

INTEGRATED PRODUCT ACQUISITION STRATEGIES

Version 3

By Derek Andrews MIIE, FAICD, FAIM, Federal President of the Institute of Industrial Engineers, the Industrial Engineering Society of Engineers Australia.

Introduction

This paper had its genesis in the manufacturers' panel discussions prior to the Institute of Industrial Engineer's 2004 AGM which established the need for new business strategies integrated with product acquisition to ensure product development resulting from market intelligence continues to provide the customer with superior value propositions through superior manufacturing plans, product acquisition strategies and after sales support.

Integrating product acquisition strategies provides a means for businesses to survive and prosper in a mature market economy through the huge shifts in global production capacity, as more countries fully engage in the global market

Global Change Impacts.

Many countries, particularly China and India, have or are developing production capacity to export to world markets. They ultimately depend on their exports to the world's consumer markets to provide economic benefits to their citizens. They are thrusting into world markets for goods and services. India has a strong emphasis on supplying engineering and computer services.

We can consider the example of China, which has a stable population of 1.3 billion. Its production capacity is already significant and will expand at 10-15% per annum for the next 20 years to absorb its entire available workforce. Already China produces complex manufactures, including computers, other electronics, machine tools, household appliances, as well as textiles and apparel. Transport and aerospace industries are also well developed.

The cost of a skilled metalworker is around \$3 Aud per hour, a textile worker costs around \$3 Aud per day. Labour costs are unlikely to rapidly increase until a high proportion of the available workforce is more fully involved in the market economy.

While much of China's production will be absorbed by its own aspirational consumer market, in future China may be able to cost-effectively satisfy the world's need for manufactures. China is supporting its global growth diplomatically, through trade relations and by direct investment in key resource companies and key marketing and distribution channels.

South-east Asian countries will suffer losses of employment and capital investment in the struggle to compete with China; however, it will not be easy for China to displace the established world players in markets for such as production equipment, machine tools, automotive and aerospace.

Conversely, China represents an opportunity for global companies to have their goods manufactured there. China is also a market for production technology and systems, other services and manufactures that are being absorbed by the expansion of China's infrastructure.

In Australia, growing exports to China, primarily minerals and energy, have indirectly provided Australian manufacturers with opportunities in Australia to supply components and construct mine infrastructure, ore transport facilities and transport systems. This activity is currently absorbing sufficient skilled engineers, technicians and tradespeople to create the current skill shortage in Australian manufacturing. After the initial high usage of inputs builds new infrastructure in China and satisfies the initial growth in their consumer market, the rate of resource use will slow, releasing many of Australia's skilled workers back into other sectors of the economy. This shift may displace many positions now being filled by skilled immigrants entering the economy.

Business enterprises in the miniscule Australian economy will need to learn how to continue to prosper in these emerging circumstances and to find advantage in freight differentials and superior product development, technology and skills. The conceptual shifts required are extreme. Changes will need to be effective three years from now when the resource lead boom starts to falter.

To be viable, investment in production and distribution facilities needs to be competitive with other investments. A viable business would be growing, have effective risk management and earn a return of 15%, after tax and interest, on the net assets of the enterprise.

To succeed in a world of massively increased product acquisition options, businesses will focus on customer service and developing strong alliances with key customers and other suppliers.

Some enterprises have changed significantly to achieve success and will continue to change. Some factories have not survived, while others have prospered and absorbed some of the businesses that have failed. The successful businesses have all adapted traditional manufacturing arrangements. Some larger manufacturing complexes are winding back investment and outsourcing or relocating the manufacturing function.

The strategic changes made by successful companies provide a platform for survival in the new circumstances. Companies will continue to further develop and build on the strategies now in place.

Integrated Product Acquisition Strategies [IPAS]

Product acquisition is the activity and expenditure of resources carried out by an enterprise to acquire and distribute the product it sells. A product is whatever is sold and includes services, packaged information, and physical items from pharmaceuticals and food through to machinery, appliances, dwellings and infrastructure.

Product acquisition strategies need to be considered in the overall framework of the enterprise's operating strategies including:

- *Marketing* - defines the opportunities in supplying customers with a specific value proposition
- *Product development* - designs and specifies the product, the intellectual property, the product acquisition plan, the product branding, launch and distribution plan
- *Product acquisition* - the processing, manufacture and purchasing that the enterprise uses to obtain the product it sells
- *Distribution* - the transfer of the product to the customer in a way that adds value through convenience, availability and product protection
- *Customer support* - the communication of the value proposition, sales and after sales service

Product acquisition strategies may be integrated by linking and sharing appropriate activities across all the strategic operating areas, but particularly product development; processing, manufacturing, out sourcing and purchasing and distribution.

CURRENT IPAS IMPLEMENTATION.

Integrating product acquisition systems involves three major organizational functions:

- . Strategy
- . Process
- . People

Strategic considerations will determine the right options. Scenario based analysis and holistic business case evaluation could apply.

Processes will need to be monitored and improved and linked across the enterprise to ensure the whole operational chain functions as single system to provide enhanced productivity, quality and customer satisfaction while minimizing resource use and environmental degradation.

People throughout the organization need to be skilled [and improving their skills] in their own roles as well as being committed to the success of the enterprise; their own success and to the enterprise's profitability and customers.

Already some businesses are fully focussed on the integration of these systems. Many other enterprises are working in some of the key areas but are not considering optimization across the entire system.

Some enterprises have focussed on customer service and developing strong relationships and alliances with key customers; their suppliers and also with businesses that are suppliers to their customers.

The focus on customer service will continue, while opportunities to provide lifetime product support and maintenance will also be considered.

Businesses will focus on innovative product development by an understanding customer needs and through alliances with suppliers to develop better value propositions for the customer. Product development should result in defined intellectual property and its commercialisation, product specification, a product acquisition plan and a marketing plan.

Manufacturers will further develop their understanding of the marketplace to adapt the manufacturing facility to flexibly meet market needs, while increasing productivity.

High volume capital-intensive businesses have leveraged off their production expertise to effectively manufacture special features and shorter runs and compete internationally against Asian competitors on functionality, quality, range and delivery, rather than price. This strategy of embedded flexibility becomes fundamental to the continuing success of the business.

Plants manufacturing components and machinery for use or sale by their customers have focussed on making their customers' businesses better. They respond to special needs, ensure the flow of product to their customers fits the clients' manufacturing plan, minimising inventories and providing the customer with operational continuity. In some instances, the manufacturing company develops a complete manufacturing plan with the customer. This involves a critical review of the product specifications and functionality, together with a critical, detailed review of each stage of the production process, the materials and equipment used and the systems for costing, quality and production management. Batch sizes and inventory levels are carefully integrated to provide the lowest overall cost. The plan becomes a basis for the contractual arrangement (the alliance) between the manufacturer and the client.

Successful manufacturers will regularly update their production equipment and technology. Replacement equipment usually has higher capacity, improved precision and cycle times, with reduced set-up times and higher levels of automation. Some machines will provide combined functionality and automated handling systems. For many businesses, equipment that is three or five years old has reached the end of its useful life due to the continuing availability of machines with increased flexibility, capacity and higher levels of integrated automation.

Managers have worked to ensure that their workforce is skilful, productive and committed to the commercial success of the enterprise. There are individual development plans for each employee. Innovative performance evaluation and reward systems have been installed.

Total Production Overheads have been reduced with the employees accepting more responsibility for scheduling, productivity, quality and safety. Production overheads for planning, scheduling, transportation, supervision, quality, maintenance and management have been reduced to one overhead to ten direct workers. One to 15 is now being targeted.

Some companies have successfully outsourced manufacture, some retaining the capacity for final fit-out or assembly. The competence of the contracted production facility is critical and becomes a key concern. Transport and logistical systems must also be carefully assessed.

In a business operating internationally, product acquisition becomes very flexible if the company can “own the brand”. Owning the brand is possible where the business has a significant market presence, supported by superior marketing systems and continued innovative productive developments, resulting in ownership of the designs, the production for technology and the intellectual property. Such a business may produce locally for their home market in highly automated plants and manufacture through joint ventures in chosen locations around the world for the world market. Their product acquisition strategy provides for a controlled rate of shift between different locations, different kinds of manufacturing tied to particular marketing and distribution arrangements that suit the market in particular countries.

Manufacturing and marketing plans can be used in conjunction with other international facilities to supply the Australian and other export markets. This approach allows the enterprise to consider all of the options in product acquisition, including those countries more fully engaging in the international marketplace, or local manufacture, or both, in the most advantageous combination. The often expressed view that “some products will not be viably sold into South-east Asia and China unless they are also manufactured there.” should also be considered.

Some of the successful businesses were strong supporters of the philosophy outlined in the book “*Good to Great*” and have made all their employees aware of the opportunities inherent in this approach.

Some Barriers or Opportunities?

Growth in countries newly engaging in the global economy will be impeded from time to time by the lack of appropriate infrastructure, skills and technology. Political instability could also affect their progress.

In Australia, the shortage of skilled professionals and trades people poses significant difficulties for industry. However many trades people are working on resources infrastructure needed to fuel the growth in infrastructure and home consumption in the emerging global production powerhouses. When the infrastructure for increased exports from Australia is built, the need for trades people will reduce sharply.

Manufacturing professionals need to encompass the change in business practices. New educational programs will be needed to provide the future productivity professionals required by the adapting enterprises.

The difficulty of protecting intellectual property in product development is a barrier to the recovery of research investment particularly by smaller companies, which inhibits effective product innovation.

Where regulations are onerous and inflexible, enterprises will move interstate or overseas. But conversely there is a need for internationally accepted standards of OH&S, employment conditions and environmental compliance. Consumers in the US and Europe will react unfavourably to products that are produced with child or slave labour in unsafe workplaces that degrade the environment. Perhaps there will be UN standards set and a system of compliance marking established. To some it will be morally repugnant that plentiful low cost consumer goods are available without improvement in the living standards in developing countries.

Labour relations reforms are being contemplated in Australia. The process may see entrenched ideologies and irrelevant stereotyped conflict. Huge attitudinal change is needed so that all are involved; working together to achieve personal and enterprise success. A battle in labour relations may see one side or the other declared the winner while the nation as a whole is a loser.

The general standards of education, political stability and corporate compliance are considered appropriate and supportive of manufacturing in Australia. It is important that these fundamentals are continuously reviewed to ensure that, while the standards are appropriate for our nation, they do not prevent Australian enterprises from competing in world markets.

The level and kinds of taxation in Australia are already a concern to global investors who may be forced to favour investment in international product acquisition capabilities.

Conclusion

Manufacturers need to further develop their understanding of the marketplace to adapt manufacturing to flexibly meet market needs, while increasing productivity. They need to become leaner manufacturers, develop alliances and closer relationships from suppliers through to customers, and focus on innovative product development by understanding customer needs and alliances with suppliers.

This approach allows an enterprise to consider all of the options in product acquisition, including those countries more fully engaging in the international marketplace, or local manufacture, or both, in the most advantageous combination.

Industrial engineers can effectively contribute to many of the phases of integrated product acquisition, particularly in product development, developing manufacturing plans [which may involve providing suitable technology for out sourced manufacture] and developing appropriate logistical systems for different product acquisition strategies.

Professional development for productivity professionals needs to produce a wider range of competencies so that smaller manufacturers can work with the emerging graduates who will eventually work effectively with people and change while having available competence in compliance, analysis and improvement of production, maintenance, safety, quality and logistical systems in the context of integration of all these systems.

Government needs to be convinced to act to assist develop appropriate education for professional skills; to amend taxation regimes and improve intellectual property protection as a means of supporting local manufacturing, product development and acquisition so the economy benefits from continued employment and economic growth.

Business enterprises and productivity professionals will find new opportunities if they study the changes in global production capability and creatively adapt to the new reality, of the massive change that will impact on the world's economy, S E Asian politics and on Australian manufacturing.