Information Communication Tools used to Coordinate Food Chains

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Abstract

Chain coordination is growing in importance for those in the food industry to maintain access to global markets and competitive advantage. Information communication facilitates coordination and is seen as the glue that holds organisational chain relationships together. This paper describes how Australian food processors have been exchanging information to coordinate customers and suppliers in their chains along with changes over time. The most frequent information exchanged was to resolve problems. Operational issues were only discussed when exceptions arose and this was decreasing over time, as problems were resolved and processes improved. For the organisations studied, they were increasingly formalising processes to review progress and performance. A wide range of organisational departments were involved in communications with customers and suppliers, especially to resolve problems and develop new products. While the traditional telephone and face-to-face communication methods were the most popular, e-mails were replacing faxes. There were also moves to increasing use of reports, electronic data interchange and intranets for more well developed relationships with larger customers and suppliers. These changes in communication systems were the source of some increased satisfaction with information systems by improving timeliness and depth of information shared. However, there was perceived to be some room for further improvement.

Introduction

Chain coordination is growing in importance to maintain access to global markets and competitive advantage. Information communication facilitates coordination and is seen as the glue that holds organisational chain relationships together (Mohr and Nevin 1990, Anderson and Narus 1990). Many support the idea that suppliers' efforts to assist communication increases customer satisfaction and relationship behaviour (e.g. Mohr and Nevin 1990, Anderson and Narus 1990, Leuthesser and Kohli 1995, Keith et al. 1990, Uzzi 1997).

However, very little research has been conducted on how information is exchanged through chains of organizations to achieve this. The empirical studies found that quantitatively collected data from chains of organizations (focal firm, a customer and a supplier) did not look in detail at information systems (Hardman et al. 2002, Spekman et al. 1998, Clare et al. 2002, Lehtinen and Torkko 2004, Matanda and Schroder 2002). Most published chain research has been based on case studies where generalisation of results can be problematic (e.g. Lindgreen et al. 2004, Simons et al. 2003, Van Dorp 2004, Van der Vorst 2000, Champion and Fearne 2002, Trienekens 1999). Even in the more substantial research into two organizations in a dyad, none were found that looked at information systems used to manage the relationship. Some of these dyadic studies looked at the effect of implementing information communication technologies (Wilson and Vlosky 1998, Amanor-Boadu et al. 2002), obtaining information from buyers and suppliers (Claro et al. 2004) and information exchanged with buyers and sellers (Langton 2004, Heather 2001, Wilson 2000). More dyadic studies were found that empirically evaluated associations between communication or information exchange and some of the factors that affect them as indicated qualitatively in the chain studies. For example the association with

outcomes (Anderson and Narus 1990), commitment (Anderson and Weitz 1992), collaboration (Karalis and Vlachos 2004, Siemieniuch et al. 1999), flexibility and joint action (Claro et al. 2004), trust and dependence (Ganesan 1994). Other dyadic studies looked more generally at the role of information and communication as a partnership success factor (Ellram 1995), reason for entering an alliance (Sparling and van Duren 2002), or a determinant of partnership advantage (Sethuraman et al. 1988).

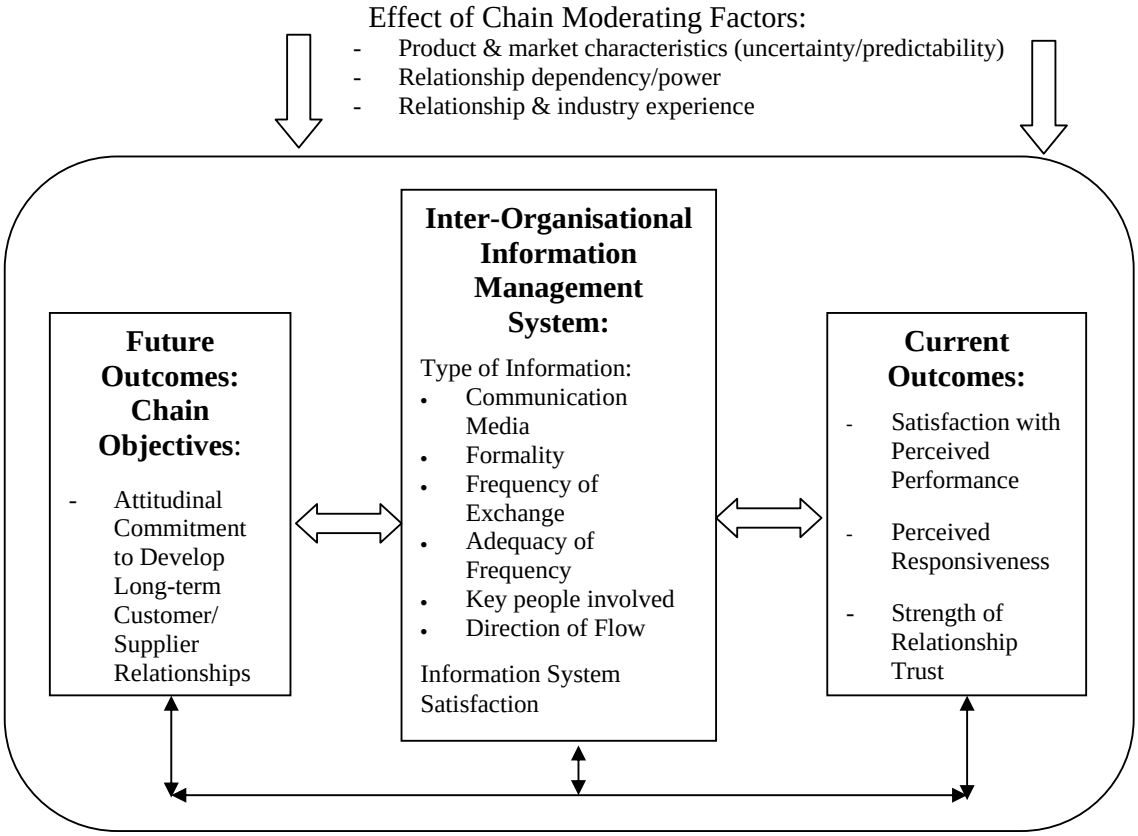
There also appears to be a lack of detailed studies of perishable goods systems. It has been argued that food chains have different product characteristics than do non-perishable products, as there is greater uncertainty (Trienekens 1999). Ancona & Caldwell (1992) suggested environment uncertainty affects the required information processing capacity and frequency of information exchanges and Bensaou (1992, 1996, 1997, 1999) argued that it might affect the nature of the relationship. Perishable product chains therefore, may have different inter-organizational information systems than durable product chains. While the Supply Chain Partnerships Program (2000) web site provides guidance about general changes in information systems in chains over time in the food and other industries, it has not been tested empirically. Spekman et al. (1998) have examined perishable chains but did not look in detail at information systems aspects. Mohr et al. (1996) and Mohr & Sohi (1995) used a sample of computer dealers to test their models. Bensaou (1992, 1996, 1997, 1999) tested his model on a sample of automobile manufacturers.

In conclusion, there would seem to be a gap in the research on the role of information systems to manage inter-organisational relationships in chains and networks of organisations, especially for those dealing with perishable goods. In addition, little has been written about the practical details to answer the how, what and why questions of what to do in practice. What types of information are most commonly communicated? How often? Who is involved? What types of communication tools are used? This paper will address some of these issues by describing how Australian food processors are communicating with their customers and suppliers to manage the relationship.

Research Method

The research has been conducted in two phases using a linked ‘sequential mixed methods’ approach with the first phase based on the ‘interpretivist’ paradigm (qualitative approach) that was linked to the second phase based on the ‘positivist’ paradigm (quantitative approach) (Tashakkori and Teddlie 1998). The aim of the first phase was to explore the role of information systems to manage inter-organisational relationships in chains and networks of organisations, especially for those dealing with perishable goods. A grounded theory approach (Denzin and Lincoln 1994) was taken using literature reviews, informal in-depth interviews with experts internationally and a case study of a network of five organisations involved in several chains or ‘netchain’ (Lazzarini et al. 2001). The result was a proposed model of inter-organizational information management systems (Figure 1) (Storer 2001). While this paper will not discuss these results of the first stage in detail, they will be used as a starting point for subsequent research presented in this paper. Key definitions were that the system was defined as a group of related objects with a common purpose. The inter-organizational information management system (IOIMS) has been defined as the information exchanged by organizations in a chain for the purpose of managing the relationships of the organisations in the chain. The IOIMS encompasses all aspects of the process of information exchange including the information communication technology tools used.

Figure 1 Model of Inter-Organisational Information Management Systems in a Chain Context



Source: Adapted from (Storer 2001)

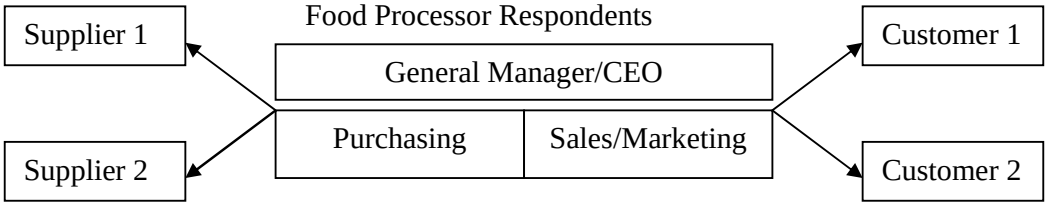
While the IOIMS model has been described in further detail previously (Storer 2001), the following describes key aspects relevant to this paper. In the model, it was suggested that (attitudinal) commitment to develop long-term customer/supplier relationships (future outcomes) would be related to the nature of the inter-organisational information management system adopted in the chain which, in turn, would be related to perceived performance, responsiveness and trust in the chain (current outcomes) (as suggested by Benedict and Margeridis 1999, Bowersox and Closs 1996, Stank et al. 1996, Vijayasarathy and Robey 1997). Further, the model argued the results would be moderated by environmental factors such as product and market uncertainty, relationship dependency and power, experience in the relationship and in the industry (as suggested by Ancona and Caldwell 1992, Bensaou 1999, Spekman et al. 1998).

The aim of the second phase was to evaluate, test and refine the theoretical framework based on a survey of food processors. Reported in this paper is a description of the IOIMS used by the Australian food processors surveyed. Support for the second phase of the research was received from a large Australian retail chain that provided introductions to four of their significant suppliers for each major food product category. All suppliers were significant to the retail chain in terms of volume, value or strategic significance. A total of 45 food categories were covered and included dry, fresh, chilled and frozen food products based on meat, dairy, fruit, vegetable and cereals in the form of ingredients as well as snacks, meals and drinks. Food

processors varied from large multinational and national organisations to smaller regional suppliers.

In-depth interviews of 111 Australian food processor purchasing managers, sales/marketing managers and owners were conducted during April to December 2002. Where possible interviews were conducted face to face with phone interviews and self completion used as a last resort. Relationships with 176 suppliers and 297 customers were discussed in the interviews. Interviewees were asked to discuss two suppliers or two customers that were significant in terms of volume, value or strategic intent (Figure 2). Some interviewees answered questions for several different product categories e.g. milk, cheese and small goods.

Figure 2 Customers and Suppliers Discussed by Food Processors



A structured questionnaire (Appendix 1) was developed based on the model developed in the food processor netchain case study (Figure 1 Storer 2001). The description of the *IOIMS* was based around whether information was exchanged about performance feedback, problem resolution, new product developments, forecast supply and demand, and opportunities and threats. Based on the netchain case study, performance feedback was expanded to specifically cover product quality, on time delivery, completeness of orders, flexibility to change orders and invoice accuracy. For each type of information shared, details were sought of:

- *communication media* used (categorised into a hierarchy of richness in communicating cues with face-to-face meetings the richest);
- *formality* of the process (formal or ad hoc/informal);
- the *frequency* it was shared on average in a year (absolute frequency);
- *adequacy of frequency* i.e. was information exchanged as often as necessary (relative frequency); and
- the key *people involved* in the exchanges While details were collected of the nature of organisations, departments and hierarchical level of people involved in the information system, for the purpose of analysis this data was translated into a count of the number of people involved.
  (Bensaou and Venkatraman 1995, Mohr and Nevin 1990, Ellinger et al. 1999, Borgen and Ohren 1999, Dansereau and Markham 1987, Farace et al. 1977, Choo 1996, Daft and Lengel 1986, Daft and Lengel 1996, Huber and Daft 1987, Anderson et al. 1987).

Perceived *satisfaction with the information system* was measured in terms of: Accuracy, reliability and completeness; Usefulness and relevancy; Depth and range of content and being Timely and up to date (O'Brien 1999).

Expected future outcomes from the relationship were measured as attitudinal *commitment* to develop long-term customer-supplier relationships (Ganesan 1994, Gundlach et al. 1995, Sharma et al. 2001). Current outcomes from the relationship were measured as perceptions of the buyer/seller's *performance, responsiveness and*

willingness to change, and *trustworthiness* compared to others in the industry (Anderson et al. 1994, Bensaou and Venkatraman 1995, Doney and Cannon 1997, Gassenheimer and Scandura 1993, Kumar et al. 1992, Kohli et al. 1993, Anderson et al. 1987, Ganesan 1994, Gundlach et al. 1995, Womack et al. 1990).

Moderating variables included uncertainty, dependency/power and experience. *Uncertainty* was measured as: predictability of demand, production yield, quality and quantity of supply; market competition; and changing consumer preferences (Ganesan 1994, Kumar et al. 1992). Relationship *dependency and power* were measured as: availability of alternative customers and suppliers; importance to each other; influence; and ease of replacement (Ganesan 1994, Kumar et al. 1992). *Experience* was measured in terms of the number of years working in the industry and with the organisation (Doney and Cannon 1997, Ganesan 1994).

To explore the dynamics of the interaction over time, the information satisfaction and relationship outcome variables were measured in terms of the current situation and how it had changed over the last five years. Comments were recorded about respondent's perceptions about the reasons for change. As a result of explanations about reasons given for change, two additional questions were added about perceptions of customers/suppliers *initiating new ideas* to improve the category/business or improving the organisation's *knowledge* of the industry.

Research Findings

Firstly results are presented on the characteristics of the respondents, followed by the people involved in information communication, the communication media used and how frequently information was exchanged, direction of information flow and the formality of the process.

Sample Characteristics

The food processors manufactured or handled a range of 45 categories of goods. Most goods were shelf stable boxed, UHT and canned goods (56%). Some goods were the more difficult to handle and manage perishable fresh and chilled goods (35%) and frozen goods (9%).

To ensure respondents were sufficiently knowledgeable to answer questions they were asked about their experience as well as their understanding of the other organisations and the industry in general. Most interviewees indicated they understood the business of the customer or supplier well (average 6.1 on a scale of 1 to 7) as well as the industry generally (average 5.9). On average interviewees had 11 years experience working in their organisations and 19 years experience in the industry. Most interviewees were executives or general managers (32%), followed by sales category managers (24%), sales department managers (19%) then purchasing category and department managers (18%). There was greater success in getting interviews with sales/marketing staff dealing with customers than with purchasing staff dealing with suppliers. As sales staff tended to be more specialised in dealing with certain categories of customers, more sales staff were interviewed per organisation and they tended to talk about more customers. In addition, discussion about customers was usually for a wider product range than supplier discussions. As a result the responses were about greater numbers of customers (63%) than suppliers (37%) even though most organisations (86%) discussed both.

Customer and supplier counterparts discussed were primarily retail supermarkets (35%) as well as wholesalers (26%), food processor/food service (15%), packaging

suppliers (11%) and primary producers (12%). Organisations had been in relationships with the counterpart customer or supplier for an average of 22 years with most (79%) relationships being in place for 10 years or more.

The way customer and supplier relationships were perceived by respondents compared to the rest of the industry is shown in Table 1. As would be expected of significant customers and suppliers, respondents perceived their organisations were highly committed to developing long-term relationships with them (average 6.6 on a scale of 1 to 7). In addition, they perceived that their organisations had become more committed in the last five years. The overall performance of customers and suppliers was perceived to be better than others in the industry (average 5.4) and had improved over the last five years. Responsiveness was more varied (average 5.1, standard deviation 1.4) and depended on the relative equality of the organisations, although it was seen to have improved over the last five years. Trust was not as strong (average 4.8) with it being above average for the industry for just over a half (52%), average for a third (34%) and below average for some (13%). Trust had not improved for most over the last five years (75%).

Table 1 Perceptions of Customer & Supplier Relationships

Relational Characteristic	**Average**	**Standard Deviation**
Commitment	6.6	1.0
Commitment change in last 5 years	4.8	1.3
Performance	5.4	1.1
Performance change in last 5 years	5.1	1.2
Responsiveness	5.1	1.4
Responsiveness change in last 5 years	4.9	1.3
Trust	4.8	1.4
Trust change in last 5 years	4.3	1.0
Scale: 1 to 7 with 1 being low, 7 being high and 4 the mid-point		

Who Communicates with Customers and Suppliers

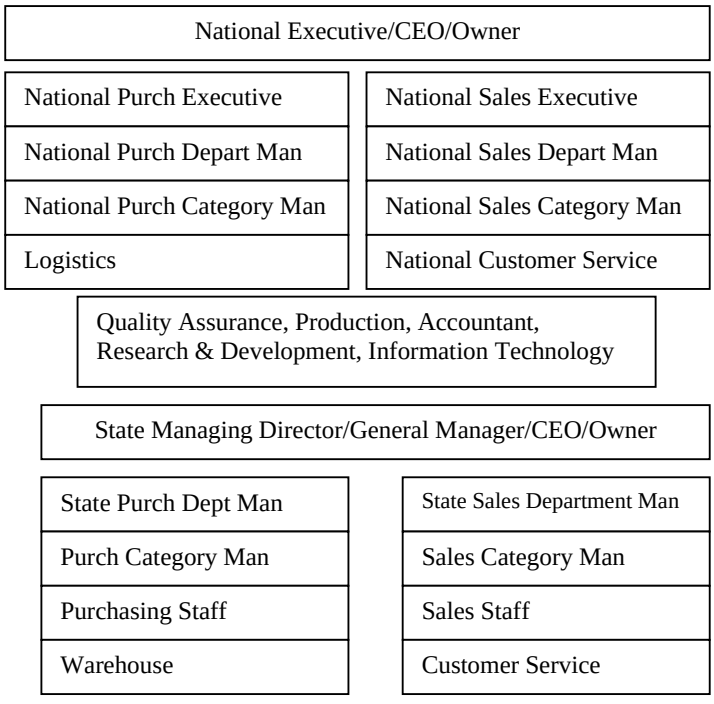
Overall an average of two or three people were involved in communicating with customers and suppliers depending on the nature of the type of information system although in some organisations as many as nine people could be involved (Table 2). More people were involved in communicating about problems generally (mean 3.7), quality management (mean 3.1) as well as opportunities and threats (mean 3.0). Fewer were involved in negotiating prices (mean 1.8) and discussing forecasts (mean 1.7).

Table 2 Number of Communicators Involved

Type of Information System Communicators	Mean	Maximum	Supplier Mean
Problem communicators	3.7	9	3.5
Quality communicators	3.1	9	2.9
Opportunities & threats communicators	3.0	11	3.7
Delivery timeliness communicators	2.6	9	2.5
Invoice accuracy communicators	2.3	9	2.0
New product communicators	2.3	9	2.7
Order completeness communicators	2.3	9	2.1
Order flexibility communicators	2.2	9	1.9
Price communicators	1.8	9	1.8
Forecast communicators	1.7	9	2.0

Sales/marketing staff mostly exchanged information with customers and purchasing/acquisitions staff mostly exchanged information with suppliers. For newer or more sensitive relationships it may be that all communication was channelled through a category purchasing/sales person. However, for well-developed relationships, increasingly a wide range of staff from different departments were involved with both customers and suppliers (Figure 3). Problems were more likely to involve a wider range of staff from different departments. Quality issues had a high level of involvement of quality staff and senior management.

Figure 3 Staff Involved in Customer and Supplier Communications



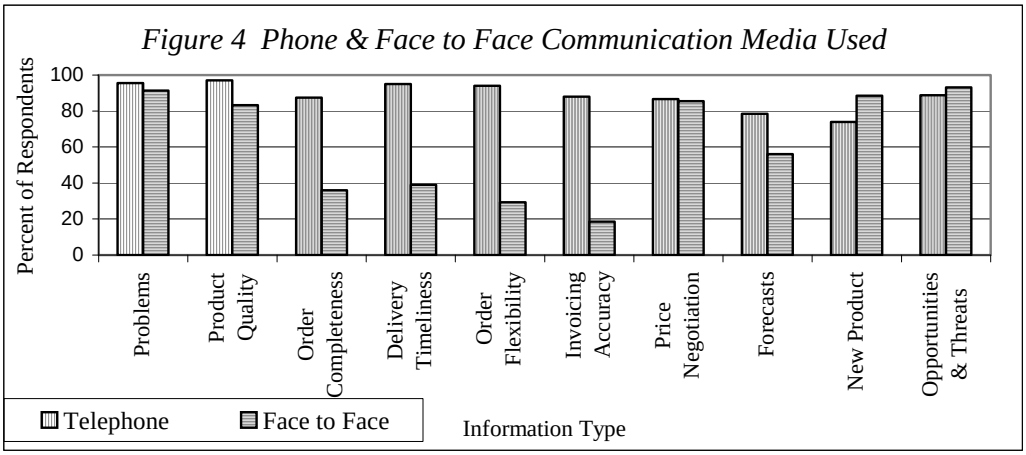
As expected, most communication took place at operational levels through local sales representatives and category managers especially for late deliveries, incomplete orders, order changes and invoice errors. Issues would escalate to be handled by department managers, general managers and national staff where they were significant or if they were ongoing or could not be resolved. Senior staff and appropriate other departments (e.g. production, quality assurance, research and development) would be advised of any major issues by internal communications. Senior staff were involved in more complex issues such as price negotiations, new products development and introduction as well as discussing opportunities and threats.

One change that was noticed through the interview process was the rate of change in organisational structures. Most organisations had moved to category managers within departments (matrix structure where there is accountability to product categories as well as functional departments). There were more category managers in sales/marketing departments so that service levels could be better managed. Purchasing was less likely to move to category mangers unless there was a large number of suppliers or suppliers required close management such as for perishable primary produce.

Communication Media Used to Manage Relationships

For each type of information exchanged, respondents were asked about the types of communication media used. The richer communication media (phone and face-to-face) were generally more used than the leaner written media (Figures 4 to 6). However whether a rich communication media was used depended on the situation. Face-to-face communication with follow up telephone calls were preferred for discussion of problems, product quality, price negotiation, new products, opportunities and threats (Figure 4).

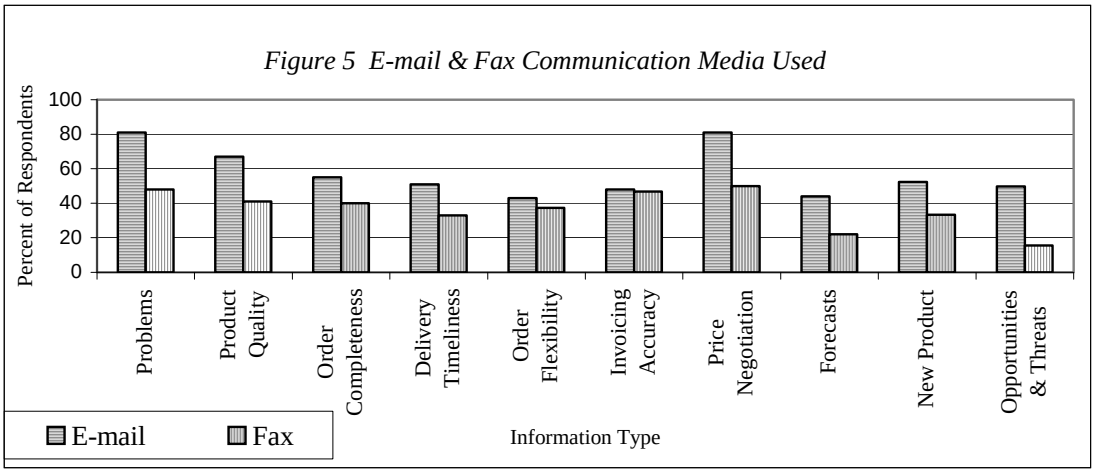
Figure 4 Phone & Face to Face Communication Media Used



The need to exchange the more difficult tacit information would explain the need to use these more resource intensive methods. The extensive use of telephones for the exchange of all information types may be because it is widely available and very effective in getting an immediate response to issues that need attention. Telephones were used more to address issues as soon as they arose. Face-to-face meetings were used to regularly evaluate performance in all these areas or to address an ongoing problem.

E-mails were also very popular communication tools with increasing use for all issues and especially those requiring timely responses such as problems, product quality and price negotiation (Figure 5). Many commented that faxes were not used as much any more unless the customer or supplier did not use e-mail.

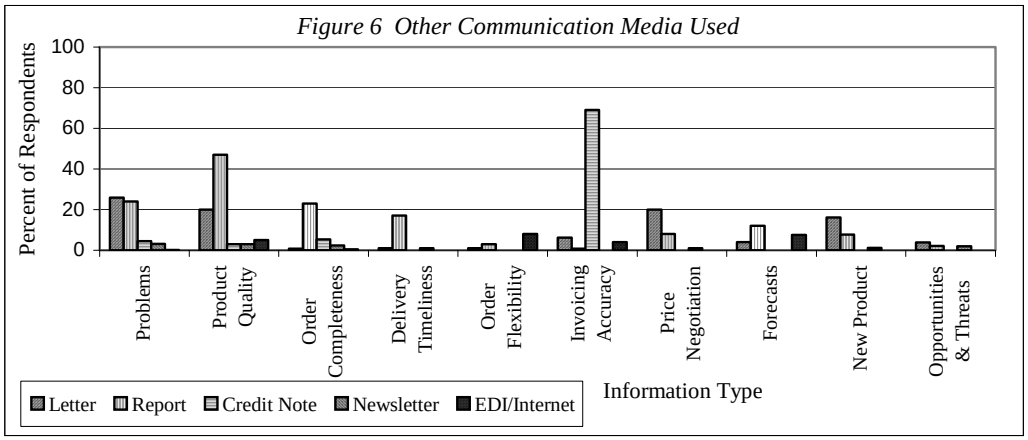
Figure 5 E-mail & Fax Communication Media Used



E-mails were increasingly used to advise people of an issue, confirm arrangements in writing as well as send attachments. The ability to share electronic documents and detailed information such as planograms (planned product layouts for retail outlets) and forecasts that was used by both parties was seen to be a big advantage. E-mail attachments of images of problems were also very popular when there was a large physical distance between parties or highly perishable goods.

Other communication media that were not very widely used but were being increasingly used were reports, electronic data interchange and intranets (Figure 6). These were used more for customers and suppliers that had well established relationships and both were of a sufficient size to warrant the investment.

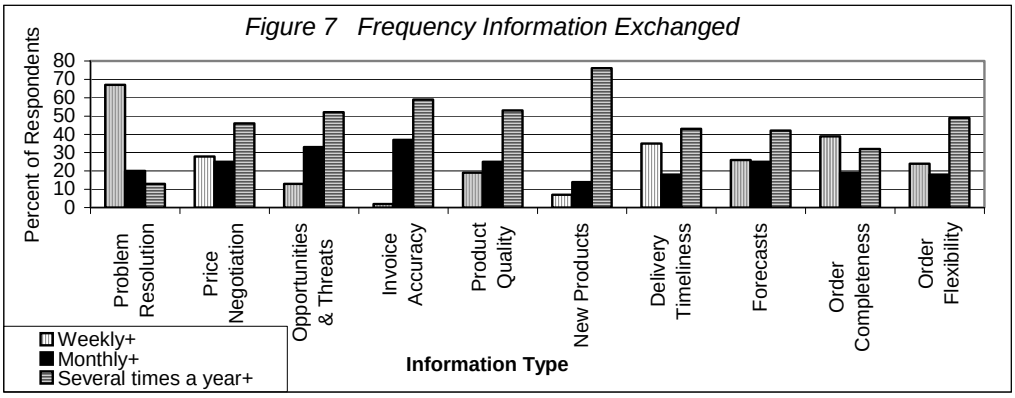
Figure 6 Other Communication Media Used



Frequency of Information Exchanges

Overall problems resolution information was exchanged more frequently followed by order completeness, timeliness of deliveries and price negotiations. (Figure 7)

Figure 7 Frequency Information Exchanged



Information exchanges monthly or more often were more common for problem resolution (87%), order completeness (58%), delivery timeliness (53%), price negotiation (53%), forecasts (51%). Most exchanged all other information types several times a year (91%-100%). The extent of the frequency of information exchange depended on how much of a problem there was. Some commented that they had "very few problems with them" and "that is why we do business with them".

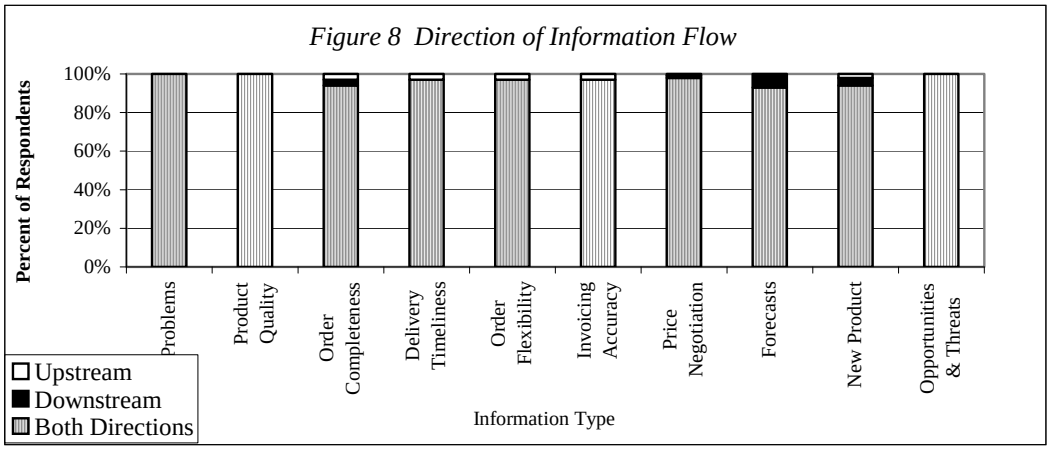
When respondents were asked if they thought they were exchanging the different types of information as often as was necessary, most said that they were. Many commented that the reduction in staff and higher job pressure meant more information exchange would be difficult to fit in unless there were clear benefits. There was seen to be room for improvement in exchange of forecasts about supply and demand by a third of respondents (37%). Some (20%) thought there could be more discussion of new product developments rather than just advise of new products available for introduction. In addition, nearly a third (30%) thought there could be more discussions about opportunities and threats with customers and suppliers.

The following describes in more detail the frequency different communication media were exchanged for each type of information. Information to resolve *problems* was exchanged most frequently with over half (56%) making phone calls weekly or more often. Some also used follow up e-mails (47%) and face-to-face meetings (36%) weekly or more often. Most discussed problems monthly or more (87%) often by phone (79%), face-to-face (68%) or e-mail (63%). All had discussions several times a year or more often commonly by phone (94%), face-to-face (90%) or e-mail (78%).

Information about *order completeness* was relatively frequently exchanged with over a third (39%) some having discussions weekly or more often. It was also common to have discussions weekly or more often about *delivery timeliness* (35%), *price negotiations* (28%) and *forecasts* (26%). These discussions were primarily by phone, and e-mail.

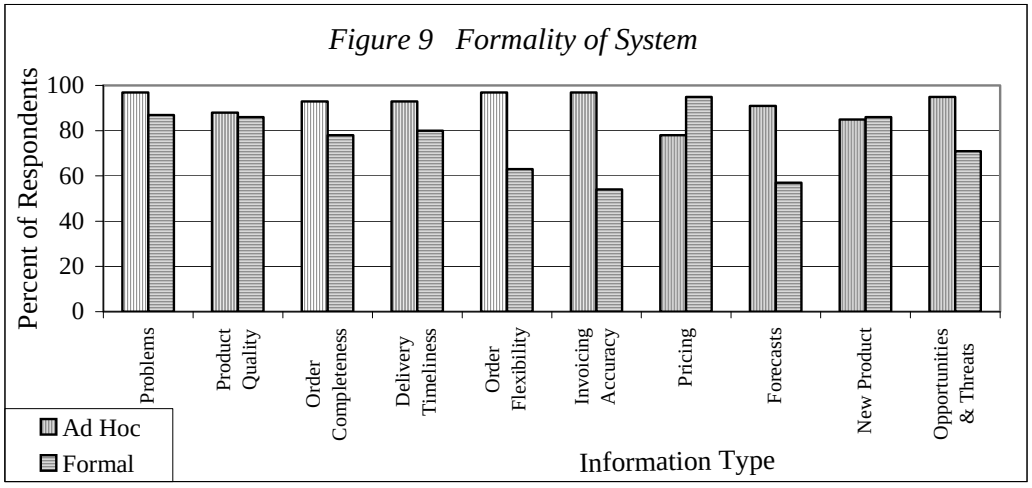
Direction of Information Flows

Most of the time, information flowed in both directions upstream to suppliers and downstream to customers (Figure 8). Occasionally only notice was required so information only flowed in one direction e.g. advice of incomplete orders, late deliveries, changes to orders, errors in invoices, forecasts or new product introductions.



Formality of System

Mostly information was exchanged on an ad hoc basis when the need arose, although, most organisations also had formal processes (Figure 9). Formal processes were generally in the form of monthly, quarterly, biannual or annual face-to-face meetings to review progress or report on performance. Formal processes were more common for larger organisations or those who have had ongoing problems in the past that were formally monitored. Ad hoc processes were used to deal with day-to-day issues.



Information Satisfaction

Generally respondents were satisfied with the information system with customers and suppliers (Table 3). They were slightly more satisfied with the accuracy, reliability, completeness, usefulness and relevancy of the information received from customers and suppliers (average 5.2 and 5.4). However, the satisfaction rating was only slightly less for information being timely and up to date as well as the depth and range of content shared (average 5.1 and 4.9). Therefore it was concluded that information satisfaction was consistent across all aspects and had improved in the last five years.

Table 3 Information System Satisfaction

Information Satisfaction	**Average**	**Standard Deviation**
Accuracy, Reliability & Completeness	5.2	1.1
Accuracy, Reliability & Completeness change in last 5 years	4.9	1.1
Usefulness & Relevancy	5.4	1.1
Usefulness & Relevancy change in last 5 years	4.9	1.1
Timely & Up to date	5.1	1.2
Timely & Up to date change in last 5 years	5.0	1.1
Depth & Range of Content	4.9	1.3
Depth & Range of Content change in last 5 years	5.0	1.1
Scale: 1 to 7 with 1 being dissatisfied, 4 neither and 7 being satisfied		

Generally respondents perceived that they were a little more satisfied with all aspects of the information system over the last five years. Many commented that they were getting more detailed information that was more useful as they got to understand each others' requirements better. Information technology such as e-mails, EDI, intranets and scan data had improved the timeliness and depth of information shared. However, not everyone was happy with these changes. Some were happy to spend less time talking as they felt more time pressure in their jobs. Others missed the closer contact and opportunities to keep in touch and catch up on other issues. As a result they continued to rely on telephone and face-to-face conversations with support or follow up with e-mails. Many commented that e-mails were often misused and that phone calls should be used if more than two or three emails may be needed to resolve an issue. The added depth of information was not always appreciated with two stating it could be "paralysis by analysis". Another commented that perspective can be lost by looking too closely at recent in-depth historical information and not looking at the "big picture".

Summary

Overall some aspects of information systems to manage relationships with customer and suppliers had been changing. Generally over the last five years there had been more commitment to developing long-term relationships and perceptions of improved performance. There were varying changes in responsiveness and trust.

As relationships developed, a wider range of organisational departments become involved in communications with customers and suppliers especially for problem resolution. There were moves to matrix structured organisations with category managers responsible for customer/supplier management, especially for sales/marketing departments, larger organisations and relationships requiring close management. The use of matrix structures at both the state and national level did mean that some staff were answerable to three or more bosses. This could possibly cause some confusion in prioritising activities and internal communications. These matrix structures also meant large teams of people were involved in complex issues such as new product developments and introductions.

The most frequent information exchanged was to resolve problems. Operational issues were only discussed when exceptions arose and this was decreasing over time as problems were resolved and processes improved. There was seen to be opportunities to exchange more complex and commercially sensitive information such as forecasts, discuss new product developments, opportunities and threats. There was also a move to formalising processes to review progress and performance.

Traditional telephone and face to face were still very popular methods for communicating. However, faxes have been increasingly superseded by e-mails. There were also moves to increased use of reports, electronic data interchange and intranets especially for more well established relationships where size warranted the investment. These changes in communication media were the source of some increased satisfaction with information systems by improving the timeliness and depth of information shared. However, they were not without some downsides with comments on “paralysis by analysis”, information overload and perceived inappropriate use of tools such as e-mails.

In conclusion, Australian food processors have been making changes to their information systems with customers and suppliers and are continuing to make changes. This has resulted in increased satisfaction and greater cooperation. However, even for those with the more advanced systems, there would seem to be further room for improvement. Greater training of staff in how to use the systems and technologies would seem to be the key to getting the best results. In addition, greater understanding of customer and supplier requirements and capabilities would ensure tools such as e-mails are appropriately used. When discussing satisfaction, most respondents made comparisons to best practice examples. Therefore, for those who have been slower to adopt new systems and communication technologies, the real risk is their customers’ and suppliers’ satisfaction may be undermined as expectations increase. This paper should provide some ideas of what changes may be expected.

Acknowledgement

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Appendix 1 – Questionnaire

Experience & Understanding

How many years have you been working with this organisation?
How many years you been working in the Industry?
How many years has your organisation been doing business with these *customers/suppliers*?

How well do you understand these *customers/suppliers?*
How well do you understand the *customers/suppliers* in this industry generally?

I do not understand it						I understand it very well
1	2	3	4	5	6	7

How **responsive** do your feel these *customers/suppliers* are to your requirements and how willing are they to change relative to others in the industry?

Not at all responsive & willing to change			Somewhat Responsive		Highly responsive & willing to change	
1	2	3	4	5	6	7

How responsive do your feel these *customers/suppliers* are to your requirements and how willing are they to change relative to others in the industry now compared with 5(*k*) years ago?

Much less responsive & willing to change			No change		Much more responsive & willing to change	
1	2	3	4	5	6	7

If some change ask Why?

How **committed** do you think your organisation is to developing long-term relationships with these *customers/suppliers*?

Not at all committed long-term			Somewhat committed long-term		Highly committed long-term	
1	2	3	4	5	6	7

How committed do you think your organisation is to developing long-term relationships with these *customers/suppliers* now compared to 5 (*k*) years ago?

Not at all committed long-term			Somewhat committed long-term		Highly committed long-term	
1	2	3	4	5	6	7

If some change ask Why?

How would you rate the overall **performance** of these *customers/suppliers* compared to others in the industry?

Worst Performance in Industry			Mediocre		Best Performance In Industry	
1	2	3	4	5	6	7

Do you perceive these *customer's/supplier*'s overall performance is better or worse now than 5(*k*) years ago?

Much Worse			No change		Much Better	
1	2	3	4	5	6	7

If some change ask Why?

Do you find these *customers/suppliers* more or less **trustworthy** than others in the same industry?

Less Trustworthy			Average			More Trustworthy
1	2	3	4	5	6	7

Do you perceive these *customer's/ supplier's* trustworthiness is better or worse now than 5(*k*) years ago?

Much Worse			Same			Much Better
1	2	3	4	5	6	7

If some change ask Why?

Environment

Could you please indicate if you agree or disagree with each of the following statements

Strongly Disagree			Neither Agree nor Disagree			Strongly Agree
1	2	3	4	5	6	7

Dependence & Influence:

These *customers/suppliers* are crucial to your future performance
It would be difficult for your organisation to replace these *customers/suppliers*
Your organisation is important to these *customers/suppliers*
These *customers/suppliers* exerts a strong influence over your organisation
If other alternative customers/suppliers are available to you, your organisation would choose to remain with these *customers/suppliers*

Uncertainty / Predictability:

Demand by *this customer/your organization* is predictable
Volume of supply by *this supplier/your organisation* is predictable
Quality of supply by *this supplier/your organisation* is predictable
Production yields from *this supplier's/*your product are highly variable
The level of competitive activity in *this customer's/supplier's* market is high
Consumer's preferences in *this customer's/supplier's* markets are changing

Inter-organisational Information Management System

Do you exchange information with *customer/supplier 1/2* about:

Problem resolution	Invoice accuracy
Product quality	Profitability, costs & prices
On time delivery	Forecast supply & demand
Completeness of orders	New product development
Flexibility to accept order changes	Opportunities & threats

If yes ask the following for each type of information

i. Who do you exchange this information with? *(record position title)*
ii. Do you discuss this information with anyone else? (*probe for details of flows to/from customers/suppliers for internal sources)*
iii. How do you exchange the information?
(phone, fax, email, face to face meetings, letter, report, invoice/credit note, telex, EDI/intranet, newsletter, radio)
iv. In what direction does the information flow? (upstream, downstream, both directions)
v. Is the information exchanged as part of a formal process or only on an ad hoc basis as perceived necessary?
vi. How often is information exchanged on average?
(several times a day, daily, several times a week, weekly, several times a month, monthly, several times a year, yearly, never)
vii. Could indicate if you consider you exchange this information as often as necessary?

Not as often as necessary			Most of the time			Whenever necessary	Don't Know
1	2	3	4	5	6	7	9

To what extent are you **satisfied/dissatisfied with the information** you share with these *customers/suppliers* in terms of .. *read list*?
Timely and up to date
Accuracy, reliability and completeness
Usefulness and relevancy
Depth and range of content

Extremely Dissatisfied			Neither Dissatisfied Nor Satisfied			Extremely Satisfied	Don't Know
1	2	3	9	4	5	6	7

Probe for details if not already discussed

To what extent are you more or less satisfied with the information you share with these *customers/suppliers* compared with 5(*k*) years ago in terms of .. *read list*?
Timely and up to date
Accuracy, reliability and completeness
Usefulness and relevancy
Depth and range of content

Much less Satisfied			No Change			Much more Satisfied	Don't Know
1	2	3	7	4	5	6	7

Could you please indicate if you agree or disagree with each of the following statements:

Strongly Disagree			Neither Agree nor Disagree			Strongly Agree
1	2	3	4	5	6	7

The information you share with these *customers/suppliers* has improved your organisation's **knowledge** of this industry.

These *customers/suppliers* initiate **new ideas** to improve the category/business.