

## **Supplier Selection in Industrial Supply-chains: The case of Taiwanese Agribusiness**

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### **Abstract**

The research reported in this study investigates the initial development of a framework of supplier selection in the context of Taiwanese agribusiness. The importance of this research lies in the fact that although supplier selection has been researched across a range of industries, there is little evidence of its application to the agribusiness sector. From the existing literature, a preliminary framework of supplier selection was developed and investigated through a series of in-depth interviews with key informants. The results of this research supported 22 criteria as being important in the preliminary framework for selecting suppliers. Some amendments to the framework had been suggested, particularly the need for stable viable suppliers that could demonstrate a willingness to cooperate and be innovative, and committed to developing ongoing relationships with buyers, thus improving supply certainty and product quality in a highly competitive environment characterised by lower-cost competition from more efficient suppliers of commodity inputs.

### **Introduction**

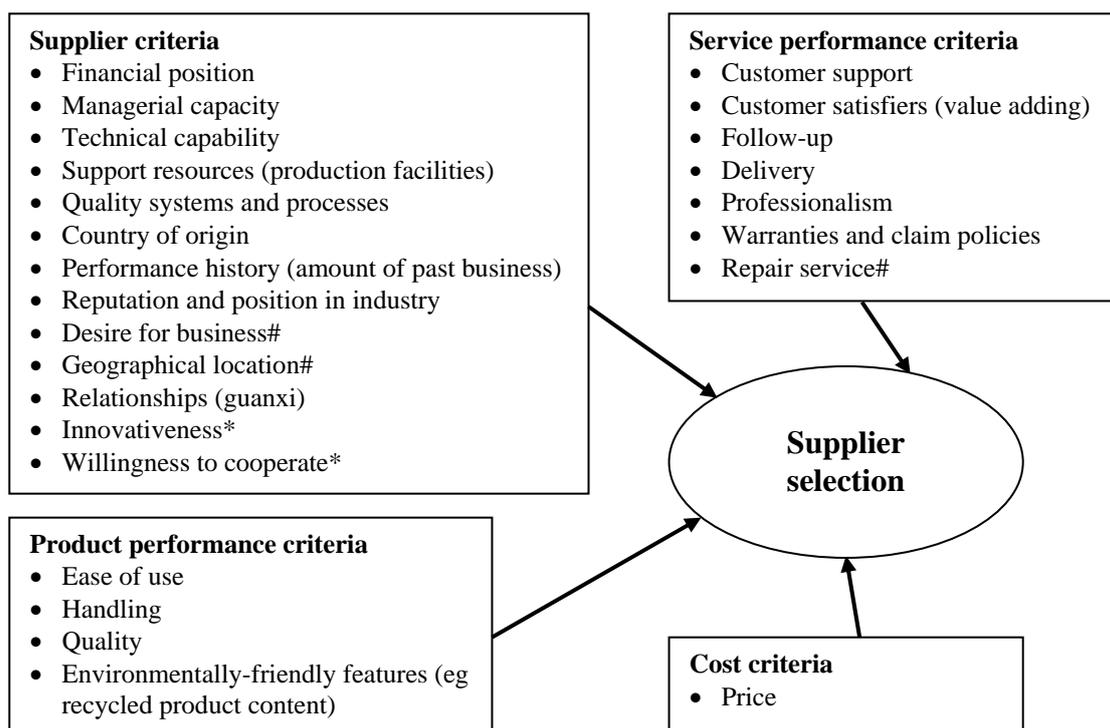
The importance of agribusiness as a specific industry sector globally has gradually strengthened as economic growth rebounds globally. This growth has led to an increase in global demand for agribusiness products (OECD, 2003). However, market conditions across the agribusiness sector are now more challenging than ever as the business environment becomes more competitive, and in which cost pressures have been increasingly passed back to suppliers. In many cases this has meant that inefficient suppliers are unable to remain viable and in many cases, supply chains have become increasingly reliant on fewer, more efficient suppliers who can remain viable in an environment of decreasing real returns but who are prepared to enter into managed relationships such as co-operative relationships with buyers (Copacino, 1996; Mason, 1996). Therefore, from the perspective of major buyers in value-adding agribusiness enterprises, supplier selection is a critical issue (Weber, Current and Benton, 1991).

The agribusiness industry in Taiwan has been historically, and still is, characterised by a large number of small, labour-intensive micro-enterprises. However, since Taiwan's entry into the World Trade Organization (WTO) in 2002, traditional agribusiness suppliers have encountered new challenges particularly in terms of tougher market competition from low cost imports (Council of Agribusiness, Executive Yuan, 2006). Furthermore, buyers of basic agricultural commodities for processing are increasingly seeking to schedule supply inputs and requirements in terms of product integrity as they increasingly move toward predicting end-user (customer) requirements. The purpose of this paper is therefore to develop a preliminary theoretical framework for the selection of suppliers in an agribusiness sector by exploring and identifying the criteria likely to be used for supplier selection. This study draws from both the theory and the preliminary empirical knowledge gained from interviewing stakeholders responsible for supplier selection in the Taiwanese agribusiness industry. Hence, this paper will address the question '*What criteria are used to select suppliers? Why?*'

## Literature Review

In agribusiness supply chains, purchasing behaviour can be regarded as industrial buying behaviour because of the need to purchase inputs from various sources. Such organisational buying behaviour is a complex decision making and communication process, involving numerous participants both internal and external to the purchasing organisation. The process often encompasses many inter-organisational relationships (Webster and Wind, 1996), as information is often required from many sources (Webster and Wind, 1996; Woodside, 2003). The literature posits that supplier selection is a complicated and often difficult process because: (1) a list of criteria has to be considered prior to making a decision; (2) the criteria used may vary with (a) the buying organisation, (b) the buying situation and (c) the influences involved; and (3) the fact multiple participants are involved in the selection process (Robinson, Faris and Wind, 1967; Webster and Wind, 1996; Wind and Thomas, 1980). The issue of which criteria to be use in selecting suppliers, which is the focus of this study, had been explored extensively (eg Choi and Hartley, 1996; Dickson, 1966; Hirakubo and Kublin, 1998; Kannan and Tan, 2003; Simpson, Siguwaw and White, 2002). Although empirical examination of the relative importance of selection criteria in several industries in relation to purchase and product scenarios is evident in the literature, essentially there are no such studies specifically directed to the agribusiness sector.

**Figure 1: Preliminary framework for selecting suppliers in value-adding supply chains**



Adapted from: Dickson, 1966; Kannan and Tan, 2003; Webster and Wind, 1996

Note: Based on the in-depth interview findings, criteria with a (\*) were added to the framework as important to the selection of suppliers whilst criteria with a (#) were regarded as unimportant selection criteria.

It can be concluded from these studies that although quality, delivery reliability, historical performance, price and service are common determinants of selecting suppliers, the criteria used and their relative importance may vary, depending on the types of purchases being made and the circumstances surrounding the purchase. Whilst there is a tendency to focus on

measurable selection criteria (examples such as price and historical performance), “soft” intangible criteria such as management compatibility and buyer-supplier relationships (or “guanxi”) can and should take on an important role in the selection process (Kannan and Tan, 2003). The importance of this in Asian markets had been previously identified by McCarroll and Brown (2004) in their study of how Australian suppliers of non-genetically modified organisms (GMO) soybeans were able to successfully gain entry into the Japanese food manufacturing sector.

For this study, the criteria have been segmented into four main areas: (1) supplier criteria, (2) service criteria, (3) product performance and (4) cost. These are now addressed in turn: (1) Supplier criteria based on personal and company aspects of the intended supplier including their financial position, managerial capacity and relationship establishment are assessed in accordance with the criteria of the customer company. (2) Service criteria cover both delivery and customer support. The timely transfer or exchange of goods and services which meet the required specifications of the buyer is crucial to the effective running of the business (Choi and Hartley, 1996). Furthermore, the way the firm meets the customer expectations with regard to time and place performance through better sales support, attention to buyer’s complaint and requests and after sales service assists the customer company the ability to add further value to their customers (Berry, Zeithaml and Parasuraman, 1985). (3) Product performance when based on the type of product has a significant effect on how the purchasing decision is made in terms of the choice (decision) criteria and the weights assigned to each criterion (Wilson, 1994). (4) The fourth area is cost. Many researchers (Bartholomew, 1984; Choi & Hartley, 1996; Dempsey, 1978) list cost as one of the four leading criteria on which a supplier is selected. These areas will be investigated for the relevant importance in deciding suppliers for the agribusiness sector of Taiwan.

## **Research Methodology**

Although the research involves two stages, only the initial exploratory stage is discussed here. In the first phase, in-depth interviews were conducted with 10 agribusiness professionals from both the private and the public sector, recognised as having the required knowledge, expertise and experiences in the fields of selecting suppliers in the agribusiness industry. They were chosen through personal contacts or references from peers or colleagues (Malhotra, 1996; Patton, 1990) and were questioned about the appropriateness of those supplier selection attributes identified in the preliminary framework. They were invited to share their experiences, opinions and attitudes in order to provide a better understanding of those attributes influencing a supplier selection in agribusiness supply chains. Since theoretical saturation occurred at the 10<sup>th</sup> in-depth interview level, and because replication had been achieved, no further interviews were conducted (Johnson, 2002). The interviews revealed the level of satisfaction that interviewees have on their respective suppliers. Additional insights from interviewees were also sought about the following objectives:

- the relevance of the current literature about the research issue in the Taiwanese context;
- the attributes which existing agribusiness firms need to consider when selecting suppliers; and
- assist in the questionnaire design and hypotheses to be developed for the second stage of this research.

To ensure all required issues were addressed, an interview protocol was developed which consisted of several open-ended questions which were used as a guide in the interviewing process. Interviews were semi-structured and conducted in either English or Mandarin at the

interviewee's office. The discussion was flexible and informal, thus giving the interviewer an in-depth understanding of the topic and the aforementioned objectives. The exploratory findings of this research are discussed in the next section.

## Research Results

The interviewees were predominantly more male (60 per cent) than female (40 per cent) with the majority (70 per cent) having more than five years of experiences in agribusiness. Seventy per cent of the interviewees were either currently involved in supplier selection or related activities in their respective organisations. Based on the results of these interviews, the preliminary framework was changed by the removal of the supplier's desire for business, geographical location and repair service criteria as they were not mentioned in any of the interviews. However, two additional criteria (innovativeness and willingness to cooperate) were seen as necessary additions to the framework for the second stage of the research as they were mentioned by 70 per cent of interviewees. Overall, the results of the interviews supported 22 of the 25 criteria identified in the preliminary framework as influencing an organisation's selection of suppliers in the agribusiness industry. All agreed that suppliers with a sound *financial position* and an experienced *managerial* team were seen as having the potential to be ongoing suppliers committed to their buyers. Furthermore, because of increasing global competition and demand for quality goods, the *quality systems and process* undertaken by suppliers were critically important to ensure goods were produced and supplied in the highest quality standards. In supporting this, interviewees suggested the need for adequate *warranties and claim policies* by suppliers to back up their commitments. This need had already resulted in many suppliers boosting their *reputation in the industry* by acquiring the International Standards Organization (ISO) quality management certification (such as the ISO 9000). Additionally, interviewees believed that there was a relationship between the supplier's *country of origin* and the quality of goods supplied, where suppliers from developed or developing countries were not always perceived to provide quality goods and also the potential existed for political impediments in some such supplier countries.

Importantly, interviewees emphasised that conducting businesses in Taiwan required a substantial level of *relationships* (guanxi) with stakeholders (including suppliers), particularly in a business-to-business environment. Organisations that appreciated this and had established good relationships with relevant stakeholders could potentially influence favourable outcomes. Post-purchase support level was another criterion that interviewees regarded as important to selecting suppliers since buying organisations *periodically review the performance history* of those selected suppliers, to determine if relationships with the suppliers were to be continued, modified, or terminated. When determining the level of support from suppliers, buying organisations would usually evaluate the *technical capability, support resources (such as production facilities)* and *customer support and professionalism (such as handling product enquiries and follow-up)*.

With growing concerns about environmental issues and in order to be seen as a 'responsible global citizen', many businesses nowadays were taking steps to incorporate *environmentally-friendly features* (such as recycled product content) into their products. Interviewees further suggested that suppliers with ISO environmental management certification (such as the ISO 14000) would be assessed favourably by buying organisations in the supplier selection process. Due to the focus on commodity-like products, interviewees agreed that the agribusiness industry in Taiwan is price sensitive in nature as they have little or no control

over pricing. The situation had worsened since its entry into the WTO in 2001, with increasing competition that had driven product prices down significantly. This had led to many suppliers placing increasing emphasis on cost control in order to remain competitive. Despite this, buying organisations were not prepared to compromise *product quality* for price, thereby reinforcing the significance of quality in supplier selection.

The *ease of use and handling* of product was also important in supplier selection. Interviewees suggested that suppliers of basic commodities were generally still labour rather than capital intensive and were both either reluctant or unable to afford introducing more sophisticated production technologies given the low skill levels of their existing workforce. However, despite this, *innovativeness and willingness to cooperate* were highlighted by interviewees as important factors to selecting suppliers. Interviewees suggested that suppliers that were *innovative* were usually regarded as leaders in the field and could *value add* to the overall supply chain. Product innovation (such as the creation of new goods and or services) to improve product quality and process innovation that could lead to a reduction in the cost of producing existing products were some examples of how suppliers could increase their attractiveness as suppliers to buying organisations. Interviewees also believed that the degree of *willingness to cooperate* was important to the selection of suppliers and this was particularly evident with last minute orders that required prompt *delivery* or make product modifications.

### **Conclusions, Implications and Limitations**

In conclusion, the findings from this study supported 22 of the 25 criteria presented in the preliminary framework as influencing an organisation's selection of suppliers in the Taiwanese agribusiness industry. The findings revealed three criteria (desire for business, geographical location and repair service) that were regarded as unimportant whilst two criteria (innovativeness and willingness to cooperate) were highlighted as important by interviewees.

The findings suggested that Taiwanese agribusiness buyers had considered the financial position of the suppliers and the quality of their managerial teams as very important in the supplier selection process. Suppliers with quality systems and processes in place and together with supporting warranties and claim policies were well regarded in the industry. The suppliers' reputation in the industry and their country of origin also impacted on the selection process. Relationships with suppliers and the periodical performance review of the suppliers were also essential. Capability, support resources, and customer support and professionalism were acknowledged for their importance in the selection process. Taiwanese agribusiness buyers had also considered environmental friendly features, the ease of use and handling of the product as important criteria in the selection process. Furthermore, the findings also suggested that suppliers had to be innovative (which would value add to the business) and could demonstrate a willingness to cooperate with the buying organisation, particularly in providing prompt delivery.

This study investigated the initial development of a framework of supplier selection within the context of Taiwanese agribusiness and thereby constrains the applicability of the findings to other markets. Further exploratory research is needed to provide comparisons between other Asian markets to ascertain the similarities or differences between such markets. From such information various frameworks could be developed which would provide a standard framework for Asian regions or individual Asian countries, depending on the findings.

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