

Beating complexity, achieving operational excellence

WHITE PAPER

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Pierfrancesco Manenti Megan Dahlgren
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EXECUTIVE SUMMARY

IDC Manufacturing Insights recently conducted on behalf of Infor and IBM a worldwide study of over 700 small and medium-sized enterprises in the discrete manufacturing industry across four sectors and in eight countries. We discovered that for European and North American manufacturers achieving operational excellence has become more complex, the pressure to reduce costs and improve productivity as ever top priorities, and perfecting the customer experience from bid to fulfillment a critical business need. For respondents in China we found the same priorities and concerns but also found some differences, for example handling demand volatility and planning, compliance with regulations and inadequate IT systems. While discrete manufacturers worldwide all face similar challenges, our study clarifies how strategic initiatives and priorities vary by sector, geography, and job description. We also evaluated the role of Information Technology (IT) as discrete manufacturers strive to manage increasing complexity, lower costs and deliver even greater customer satisfaction.

IDC Manufacturing Insights' latest global study discovered the following key findings:

- According to 58.9% of Western European and North American respondents in our study complexity is a critical issue regardless of the size of the business. And in striking contrast, only 27.5% of respondents in China reported feeling increasing complexity. In fact, 35.0% of manufacturers in China feel their markets are becoming less complex.
- Discrete SMB manufacturers in Western Europe and North America are particularly emphasizing strategies to contain costs while improving customer fulfillment. Customers will be a top priority over the next few years so discrete manufacturers are keen to improve the bid and project management process – which is essential for profitability and customer satisfaction.
- Operational excellence is as always a key priority for discrete manufacturers. Our survey results show the three main operational priorities for the next few years will be: Demand Planning & Forecasting, New Product Design and Introduction and Manufacturing Operations Management.

- In order to achieve operational excellence discrete manufacturers know they need skilled people resources, agile and adaptable processes, and available and relevant information. It is no surprise then that these will be critical areas of development especially for information technology initiatives over the next few years.

SITUATION OVERVIEW

Increasing complexity in doing business

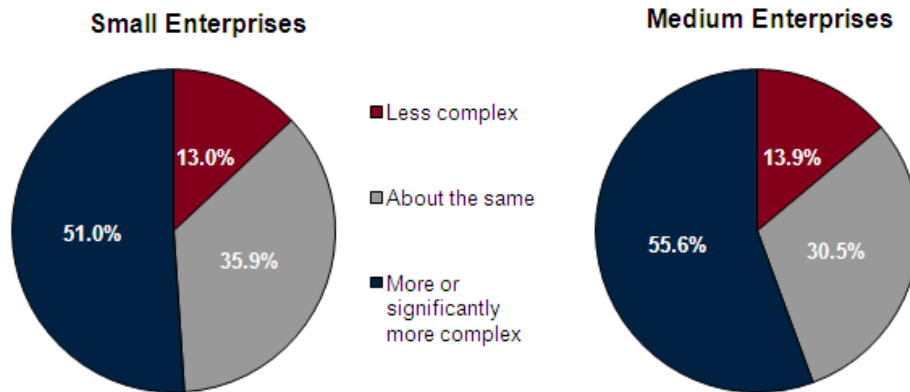
Our global study of small and medium-sized discrete manufacturers worldwide revealed the industry is struggling with increasing complexity, global competition, rapidly changing business environments, and volatile raw materials prices. Complexity in the industry also arises from a number of new factors such as low visibility into demand forecasting, the challenge of properly bidding for a project, and project profitability. Most importantly discrete manufacturers struggle to insure customer fulfillment because of complex and global supply chains making control over the customer experience very challenging. Lack of clear visibility into market demand coupled with global competition makes developing profitable new products a guessing game. And to make matters worse, not only is there increasing complexity, but discrete manufacturers are under enormous pressure to lower costs.

Consulting and business applications that both identify and address these problems have been developed over the last few decades primarily for large multinational companies. However, without the budgets or internal expertise to realize such projects, small and medium sized discrete manufacturers struggle to find affordable business services and IT applications to address their sector specific needs and budgetary constraints. IDC Manufacturing Insights is seeing a growing awareness and market response to small and medium sized discrete manufacturers who face similar complexity and operational challenges as larger companies and need business process consulting and IT applications tailored to their unique needs.

FIGURE 1

Changes in complexity in operations in the past five years,
Small vs. Medium Enterprises

Q. How would you describe the changes in complexity in operations you have experienced in the past five years?



Base: Entire Sample

Number of valid respondents: 722

Note: small enterprises (100-499 employees), medium-sized enterprises (500-5000 employees)

Source: IDC Manufacturing Insights, July 2010

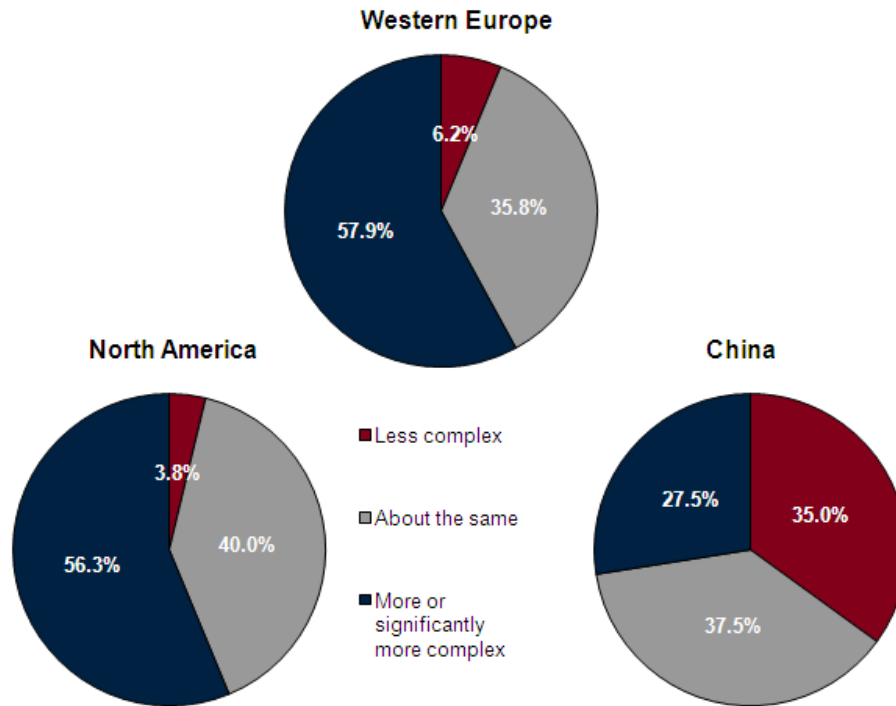
Complexity: Small and Medium-sized Enterprises

As figure 1 illustrates, small enterprises feel the pressure of complexity in almost the same measure as larger organizations. 51.0% of small enterprises (100-499 employees) and 55.6% of medium-sized enterprises (500-5000 employees) indicated complexity is a critical issue. All manufacturers regardless of size are now competing in an increasingly complex, global marketplace with constrained economic growth. IDC Manufacturing Insights expects these concerns to remain pressing for SMB discrete manufacturers especially in mature economies for years to come.

FIGURE 2

Changes in complexity in operations in the past five years, Western Europe, North America and China

Q. How would you describe the changes in complexity in operations you have experienced in the past five years?



Base: Entire Sample

Number of valid respondents: 561

Source: IDC Manufacturing Insights, July 2010

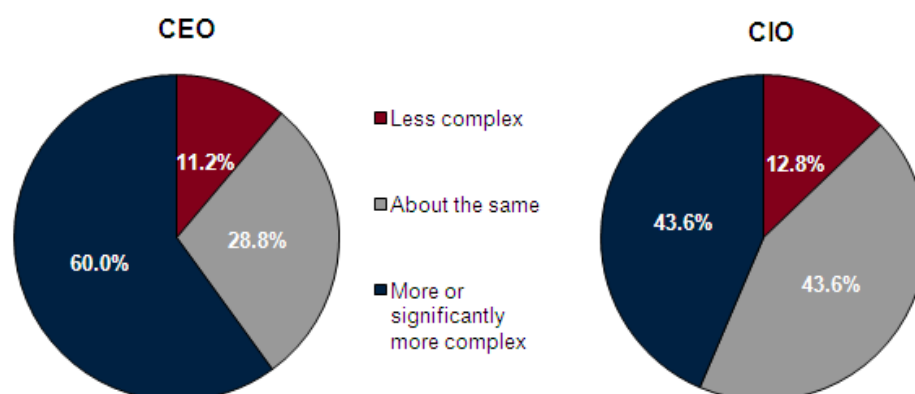
Complexity: by geography

Figure 2 illustrates the sharp contrast between North American and Western European manufacturers' perceptions of complexity on the one hand and China on the other. 57.9% of Western European and 56.3% of North American respondents indicated experiencing increasing complexity, while only 27.5% from China reported feeling this pressure. What is more, 35.0% of respondents in China feel the market has become less complex. We believe this survey finding confirms that the challenge of complexity is not shared across every market.

FIGURE 3

Changes in complexity in operations in the past five years, CEO vs. CIO views

Q. How would you describe the changes in complexity in operations you have experienced in the past five years?



Base: Entire Sample

Number of valid respondents: 439

Source: IDC Manufacturing Insights, July 2010

Complexity: CEO vs CIO

Figure 3 shows us that CEOs and CIOs are feeling the pressure of complexity but not to the same degree. While 60.0% of CEOs sense complexity is increasing, only 43.8% of CIOs perceived a significant change in complexity over the past five years. IDC Manufacturing Insights has always said that if IT and the business team are not in alignment, more often than not there will be business level implications. Discrete manufacturers now more than ever need to leverage IT to address operational challenges. In many cases it will be up to the CEO to make this alignment a priority because it takes time and resources to communicate effectively internally. There are of course technology solutions to improve internal communication and collaboration but this process must start with both the CEO and the CIO prioritizing the initiative to understand the business needs that enterprise applications must service.

Conclusion

IDC Manufacturing Insights believes the best way to tackle complexity is by learning from best practice and sector-specific experts, and then on this basis invest in efficient business process and technology. A combined approach of internal skills development and training, and external consulting and technology investment will be essential to address the ongoing challenge of complexity. It is important to note that any significant ten to fifteen year technology investments made today must be selected with the idea that complexity will increase over time and as a result solutions must be adaptable.

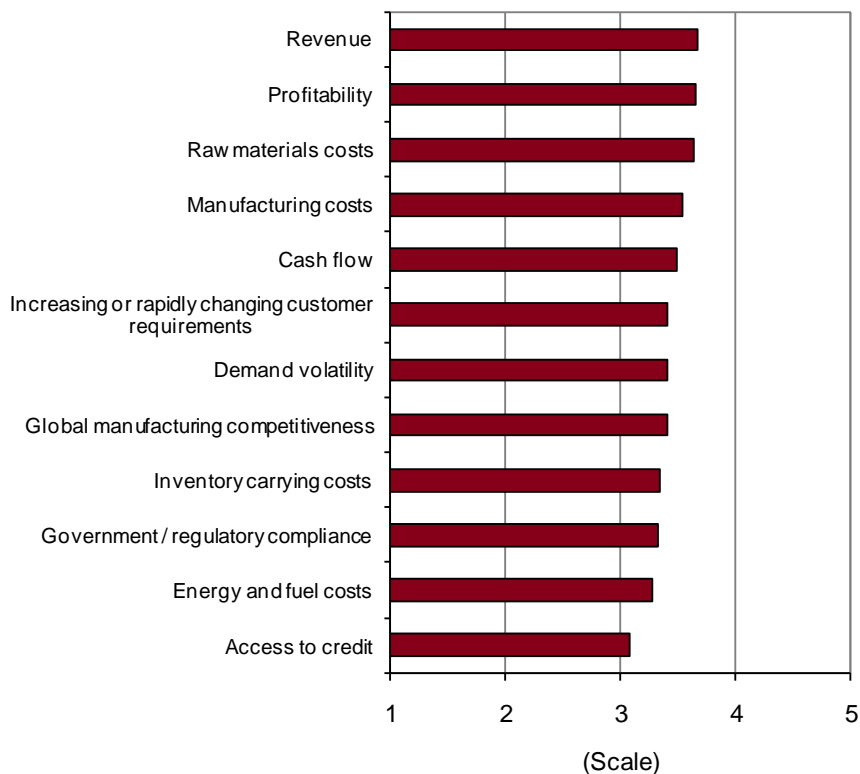
Critical business concerns

Most discrete manufacturers feel they are not able to adequately forecast demand and many are not sure if price and volume levels will return to pre-recession levels. For most discrete manufacturers the current economic outlook has forced them to accept lower volumes and/or prices as a kind of 'new normal' baseline. So it is not surprising that revenue, profitability, and costs are top priorities this financial year, see Figure 4.

FIGURE 4

Business concerns over the next two years

Q. What are the main business concerns for your company in 2010/2011?



Base: Entire Sample

Number of valid respondents: 722

Source: IDC Manufacturing Insights, July 2010

Business concerns: by geography and sector

While profitability and managing costs are important for any discrete manufacturer, business conditions are not uniform around the world. For Chinese manufacturers demand volatility and government regulations are top concerns and revenue and profitability rank among the last. The market conditions across Western Europe are not uniform either. For example, demand volatility and adjusting to customer requirements are very important in Germany while respondents in other Western Europe countries mention cash flow as a key concern. If we look at each sector profitability concerns are always important.

However some differences exist. For example volatile raw material costs are most critical for the metal fabrication industry. This sector is particularly sensitive to fluctuating rubber or steel prices which they source directly from global commodity markets. While for consumer-orientated sectors such as high-tech and automotive achieving revenue targets is most critical.

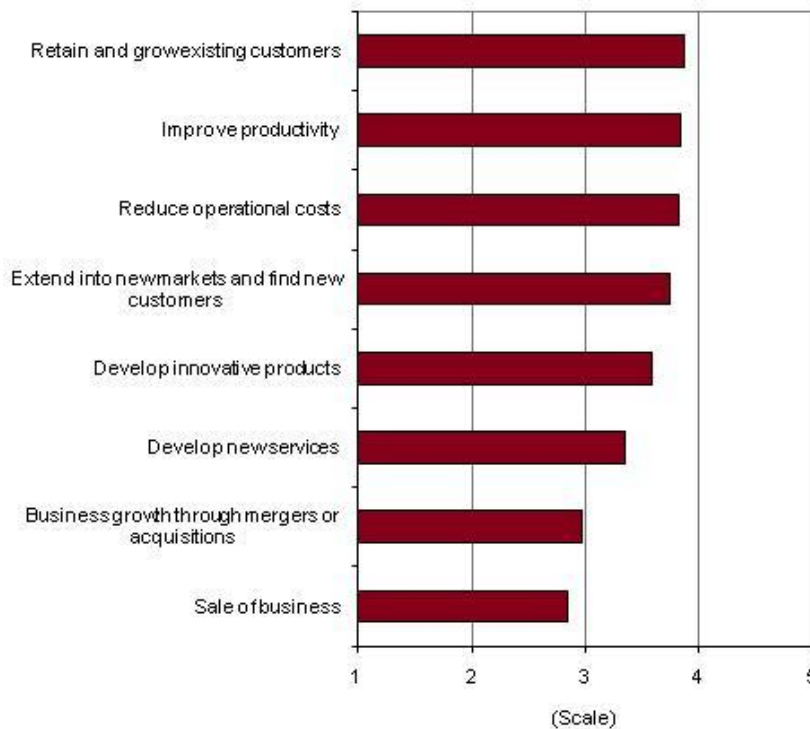
Business strategies for the next two years

Figure 5 shows that the top business strategies for SMB discrete manufacturers are: 1) retain and grow existing customers and 2) improve productivity and lower costs. Therefore, manufacturers are emphasizing a conservative approach focused on protecting their existing client-base and market share from increased competition. Strategies for growth such as extending into new markets and finding new customers and innovation in products and services are priorities for discrete manufacturers but they come second to finding growth in the current customer base with existing products and services. However, it is important to note that growth priorities such as developing innovative new products are the focus for Chinese respondents (see Figure 6).

FIGURE 5

Business strategies over the next two years

Q. What are the business strategies you expect your company to pursue over the next two years to face the above business concerns?



Base: Entire Sample

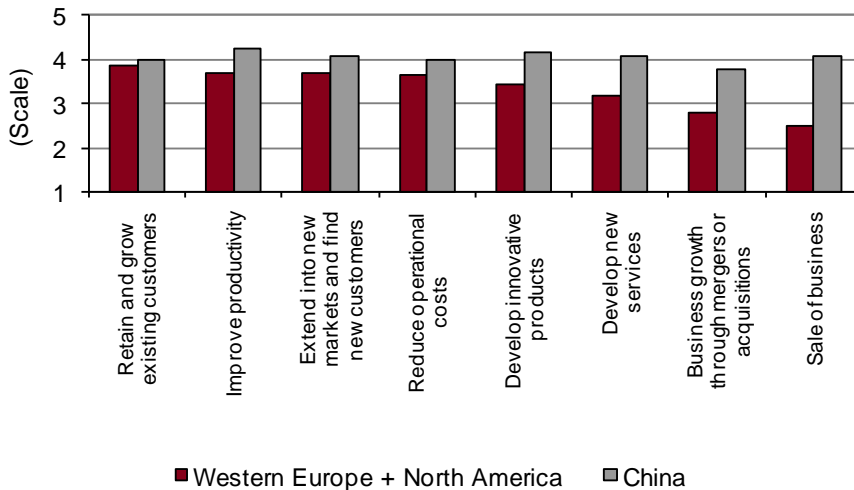
Number of valid respondents: 722

Source: IDC Manufacturing Insights, July 2010

FIGURE 6

Business strategies over the next two years, China vs. North America and Western Europe

Q. What are the business strategies you expect your company to pursue over the next two years to face the above business concerns?



Base: Entire Sample

Number of valid respondents: 561

Source: IDC Manufacturing Insights, July 2010

Discrete manufacturers in emerging economies are facing high-growth markets and are at an earlier stage of maturity, this makes it somewhat easier to see what needs to be done and with some degree of certainty. This certainty is then reflected in the intensity of responses. Figure 6 illustrates the scores for future strategies ranked on average higher in China than for their counterparts in Western Europe and North America. The average ranking across strategic priorities for Chinese manufacturers was 4.0 out of 5.0 versus 3.4 out of 5.0 for European and North American respondents. Western markets are experiencing overwhelming complexity, higher cost structures, and more reliance on global and interconnected supply chains. Manufacturers in high-growth markets like China's are not burdened by the same complexity or uncertainty, as seen in Figure 2 above and therefore have the luxury to focus on new product and service innovation. This fosters the conditions for competitive advantage and if manufacturers from more mature markets focus too much on cost containment and existing products, they are at risk of insufficient capital investment in the long run. This is why innovation in operational excellence will be critical for discrete manufacturers in mature markets.

Conclusion

Whether it is the global recession or increased global competition, what we know for sure is discrete SMB manufacturers in Europe and North America are returning to basics; improving operations, lowering costs, and focusing on the customer. If customer satisfaction and operational excellence are the top strategic priorities in this industry, IDC Manufacturing Insights naturally asks the question how

information technology can be used to achieve these strategic objectives. We can safely say, those on the cutting edge of smarter IT that supports the business needs mentioned above, will be better positioned to succeed.

FUTURE OUTLOOK

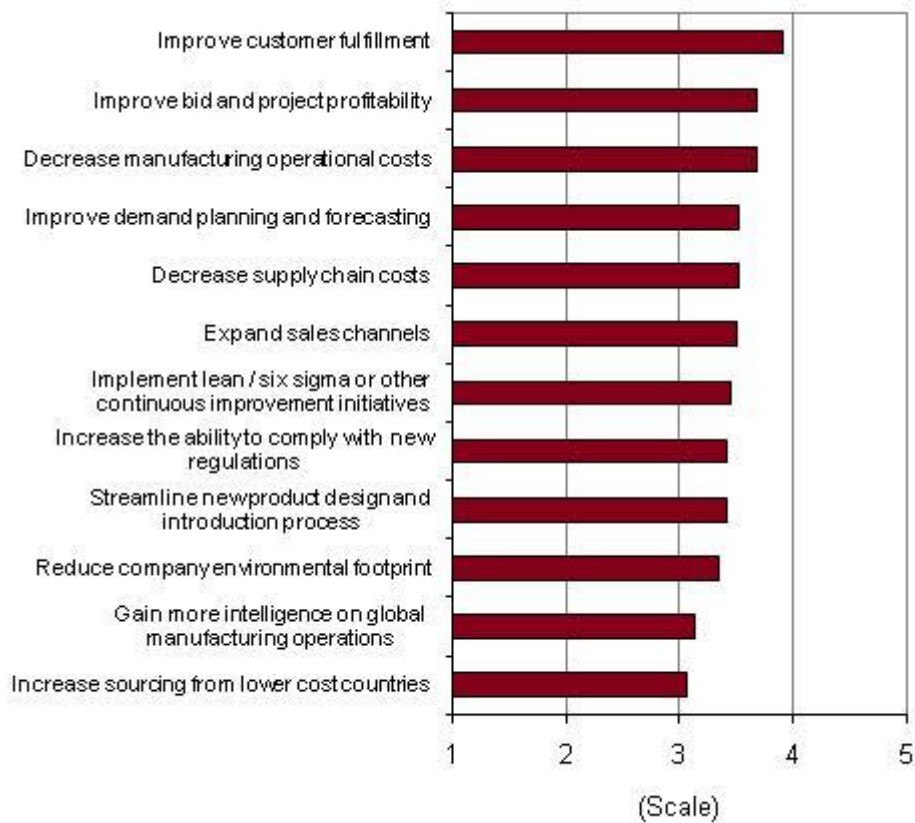
Servicing the customer better

If retaining existing customers is a top strategy for manufacturers worldwide it comes as no surprise that customer fulfillment is the top business initiative, closely followed by bid and project profitability and reducing costs (see Figure 7 and 8).

FIGURE 7

Business initiatives over the next two years

Q. Which business initiatives will your company undertake over the next two years?



Base: Entire Sample

Number of valid respondents: 722

Source: IDC Manufacturing Insights, July 2010

Figure 7 shows us that the top focus for SMB discrete manufacturers is the customer, shortly followed by improving bid and project profitability and demand planning and forecasting. IDC Manufacturing Insights summarizes the major themes that emerge from these results:

- **Customer Fulfillment** – It is not just about on-time, in-full delivery. Fulfillment requires a deeper understanding of customer needs, close relationships with customers, and the ability to uniquely serve each client. Serving the customer well creates the groundwork for competitive advantage and thus can prevent competitors, especially from low-cost countries, from stealing market share. Fulfillment supersedes traditional efforts to decrease costs. Of course, manufacturers will continue to focus on optimizing manufacturing operations and the supply chain, but they are now consistently prioritizing customer fulfillment above all else. This is a remarkable shift from pure cost cutting initiatives of the past as seen in 2009 with the crisis. Discrete SMB manufacturers realize that understanding customer requirements not only insures greater customer satisfaction and therefore lowers business risk, but it also can help insure profitability at the end of each project.
- **Improving bid and project profitability** - Ranks #2 in Industrial Machinery and High-Tech sectors, and #3 in Automotive and Metal fabrication sectors. Industrial machinery manufacturers for example sell one-off high capital investment items, so a well managed bid and project management process can have a significant impact on both the top and bottom line. The same applies for the majority of SMB manufacturers in automotive, high-tech and metal fabrication sectors that do not sell standard catalogue items, but rather manufacture components to OEM's specification Every time a discrete manufacturer takes on a new project there is a risk. Each project not only represents a significant percentage of revenues but requires an investment in financial, manufacturing, and people resources. Thus, understanding customer requirements at the outset is essential for not only customer satisfaction but profitability.
- **Improve demand planning and forecasting** – Is critical for achieving profitability, especially in the High-Tech sector. Inaccurate forecasts can make planning and allocation of resources and servicing new projects very challenging and it can make adequately servicing customers difficult if orders come in all at once. With strained economic conditions in 2009 and 2010 planning is harder as last year's revenues provide little indication of future sales. Most demand planning and forecasting applications were designed to do statistical analysis based on previous sales figures for consumer manufacturers who manage high volumes of the same products as opposed to discrete manufacturers who manage lower-volumes and customized products. IDC Manufacturing Insights therefore suggests that the best approach for discrete manufacturers is to embrace sales and operations planning (SOP) which synchronizes the demand forecasting process with production and customer fulfillment planning.
- **Sourcing from low-cost countries** – Manufacturers, while pressured to lower costs, have pulled back on the prevalence of low-cost country sourcing. The importance of customer fulfillment

today contrasts with emphasizing low-cost sourcing strategies. Low-cost sourcing can result in lower responsiveness and poor customer service, higher costs, and additional risk factors such as supply chain disruptions, diminished IP protection and environmental concerns. Our study indicates North American and European manufacturers will focus on improving their own operations for the medium-term as opposed to aggressively looking to sourcing partners to cut costs.

- **Decreasing manufacturing and supply chain costs** – Did not rank as a critical initiative overall but it has been and will continue to be a critical operating challenge for discrete manufacturers. The need to improve customer fulfillment is forcing manufacturers to invest in improvements across the supply chain. IDC Manufacturing Insights insists on the importance of integrated processes and closed-loop systems to manage inbound material, production capacity, and order fulfillment throughout the supply chain. Excellence in managing the supply chain ultimately leads to lower costs and to the ultimate goal of servicing the customer better.

The road to Operational Excellence

Our survey findings indicate discrete manufacturers are pressured to achieve even greater levels of operational excellence based on the building blocks of customer fulfillment, excellence in manufacturing operations, and new product design and introduction.

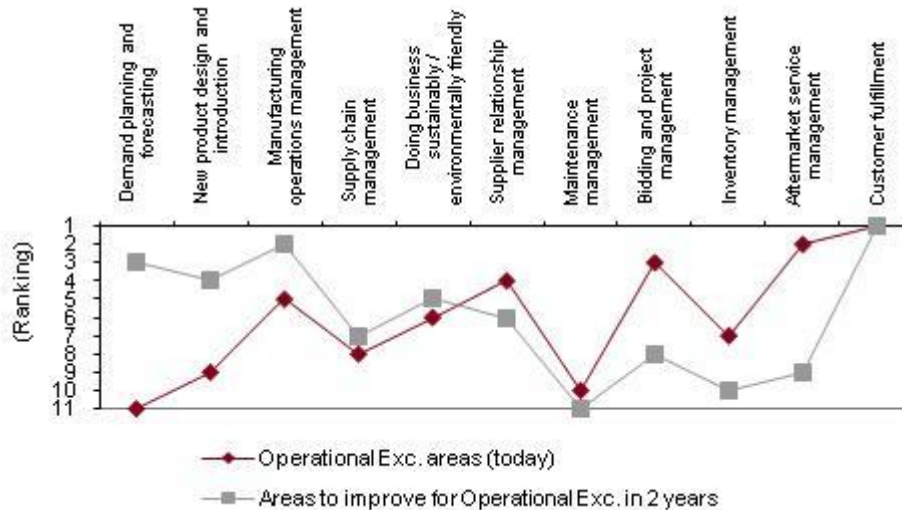
IDC Manufacturing Insights asked respondents in which areas they believe their company's operations is excellent today and in which areas they believe their company needs to pursue improvements to achieve operational excellence over the next 2 years, see Figure 8.

FIGURE 8

Companies' Operational Excellence areas: today's ranking compared with next 2 years one

Q. In which areas do you believe your company is excellent today?

Q. In which areas do you believe your company needs to pursue improvements in operational excellence in the next two years?



Base: Entire Sample

Number of valid respondents: 722

Source: IDC Manufacturing Insights, July 2010

The gaps in Figure 8 illustrate areas where SMB discrete manufacturers will commit resources over the next few years, and they are:

- **Customer Fulfillment** – This is an area where respondents feel they are currently doing well, apart from the high-tech sector. However, manufacturers believe there is room for improvement. This is also an area where respondents also want to be strong two years from now, reinforcing the finding that discrete manufacturers are focused on the customer (Figure 7).
- **Demand Planning & Forecasting** – This is where we see the greatest gap between today's performance and the level of excellence expected in two years. The industry, especially in the automotive, metal fabrication and high-tech sectors, has suffered from demand volatility over the last few years, adding to complexity and uncertainty. Low demand visibility strains the entire operational value chain, making achieving operational excellence and satisfying customers all the more difficult.
- **New product design and introduction (NPDI)** – Despite its obvious importance to manufacturers, our survey results show that most manufacturing companies feel their NPDI processes are far from excellent and could be improved over the next couple of years.

- **Manufacturing Operations Management** – Respondents in the automotive and high-tech sectors cited this as an especially pressing concern. While operations management is at the core of what manufacturers do, there is a renewed focus on further improving manufacturing processes, particularly in western countries. Governments in Western Europe and North America are keen to preserve their domestic manufacturing industries, as they now better understand that an economy purely based on service industries alone can't survive in the longer run. For example, President Obama announced an initiative to double domestic production in the US to prevent the economy from being overly dependent on services industries and imports. Therefore, IDC Manufacturing Insights expects intensive investments to be made in improving operations in mature economies so that they remain competitive with manufacturers from lower-cost countries.
- **Supply Chain Management** – Survey results show this area of operational excellence will be particularly important for the Industrial Machinery sector. Manufacturers in this sector were once immune to global competition, now they must compete with suppliers from around the world. Indeed, the machining technology delivered by low-cost countries is now almost indistinguishable from European or North American providers. IDC Manufacturing Insights expects to see industrial machinery firms rapidly move from local to global manufacturing and rethink their supply chains structures to better respond to global competition.
- **Doing Business Sustainably** – Traditionally sustainability has not been a priority in discrete manufacturing, especially compared to process industries. However, survey results show that sustainability will be a priority moving forward particularly for high-tech and industrial machinery sectors. This is partly driven by legislation - such as WEEE or RoHS which significantly impacts the high-tech sector, and partly driven by market demand. Environmental 'friendliness' can be a point of differentiation from low-cost competitors. IDC Manufacturing Insights believes sustainability built on the principles of "Reduce, Reuse, Recycle," is part of achieving both competitive advantage and operational excellence.

The role of Information Technology: Critical or irrelevant?

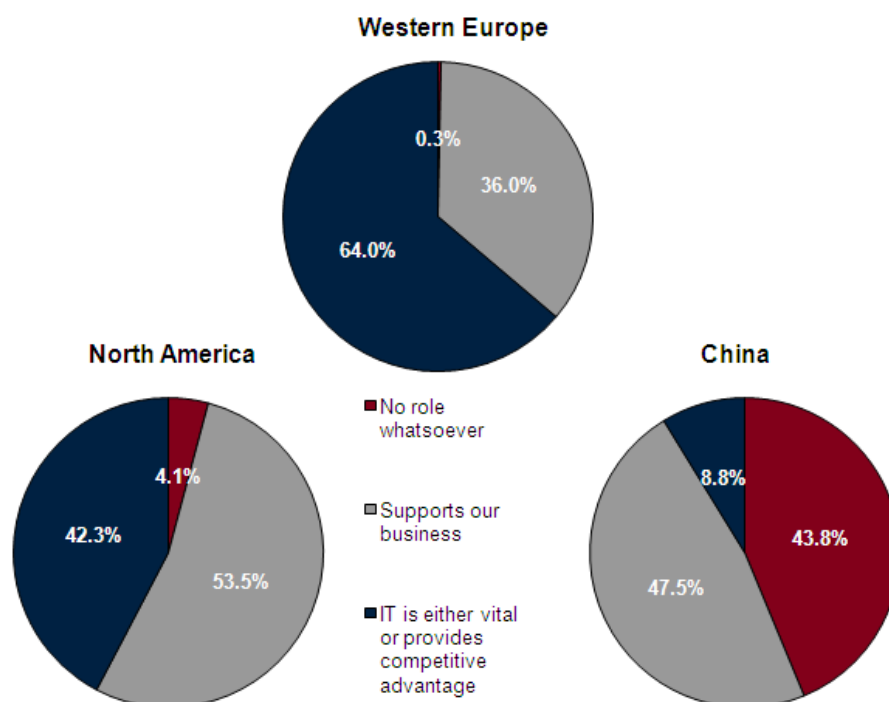
The role of IT

While the perception of the role of IT for discrete manufacturers around the world varies, the biggest difference seems to be between respondents in China and Western countries. According to European respondents IT plays either a strategic, critical or at least operational role (Figure 9). Not one respondent in Germany, France or Benelux indicated IT had no role to play in the organization, whereas in China 43.8% of respondents indicated IT is irrelevant in their organization. Across countries there was somewhat of a mixed view of IT but what stands out is 30.0% of Chinese respondents feel inadequate IT is a major barrier in achieving operational excellence, and yet only 6.3% of Chinese respondents felt IT is vital to the business. In short, the perception of IT as a strategic enabler is more developed in Western countries.

FIGURE 9

Role of Information Technology (IT), Western Europe, North America and China

Q. What role do you think Information Technology (IT) plays in your organization?



Base: Entire Sample

Number of valid respondents: 561

Source: IDC Manufacturing Insights, July 2010

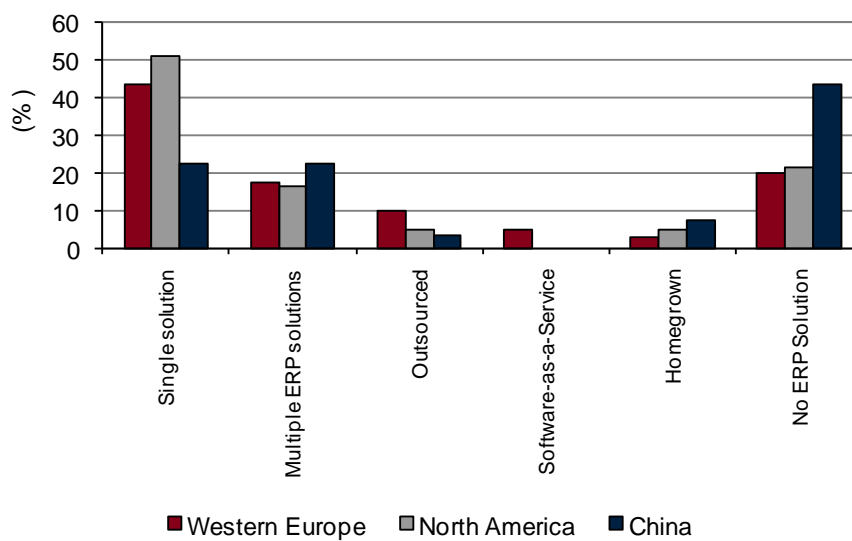
ERP in place: by geography

Survey results show that 75.2% of respondents overall have an ERP solution in place. Most have a single solution that they manage internally (Figure 10). About 43.8% of Chinese respondents do not have an ERP solution at all versus 20% or less in Europe and North America.

FIGURE 10

ERP solution adoption levels, Western Europe, North America and China

Q. Do you have an ERP solution in place?



Base: Entire Sample

Number of valid respondents: 561

Source: IDC Manufacturing Insights, July 2010

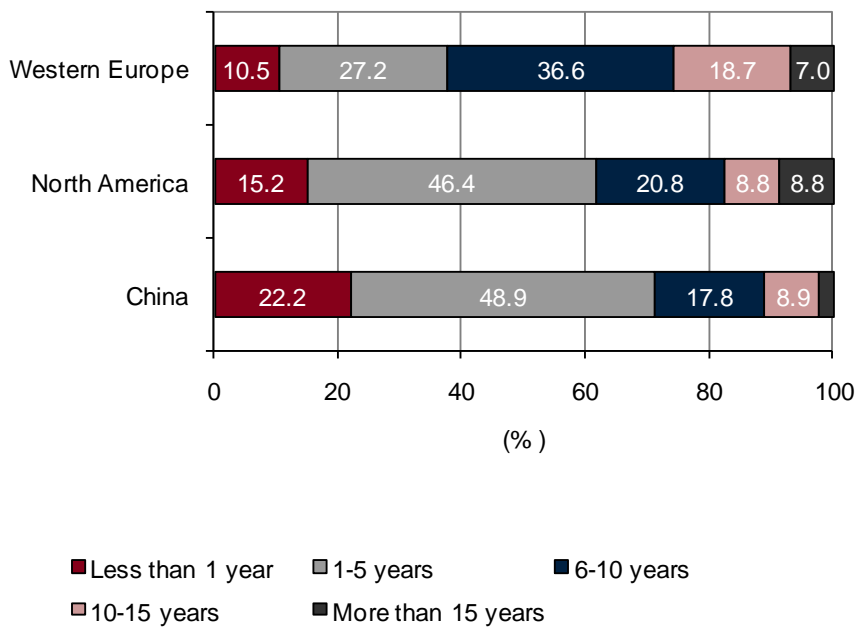
ERP systems deployment time

For most respondents who have an ERP solution in place, it has been in place between five and ten years. For most Chinese manufacturers, these solutions are rather new, having been in place between 1 and 5 years, or they have no solution at all (Figure 11).

FIGURE 11

ERP solution deployment time, Western Europe, North America and China

Q. How long have you had your ERP solution in place?



Base: Respondents having an ERP solution in place

Number of valid respondents: 427

Source: IDC Manufacturing Insights, July 2010

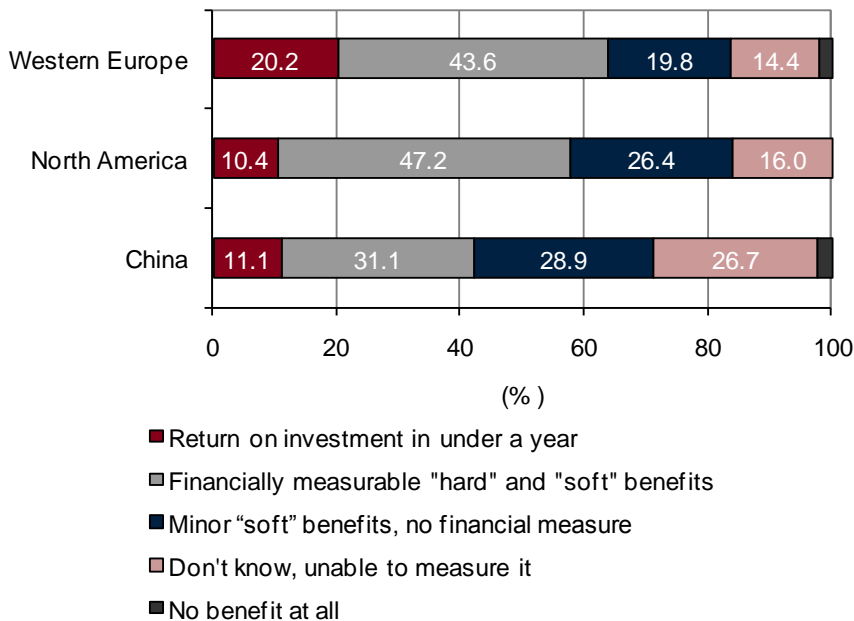
ERP systems return on investment

Figure 12 shows 63.8% of respondents in Western Europe see a measurable benefit from ERP systems, and that is more than their counterparts in North America and China, but not by much. 41.6% of discrete manufacturers overall find it difficult or don't know how to measure the benefits of their ERP systems. SMB discrete manufacturers may find it hard to measure benefits from packaged ERP systems because they were not designed with them in mind. That said, IDC Manufacturing Insights knows there is measureable value to be obtained from these systems and it is worth investing in services or additional software to get the most benefit out them.

FIGURE 12

ERP solution benefits defined, Western Europe, North America and China

Q. Thinking of the ERP solution you have implemented how would you define the benefit you have received?



Base: Respondents having an ERP solution in place

Number of valid respondents: 427

Source: IDC Manufacturing Insights, July 2010

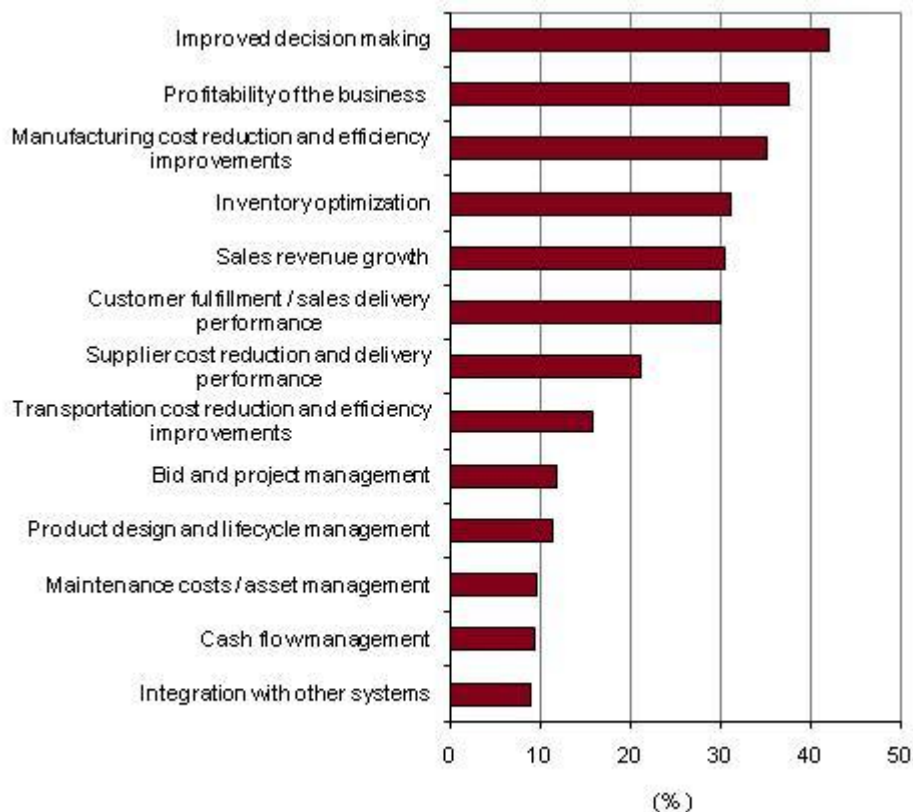
Benefits of ERP systems

While respondents do not find it easy to find hard measures for the value of ERP systems, 82.7% of discrete manufacturers believe their ERP system is helping them somehow. The key benefits cited by respondents include making better decisions, increasing profitability and reducing manufacturing costs (Figure 13). However since 41.6% of respondents find minor or no benefits from ERP systems it again begs the question whether SMB discrete manufacturers are sufficiently maximizing their investment in ERP. In addition, one of the main business areas respondents want to improve, bid and project management, is an area where respondents did not think ERP systems add significant value. Packaged software has not historically serviced this sector well and IDC Manufacturing Insights encourages discrete manufacturers to inquire how their existing ERP can be reconfigured to help them solve their bid and project management challenges. It is a critical business need and ERP systems are capable of helping with managing it.

FIGURE 13

ERP solution benefits areas

Q. In which areas do you believe your ERP system has contributed the most benefit?



Base: Respondents having an ERP solution in place

Number of valid respondents: 543

Source: IDC Manufacturing Insights, July 2010

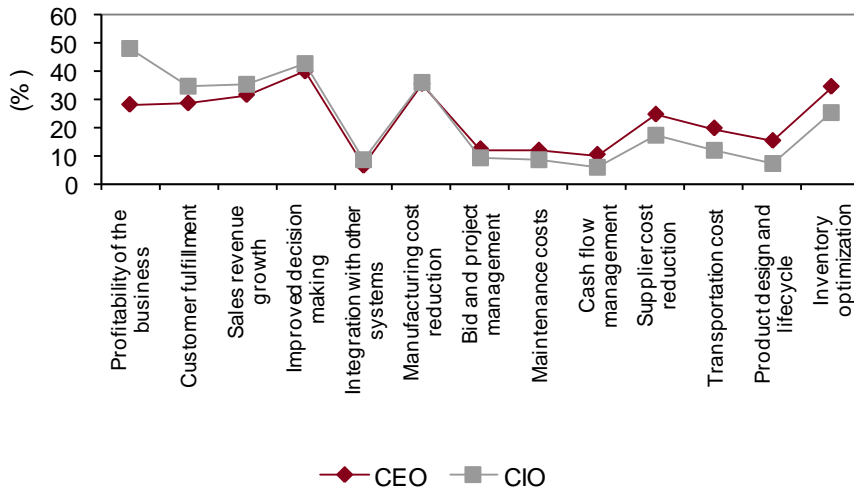
Benefits of ERP systems: CEO vs. CIO

We also discovered some significant gaps between CIO and CEO points of view on the benefits of ERP systems. As Figure 14 shows the CIO believes ERP helps the organization with profitability but the CEO does not agree to the same extent. In fact the CEO does not rate profitability among the top three benefits of ERP systems, whereas CIO respondents felt it was the #1 benefit. In fact the CEO feels ERP helps with inventory optimization or supplier cost reduction more than the CIO does. This suggests that the CEO believes that ERP systems can help streamline operational processes, and the CIO believes it helps the company manage finances. These gaps in understanding of the value of ERP systems are important to address. IDC Manufacturing Insights encourages CIOs to seek out opportunities to understand the CEO's point of view and clarify what business benefits IT systems must deliver. It is also valuable to communicate how enterprise applications currently benefit the business if that is needed.

FIGURE 14

ERP solution benefits areas- CEO vs. CIO views

Q. In which areas do you believe your ERP system has contributed the most benefit?



Base: Respondents having an ERP solution in place, CIO and CEO respondents

Number of valid respondents: 343

Source: IDC Manufacturing Insights, July 2010

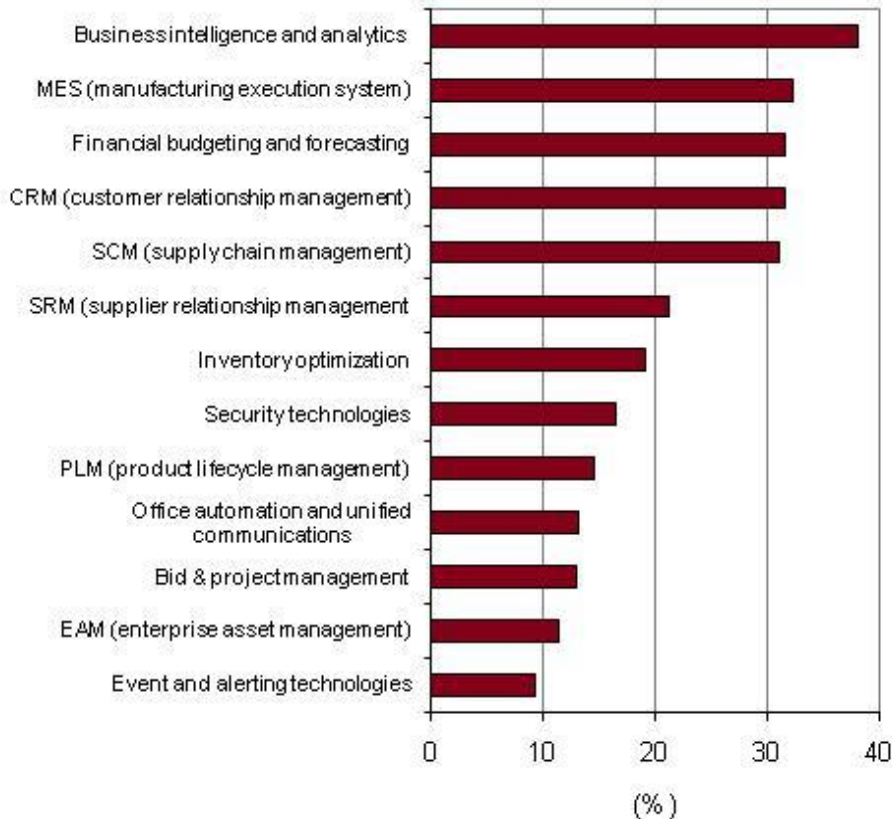
ERP supports operational excellence

Among the enterprise applications in addition to ERP that support operational excellence, 38.1% of respondents ranked business intelligence and analytics on top (Figure 15). SMB discrete manufacturers also mentioned manufacturing execution systems (MES) and financial budgeting and forecasting as important applications for their business. As we saw throughout the survey results, discrete manufacturers are keen to improve demand planning and forecasting and are intensely focused on optimizing manufacturing operations and cutting costs over the next few years. In addition, discrete manufacturers are pressured to achieve profitability targets and these tools will help more accurately predict revenues and costs. Improving bid and project management is a key priority for manufacturers (see Figure 7), and yet respondents did not rank it as one of the top three applications for operational excellence. This is probably because discrete manufacturers have been underserved by packaged applications in this area.

FIGURE 15

IT applications in addition to ERP supporting operational excellence initiatives

Q. What are the top three IT applications in addition to your core ERP solution you believe best support your organization's operational excellence initiatives?



Base: Respondents having an ERP solution in place

Number of valid respondents: 543

Source: IDC Manufacturing Insights, July 2010

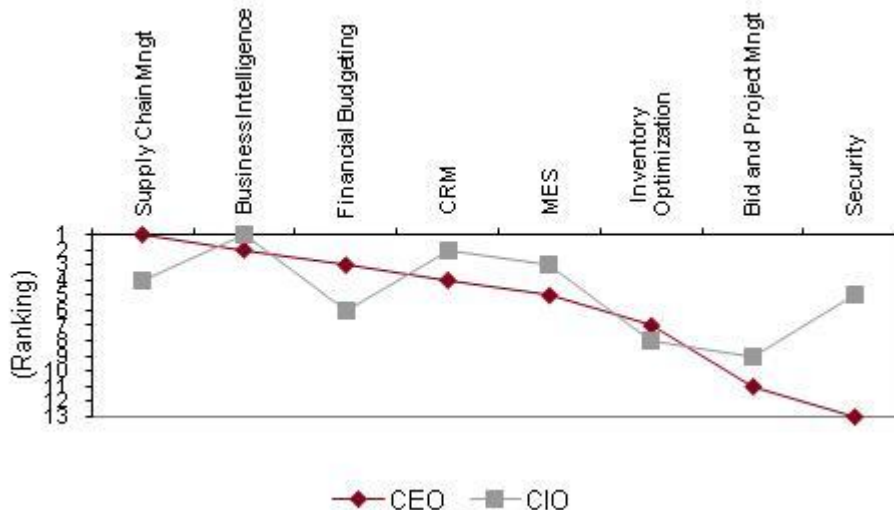
The survey demonstrates that CEOs are much more concerned with applications that drive the performance of the business – prioritizing the effectiveness of their supply chain, ability to get at information for better decision making through business intelligence and financial budgeting. CIO’s on the other hand, whilst sharing the desire for better information through BI place higher priorities on the more technical side of operations – customer relationship management, manufacturing execution systems and security.

IDC Manufacturing Insights believes these gaps are significant enough to warrant investigating what can be done to bring the CEO and CIO perspectives closer together.

FIGURE 16

IT applications in addition to ERP supporting operational excellence initiatives, CEO vs. CIO views

Q. What are the top three IT applications in addition to your core ERP solution you believe best support your organization’s operational excellence initiatives?



Base: Respondents having an ERP solution in place

Number of valid respondents: 343

Source: IDC Manufacturing Insights, July 2010

Conclusion

Whilst there is little doubt that leading SMB discrete manufacturers are taking advantage of applications such as ERP, business intelligence and analytics, manufacturing execution systems (MES), financial budgeting and forecasting applications and CRM, respondents find it hard to measure the benefit and return on investment of these applications. The perceived benefits are also not commonly understood within the industry or even among c-level executives in the same company. IDC Manufacturing Insights call on the services and technology providers to help their customers better understand the relationship between investments in IT and return on IT investment through the services they offer - it will help vendors and customers alike to have a common understanding in this

area. Additionally, it is disconcerting to see such misalignment between CEOs and CIOs on where the benefits and future IT investments should be focused and we encourage CIO's to take the ownership on this and quickly align their priorities and IT budget allocation with real business needs.

ESSENTIAL GUIDANCE

Increasing complexity and unfavorable economic conditions has led to a great deal of uncertainty throughout the discrete manufacturing sector. As a result, discrete manufacturers should think about investing in IT systems that can streamline and automate processes wherever possible, adjust easily to change, and extract valuable real-time business intelligence from all the data business applications generate.

As for manufacturers in emerging economies, especially in China, the needs are more fundamental. They must assess the role of IT in general and consider investing; given 43.8% of Chinese respondents in our study do not have an ERP solution in place nor see the need for it.

IDC Manufacturing Insights can offer the following guidelines from our latest global study:

- **Adopt a higher customer orientation** – Over the next two years, discrete SMB manufacturers should realize cost cutting is not enough and the new guiding principle will be 'greater focus on the customer'. Discrete SMB manufacturers that want to compete will need to invest in and commit to excellence in customer fulfillment, bid and project management, demand planning & forecasting and new product design and introduction.
- **Innovative Business Processes** – In order to achieve operational excellence and service the customer better, SMB manufacturers will need to rethink organizational structures, breakdown functional silos, and work smarter. IDC Manufacturing Insights confirms that organizations that support collaborative processes and interconnected workflows are better able to compete. IDC Manufacturing Insights encourages discrete manufacturers to develop closed-loop business processes for demand planning and forecasting, and for bid and project management functions especially.
- **Understand the business case first, evaluate IT after** – Discrete SMB organizations are well aware that information technology can be used to manage complexity, lower costs, enable employees to work smarter, and improve customer satisfaction. The challenge discrete SMB manufacturers face is often in the evaluation process. There are many ways to tackle the same business challenges with different business processes and technologies. While there are packaged enterprise applications tailored to the needs of SMBs, the main challenge for decision makers is evaluating which applications to choose and which will grow with their business. SMBs do not have to make these decisions alone

and should seek out independent advisors to help in the selection process.

- **Invest in Training** – The survey clearly showed that “availability of skilled resources” is a major barrier in achieving operational excellence. This is also adding to complexity because if recruitment is not an option manufacturers have no way to resolve their skilled resources needs. IDC Manufacturing Insights suggests at the very least, SMB discrete manufacturers can invest in training, develop closed-loop business processes across the value chain, and in technology solutions that help them work smarter.

APPENDIX

This appendix explains our methodology for the research that supports this White Paper and provides a glossary of useful abbreviations.

Methodology

The information presented in this document comes from primary research by IDC Manufacturing Insights in collaboration with and sponsored by Infor and IBM.

The primary research for this White Paper is based on a global survey conducted in May 2010 across multiple discrete manufacturing industries such as automotive, metal fabrication, industrial machinery, and high-tech. 722 interviews were carried out with Small and Medium sized Businesses (SMBs, from 100 to 5000 employees) in the most important countries across Western Europe, Asia Pacific and the Americas.

Tables M1, M2 and M3 provide further details.

TABLE M1

Vertical Market Quotas

	Completes	%
Automotive / Vehicle production (including OEM and 1st tier suppliers)	181	25.1%
Industrial Machinery & Equipment	185	25.6%
Metal fabrication	176	24.4%
High Tech / Electronics	180	24.9%
Total	722	100%

Source: IDC Manufacturing Insights, July 2010

TABLE M2

Company Size Quotas

	Completes	%
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TABLE M2

Company Size Quotas

	Completes	%
From 100 to 499 employees	367	50.8%
From 500 to 999 employees	151	20.9%
From 1000 to 2499 employees	109	15.1%
From 2500 to 5000 employees	95	13.2%
Total	722	100%

Source: IDC Manufacturing Insights, July 2010

TABLE M3

Number of Completes by Country

	Completes	%
France	80	11.1%
Germany	80	11.1%
UK	80	11.1%
Benelux	81	11.2%
US	160	22.2%
Brazil	81	11.2%
Japan	80	11.1%
China	80	11.1%
Total	722	100%

Source: IDC Manufacturing Insights, July 2010

Given the strategic nature of the survey, interviews were addressed to the most qualified people to answer questions. Results in Table M4 reveal that a high percentage of the respondents have a C-level job role, including CEOs, COOs and CIOs, (76.9%). Remaining 23.1% of respondents come from Line-of-Business areas (CFPs, Head of Supply Chain, Operations or R&D).

TABLE M4

Survey Respondent Profile by Job Title and Sub-Vertical Market

Which of the following best describes your job title?

	COO - Chief Operating Officer / CEO - Chief Executive Officer	CIO - Chief Information Officer	CFO - Chief Financial Officer	VP or head of Supply chain	VP or head of Operations	VP or head of Engineering or R&D	VP or head of Purchasing
Automotive / Vehicle production	37.6%	24.9%	13.3%	12.7%	5.5%	5.5%	0.6%
Industrial Machinery & Equipment	25.4%	33.0%	18.9%	12.4%	4.3%	5.4%	0.5%
Metal fabrication	39.2%	22.2%	18.2%	10.2%	4.5%	5.7%	
High Tech / Electronics	42.2%	18.9%	13.9%	15.0%	3.9%	6.1%	
Total	36.0%	24.8%	16.1%	12.6%	4.6%	5.7%	0.3%

Base: Entire Sample

Number of valid respondents: 722

Source: IDC Manufacturing Insights, July 2010

Abbreviations

CRM	Customer Relationship Management
ERP	Enterprise Resource Planning
IT	Information Technology
MES	Manufacturing Execution Systems
NPDI	New product design and introduction
OEM	Original Equipment Manufacturer
RoHS	Reduction of Hazardous Substances
SMB	Small-Medium Businesses
WEEE	Waste Electrical and Electronic Equipment

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