2003).

A case apart is the topic 'female'. It has the highest concentration and crosses many different tracks, being present in 12 different papers. In some respects it is a 'hidden' centre of interest in the Conference (Gnan & Montemerlo, 2003; Kondo, 2003; Goulart, Cozzi & Arruda, 2003; Mingolla, 2003; Soru & Zanni, 2003), and its association with 'entrepreneur', 'presence', 'work', 'participation' and so on, shows it to be well embedded and worthy of further attention.

Last but not least is the topic of 'growth'. This is included in 55 papers out of the 64 considered in the textual analysis. Its concentration is high and the 'managing growth' track was the largest in the Conference with 24 papers being presented. Crossing every category, growth seems to be the distinct research problem related to SMEs: it is associated with 'strategy', 'model', 'firm/company', 'revenue/sales', 'organisational', 'employee' and 'potential'. It is possible to find a combination of 'growth' with about every other keyword.

CONCLUSIONS

On the basis of the textual analysis carried out, some conclusions can be reached about the Conference that could have general significance.

Women's position in SMEs seems to be a matter of interest that needs more attention.¹⁰ Perhaps like 'family business' this topic may emerge further, in a corpus well integrated into the more general domain of SME and entrepreneurship studies.

'Growth' was the most frequently discussed topic during the Conference, and this may be a reflection of the economic situation. Innovation, knowledge districts and networks are hot topics, but they tend to be studied at either a macro or micro level and are not always well integrated. It is a natural ambiguity in SME research that on the one hand attention is devoted to the firm and to the entrepreneur, while on the other its recommendations are more often addressed to policy makers. But if policymaking is the natural interest of SME scholars, it may be that different strategies are needed to deliver its messages in a more effective way.

¹⁰ Carter *et al.*'s (2003) Review for *Annual Review of Progress in Entrepreneurship Research* covers some of the areas of interest: specifically, where women are the entrepreneurs. However, the role of women in SMEs in the papers analysed here is broader.

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Disruptive Innovation: Fuelling Emerging Markets¹

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INTRODUCTION

Considerable interest has been generated in the development of alternative energy sources as a result of links between pollution, health and climate change. International agreements such as Kyoto and those between EU, Japanese and Korean car manufacturers have been supplemented by legislation in both America and Europe to control the use of power sources known to pollute the environment. There are also major concerns about: a) the long-term sustainability of fossil fuel energy sources, and b) the short to medium term security of supply for fossil fuel energy in the current, turbulent politico-religious environment.

The opportunity exists, therefore, for radical innovation to address these societal and market problems and to develop sustainable energy technologies. For example, fuel cells are an attractive, clean, quiet, reliable, and resource-efficient energy source, with a range of applications in the automotive, portable electronics, and power generation markets. Fuel cell technology is based on science known in the 19th Century – combining hydrogen and oxygen in a catalytic chemical reaction (see Appendix 1) to produce electricity and water – and has been used by NASA in the space programme since the 1960s. However, developing commercially viable designs to suit a range of applications has only been actively pursued over the last decade as concern over environmental and security of power supply issues has grown stronger. Hall & Kerr (2003) highlight “...expensive components, inadequate power densities and competing technologies, particularly the dominant internal combustion engine” as reasons for restricted development in fuel cells. However, development is now being actively funded by private businesses and governments in Europe, North America and the Far East. Not all of the technologies, as described in Appendix 1, are completely substitutable - for example Proton Exchange Membrane Fuel Cells (PEMFC) and Solid Oxide Fuel Cells (SOFC) - although there is some potential for overlap between these two (for example, in domestic power generation or large vehicle auxiliary

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