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Collaboration: A key competence for competing in the 21st century

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1. Introduction

It is now an accepted fact that in the 21st century competition will be between networks of organisations and individuals, which efficiently and effectively integrate their competencies and resources in order to compete in a global economy (Bititci et al, 2004). Similarly the SME'2000 conference, which was held in Bologna, concluded that "*SMEs belonging to networks are often more competitive and innovative than those operating in isolation. When working together, SMEs can increase their focus through specialisation in functions that are complementary within their networks*".

In today's global economy, companies are trying to re-invent their businesses and maintain their competitive advantage through collaboration by sharing resources, information and risks. However, despite the fact that collaboration has significant benefits, earlier studies report high failure rates amongst collaborative companies (Lewis, 1990; Elmuti and Kathawala, 2001; Zineldin and Bredenlow, 2003). These works identify many factors as the drivers for success and failure (Ohmae, 1992; Kanter, 1994; Das and Teng, 1998; Kalmbach and Roussel, 1999; Huxham and Vangen, 2000; Daniels and Radebaugh, 2001; Child, 2001).

The objective of this article is two-fold:

1. Explain in simple terms what collaboration means, its benefits, reasons for failure and critical factors that need to be considered in creating and managing collaborative enterprises.
2. Share the results of a survey conducted among European SMEs to understand the state of collaborative arrangements and elicit their experiences with regards to collaboration.

The research reported in this article was funded through an EU Leonardo da Vinci project with an objective to facilitate European SMEs to collaborate (see www.SMECollaborate.com for further information on the project)

2. The Global Landscape

In the 21st century, industry will continue to be about the creation of value through innovation and improvement of products and processes. However, the value content of manufactured artefacts (goods) will be relatively small compared to the value of the service and/or knowledge content associated with the artefact.

It is also considered that the nature of retail will change and some manufacturing activities will start moving into retail operations – for example, with retail outlets configuring products to customer specification, continuously driving towards mass customisation. This will lead to the blurring of lines between manufacturing and retail.

Manufacturing will have to deal with greater degrees of complexity, uncertainty and change as product lifecycles becomes shorter, multi-science products starts to emerge (products with knowledge, IT, biotech, chemical, mechanical, electrical, etc., content),….thus sustainability of the productive system (including product design, recycling, returns management) and agility become major challenges. Industry and retail will have to deal with end-to-end fulfilment processes that include product development, supply-chain management, reuse, recycling and end of life disposal. Mass customisation will become more widespread, especially enabled through scalable technologies.

All of these developments will lead to the emergence of knowledge-based collaborative enterprises.

In this context, collaborative enterprises refer not just to supply chains but also to networks and clusters, including collaboration in technology development (technology chain), product development (design chain) and product support (support chain). The collaborative enterprise concept extends the current thinking on supply chains and strategic alliances, where each enterprise tries to maximise its own performance… in a truly collaborative enterprise the performance of the whole system is optimised and gains are shared between the partner enterprises.

Knowledge-based collaborative enterprises will compete, not based on the ability of making a specific artefact but based on its competencies and capabilities in developing a product, marketing and selling the product, making the product, packaging it within a service proposition and customising it to specific customer needs. The collaborative nature of an enterprise together with the need for mass customisation will lead to the development of more distributed industrial systems.

These changes will also affect the distribution of labour and the social systems. Industry and commerce as we know them today will change. Processes will be global and inter-enterprise, consequently teams (operational and management) will span across enterprises and these global teams will be multicultural and spread across multiple time zones. Consequently, a new social system will emerge.

The above changes will be partly fuelled and partly driven by emerging technologies in all areas of science and engineering, but particularly by developments in information and communication technologies, such as exponential increases in bandwidth, standardisation of interfaces and development of more open systems architectures.

3. What is collaboration? and Why do companies collaborate?

In simple terms collaboration literally means "working together". Bititci etal, (2004) offers a more formal definition of collaboration as "a number of autonomous organisations working together, pooling and sharing resources, information, systems and risk for mutual benefit".

In collaborating, organisations share resources, share & exchange information and complement each other's weaknesses. Literature (Golicic et al., 2003 and Parung and Bititci,2005) defines different levels of collaboration that are associated with different levels of resource, risk and benefit sharing. These are:

- Coordination – information sharing with little mutual adjustment
- Cooperation – resource sharing with moderate mutual adjustment
- Collaboration – risk and benefit sharing with high levels of mutual adjustment

Literature also provides numerous sources on the benefits of collaboration, which are summarised in Table 1. Based on how the literature defines and classifies collaborative business relationships and the associated benefits of such relationships, it is clear that collaboration provides a mechanism by which risks are shared (thus minimised) and opportunities maximised by bringing together the right mix of competencies and creating critical mass to enhance an organisation's competitive advantage.

Table 1 - Typical benefits of collaboration

Reduced…	**Increased…**
• Risks	• Market share
• Costs	• Assets utilization
• Time to market	• Quality
• Delivery time	• Flexibility and responsiveness
• Inventory	• Skill and knowledge
	• Critical mass
Lewis, 1990; Kanter, 1994; Huxham, 1996; Parker, 2000; McLaren, Head and Yuan, 2002; Sahay, 2003; Stank et al., 1999; Holmberg, 2000; Lummus and Vokurka, 1999; Ireland and Bruce, 2000; Kanter, 1994	

Why do collaborative ventures fail?

Evidently, many studies report that, although the number of collaborative enterprises is increasing, 70% of collaborative enterprises end up in failure (Lewis, 1990; Harbinson and Pekar, 1998; Zineldin and Bredenlow, 2003).

The literature contains a number of examples that typify why collaboration fails. The most commonly quoted examples include: Honeywell and Ericsson (Zineldin and Bredenlow, 2003); Ikea and its suppliers (Zineldin and Bredenlow, 2003); NWA and KLM (Elmuti and Kathawala, 2001; Zineldin and Bredenlow, 2003); GM and Daewoo (Zineldin and Bredenlow, 2003), Volvo and Renault (Bruner and Speckman, 1998; Elmuti and Kathawala, 2001)

Previous research (Bititci et al,2004) identified several reasons that may cause a collaborative enterprise to fail. These reasons are categorised as follows:

- Failure to achieve **Strategic Synergy** – to ensure that participants have a common appreciation of the individual objectives and expectations of one another, which are consistent with the competencies and contribution of each partner, as well as the additional value and competitive advantage to be delivered through the collaboration.
- Failure to achieve **Operational Synergy** – to ensure that each partner's internal management difficulties are understood and resolved, and that customer focused operational systems extend across organisational boundaries.
- Failure to achieve **Cultural Synergy** – to ensure that the mindsets, organisational culture and management styles are compatible between partners and that there is sufficient trust and commitment among partners.
- Failure to achieve **Commercial Synergy** – to ensure that the short and long term expectations, benefits and risks are understood and appropriate agreements have been put in place with regards to the distribution of risks, as well as benefits arising from collaboration.

The literature makes it clears that collaborative relationships between businesses provide a mechanism for quickly responding to global changes and pressures whilst building competitive advantages for competing in this rapidly changing global economy. It is also recognised that, while large companies can rely on internal resources for technology, product, market and competency development needs, SMEs, with their limited resources, need to work with others in order to develop competitive positions in a global environment.

4. What do European SMEs say about Collaboration?

In 2007, a survey of European SMEs was conducted by Partners in the SMEcoll project (www.smecollaborate.com). The survey was conducted in two stages. The first stage involved the completion of a questionnaire to establish the collaborative profile of the population. This was followed by face-to-face interviews with selected SMEs from these states. In this section we present the results of this survey.

4.1 Questionnaire Survey

The questionnaire was distributed by post and email post to approximately 500 SMEs across the five European countries that participated in the project. In some countries the questionnaires were followed up with telephone calls to elicit responses. In total, 108 usable responses were returned (28 from Ireland, 11 from UK, 9 from Germany, 42 from Italy and 18 from Sweden).

When asked of their experience of collaboration, 82% of the respondents reported positive experiences, implying that they had participated in some form of collaboration and, as a result, they had positive experience of collaboration. 16% indicated that they had no experience of collaboration but were interested in finding out more. 1% reported negative experience, implying that they had participated in some form of collaboration but with unfavourable results. 1% of the respondents reported that they have no experience and that they were not interested in collaboration (Figure 1a).

Respondents were asked what types of partnerships were preferred. Four different types were defined, each of which involves deeper levels of involvement:

- Cooperation involves being a 'good neighbour' and sharing information.
- Coordination involves resource and systems sharing, such as joint marketing.
- Collaboration involves interdependency with risk and benefit sharing, such as new product development.
- Vertical Integration involves a tight partnership, such as in sectoral supply chains.

It was not surprising that cooperation was deemed as the most important (33%). Significantly, collaboration was almost as important (30%) among the respondents. Co-ordination was deemed as of lesser importance (22%), while Vertical Integration was of lower priority (15%).
(Figure 1b).

Respondents were asked to select from a list of business processes or business areas what their primary and secondary priority areas were for potential collaboration with others. Three areas stand out – anything that will help increase sales; the ability to be able to access new markets; and the capacity to develop new products. Accessing technological capability and new skills were also seen as important, while general improvement projects, e.g. productivity or quality improvement, were less important.

When asked of the location of their collaborative partners, 45% reported relationships within national boundaries, 35% reported relationships with North American and Western European companies, 7% had relationships in Eastern European with 13% reporting relationships with the rest of the world, including the emerging low-cost economies (Figure 1d).

When asked to categorise their level of satisfaction with collaboration projects that they had undertaken, respondents expressed generally good satisfaction with the overall results, the collaboration process used, the quality of their own contribution and that of their partners and the overall level of goal achievement. (Figure 1e). Similarly, when questioned on more measurable and tangible performance drivers (such as impact on sales, costs, productivity, quality and so on) the respondents reported general satisfaction with the results, although this was not universal. (Figure 1f).

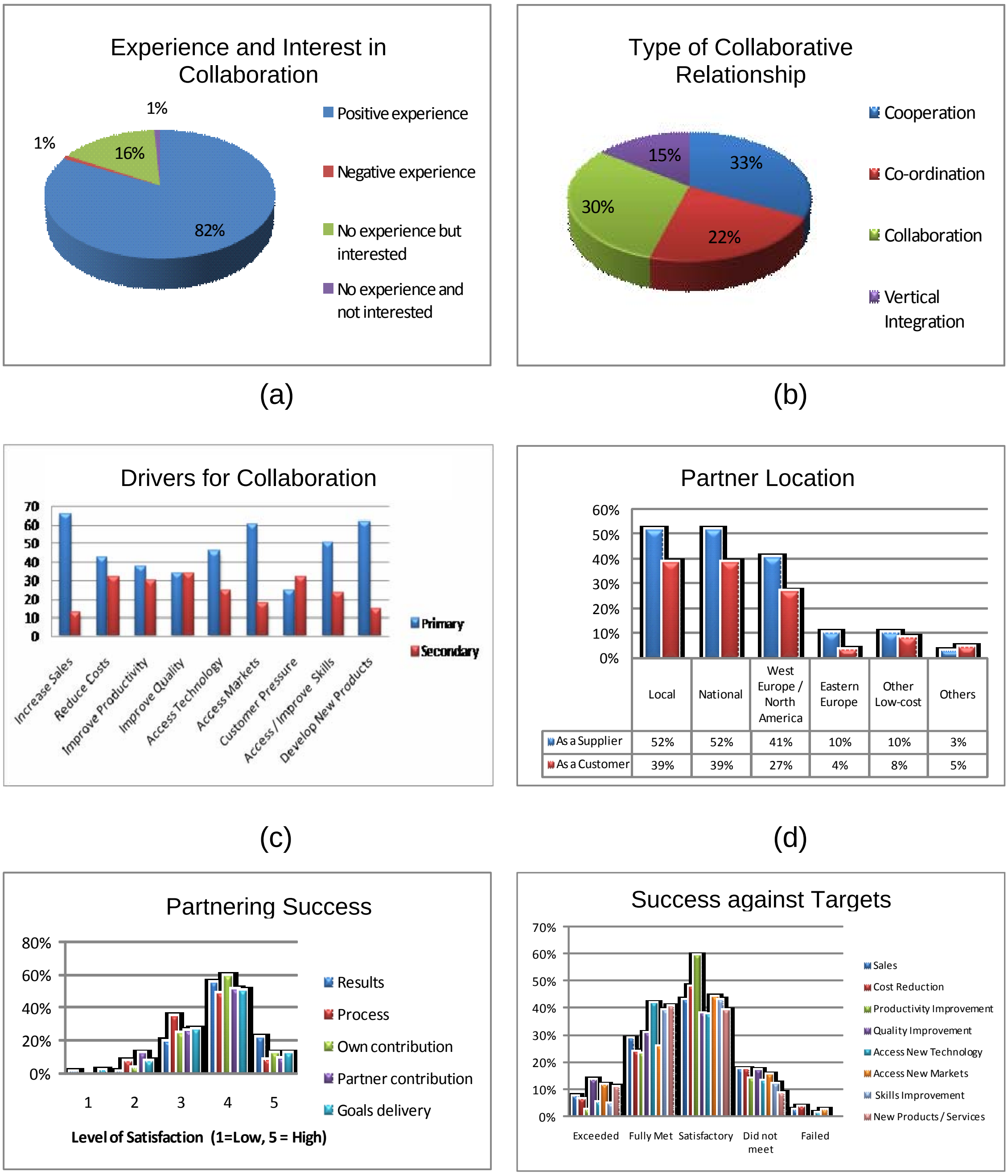

Figure 1. Collaborative profile of European SMEs

4.2 Interview Survey

From the analysis of the results of the questionnaire survey, a select number of companies were interviewed from each country. These were primarily those organisations that had exhibited good experience in collaboration. In addition, a number of other companies from outside of this group that did not believe in collaboration were also interviewed.

In total, interviews were carried out with 24 companies (5 in Ireland, 5 in UK, 3 in Germany, 5 in Italy, 4 in Sweden and 2 in Switzerland). The key messages that emerged from these interviews are illustrated in Table 2.

Table 2. Key messages emerging from the interviews

Key Issue	**Trust** There is a clear need for mutual trust to make collaborations work	**Relationships** The need to establish good working relationships	**Communications** The need for managed and clear communication	**Culture** The need to be aware of and overcome cultural differences	**Setting up** In setting up the partnership there is a need for structured and proven methods	**Operation** The need for operational tools to make collaborations work	**Problem Solving** The need for a shared approach to problem solving
Dos and Don'ts	▪ Be an 'Open Book' ▪ Do not undermine partner's business ▪ No hidden agendas ▪ Everyone needs to be a winner ▪ Start relationship with something simple ▪ Avoid adversarial relationship ▪ Do not take advantage of partners	▪ Build a strong relationship between the internal champions in each partner ▪ Ensure strong involvement by each partner	▪ Use all possible communications channels to build trust ▪ Be willing to share information	▪ Cultural differences will always be present ▪ Develop an early understanding of cultural differences ▪ Work with partners to mitigate against cultural differences	▪ Use available tools to help find partners ▪ Ensure size compatibility ▪ Ensure goal congruence ▪ Understand partners' goals & problems ▪ Ensure clarity through measurable targets ▪ Use written agreements ▪ Each partner should understand other's roles and competencies ▪ Understand limitations of each partner ▪ Combined competencies should give something greater than the sum ▪ Do not underestimate the man-management effort required ▪ Ensure the pace of collaboration development suits all partners	▪ Clear traceability among partnership. ▪ Train the collaborating team in teamwork and social skills to ▪ Invest effort to make the partnership work ▪ Strong should mentor the weak ▪ Act as if working for the same business and treat people accordingly ▪ Share personnel if possible ▪ Spend time in each other's organisations	▪ Do not blame – it is easy, but is destructive to the relationship ▪ Need a clear way to identify problems and to tackle them ▪ Identify problems early ▪ Be up-front with problems ▪ Focus on solution first and then look at how to prevent them re-occurring

4.3 Overall Conclusions of the Survey

Based on the responses to the questionnaire together with the face-to-face interviews held, the following are the principal conclusions:

- Although European SMEs seems to be familiar with business to business collaboration (82%), mostly with positive results, many of these seems to be cooperative or coordinating relationships rather than full collaboration (30%) where risks and benefits are shared.

- European SMEs seem to be aware of the potential benefits of collaboration, particularly those relating to increasing market opportunities and new product development.

- Most European SMEs seem to prefer forming collaborative relationships within national boundaries (45%) or with partners in Western Europe or North America (35%). In contrast, the survey reported a low level of relationships with other parts of the world (20%). From our interviews, the primary reason for this is the priority given to trust and relationships by SMEs, combined with the need to operate in an open and blame-free way. This emphasises the need to put effort into finding the right partners and understanding their needs, as well as constructing sound operational processes with clear and focused goals, and good communications backed up by measurement and reporting systems.

- Based on the data collected there does not seemed to be a significant difference between the attitudes of SMEs in different European states. However, the interviews did display an increasing tendency for SMEs from Ireland to develop relationships with low cost production economies (such as Eastern Europe and China). A similar tendency is noticed between Northern Italy and Romania. We expect that these trends will accelerate.

5. The SMEcoll Project

SMEcoll is funded by the Leonardo da Vinci programme within the European Commission to help SMEs to collaborate in today's increasingly volatile global economy. The objectives of SMEcoll is to facilitate SMEs to identify partners, locally and globally, explore collaborative opportunities and develop collaborative relationships through proven methods, tools and techniques, as well as providing a secure environment for managing collaborative workflows. The project has eleven partners throughout Europe, including Switzerland, Germany, Ireland, Italy, Scotland (UK) and Sweden.

SME Collaborate, together with its predecessor SMEexcel, has developed the following methods and tools:

- The Synergy Model – for assessing the collaborative readiness of an organisation.
- Collaborative attitude assessment tool

- The SME Excel methodology for facilitating and developing collaborative relationships. This takes an organisation through the Attraction, Identification, Formation, Implementation and Evaluation phases of the collaboration lifecycle.
- A number of on-line application tools or simple spreadsheets for evaluating the attractiveness of particular collaborative opportunities
- A secure web-based ICT platform where collaborating organisations can manage their collaborations through a one-stop web-based interface. Collaborations across different regions and time zones can access the collaboration web space on a 24/7 basis. The ICT platform offers the following facilities:
    - Share documents and information
    - Managing workflows to facilitate their collaborative business processes. For example, collaborative preparation of a quotation for a given request for quotation
    - Share a common collaboration calendar
    - Manage collaborative projects using simple project management tools
    - Link to additional resources for collaboration
    - Display ongoing announcements specific to the collaborating companies

In addition to the above, SMEcoll has developed educational materials and programmes specifically targeted at managers, directors and owners of SMEs. For further information, visit www.smecollaborate.com

The following insets contain two case studies on collaboration amongst SMEs facilitated through the SME Collaborate project/

Case of Houston Co-Pack and JW Hardie

Houston Co-Pack is a bonded warehousing and contract packaging operations that specialises in taking the difficult to do jobs from the spirits industry and packages these for major customers, such as Allied, Pernod and Diageo. It identified the need for larger facilities and investment in a modern bottling line as a key priority for growth but could not invest alone due to associated risks.

JW Hardie are owners and managers of well known whisky brands, such as Talisman, Tomatin and Antiquary and were looking for reliable and dependable bottling facilities but could not justify investing in a full new facility due to limited volumes.

Houston Co-Pack was interested in exploring collaboration to grow its business. Facilitated through the SME Collaborate project, Houston Co-Pack identified two potential partners, JW Hardy and Company X, through their industry network. The three organisations were facilitated through the Attraction and Identification phase of the SME Collaborate methodology that resulted in one partner dropping out. Houston Co-Pack and JW Hardy were facilitated through the Formation and Implementation phases of the collaboration process.

As a result Houston Co-Pack installed a new bottling facility to produce 100% of JW Hardie's production. JW Hardie contributed 50% towards the costs of a new manufacturing facility. Houston would also procure dry-goods (bottles, labels, etc) for Hardie, in effect becoming and extension of Hardie's business whilst maintaining autonomy and freedom to win business from other customers. Repetition.

Houston focused on achieving operational excellence in bottling and contract packaging and Hardie focused on distilling, blending and brand management with both organisations enjoying steep improvements in sales, productivity and customer service.

Case study of RTR Electronics and Quanta
RTR Electronics is a knowledge-based Company, which provides specialised Electronic Manufacturing, Rework Test and Support Services to OEMs globally. RTR's mission is to provide the Electronics Industry with a Best-in-Class Manufacturing, Rework and Repairs Services, which is of high quality, flexible and cost effective. It has a highly skilled workforce, which includes Technicians and IPC Certified Rework Operators.

Today, Quanta Computer is the largest notebook computer ODM company in the world. With leading technology and strong R&D, Quanta has become a leader in hi-tech markets.

RTR and Quanta's Irish operations collaborate on the quick turnaround of screening and testing flat panel computer displays for integration into notebook computers for an OEM based in Europe.

Initially, the RTR/Quanta collaboration tested out a pilot version of the SME-Collaborate platform. The pilot version consisted of a collaboration web space where both companies could share documents, manage their contacts and manage their quotation and reporting processes. The quotation and reporting processes were managed through workflows developed specifically for this collaboration. The workflows included automatic email alerts to notify each person in the process of tasks that required action.

The results of the initial testing concluded that the collaboration platform does provide a useful base for collaboration and that the workflows are good for traceability and data management. The pilot testing also concluded that the users were satisfied with the reliability and error free nature of the platform, as well as the compatibility with other systems and applications. The initial testing also concluded that the platform is a good tool for SMEs.

Testing is continuing with both companies and the use of the platform is being extended to a new facility in Eastern Europe.

6. Conclusions

It is clear that collaboration among SMEs is going to be a key requirement for developing and sustaining competitive advantage in the 21st century. European SMEs seem to recognise this; however they also seem to be nervous about entering collaborative relationships outside their comfort zones. It is therefore essential that they are supported with appropriate education, methods, tools and techniques throughout the collaboration journey.

SMEs need to take the collaboration message seriously and look for collaborative opportunities beyond their national boundaries and comfort zones. Similarly, European governments and support agencies need to recognise the fact that SMEs need coaching and guidance as well as support with identification, formation and operation of collaborative relationships, particularly with partners in developing economies. The SMEcoll project offers a set of methods, tools and techniques to facilitate such support.

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