

E-BUSINESS DEVELOPMENTAL ISSUES IN THE AUSTRALIAN FOOD INDUSTRY

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ABSTRACT

This paper discusses e-business developmental issues in the Australian Food industry that were identified from a research project funded by the Australian Research Council. Data was gathered from interviews with 11 food organisations in the year 2000, most of which can be classified as 'bricks and clicks'. These 11 companies were traditional businesses that had adopted e-business as a new way of doing business. The findings of the paper highlight the fact that the B2B is the predominant e-business model in the Australian Food Industry, EDI is an important foundation technology platform for developing B2B e-business, e-procurement was an important reason for adopting B2B e-business and improved supply chain management was the most important achievement from E-Business for these organizations. It also highlighted the fact e-business developed in-house with an IT department managed e-business sites better than those that outsourced the development.

Key Words E-business, e-commerce, EDI systems, B2B E-Business, B2C E-Business, E-Procurement

INTRODUCTION

Motivated by the potential for business to business and business to consumer commerce, Australian industries have largely resorted to e-business as a new channel of business since 1998. Research findings of the Anderson Consulting Group (1999) indicated that in Australia, the Internet was used to satisfy communication, network and research needs, and increasingly to sell goods and services to consumers and other businesses. Online revenue of Australian companies during 2001 and 2002 reported in NOIE Report (2002) contributed to \$43 billion, the equivalent of 6.4 percent, of the gross domestic product. The report also indicated that the application of the Internet by SMEs for e-procurement increased from 26 percent to 41 percent and the increase in e-payments increased from 23 percent to 40 percent. The Australian Food industry akin to other industries adopted e-business to acquire new customers, increase competitiveness and to achieve business efficiencies of automated processes and electronic communication and transmission of data.

This paper discusses e-business developmental issues in the Australian Food industry that were identified from a research project funded by the Australian Research Council. Data was gathered from interviews with 11 food organisations in the year 2000, most of which can be classified as 'bricks and clicks'. These 11 companies were traditional businesses that had adopted e-business as a new business channel. The findings of the research are presented in tables and discussed to highlight the fact that the B2B is the predominant e-business model in the Australian Food Industry, EDI was an important foundation technology platform for developing B2B e-business, e-procurement was an important reason for adopting e-business and improved supply chain management was the most important achievement from E-Business in these organizations. It also highlighted the fact e-business developed in-house with an IT department better managed e-business than those that outsourced the development.

The paper includes a review of literature on e-business, describes the methodology applied for collecting data, research findings and a discussion of the findings addressing technological, business and B2B e-business applications. E-business and e-commerce are used interchangeably to mean the same thing in this paper.

LITERATURE REVIEW

E-Commerce generally means doing business on the Internet. It is also referred to as Internet Commerce, digital business and online trade. Turban et al. (2000) define it as the process of buying and selling or exchanging of products, services and information via computer networks including the Internet. Thuraisingham et al. (2002) refer to e-commerce as transactions on the web such as buying and selling products, and activities such as training, procurement, and supply chain management; and to e-business as any business on the web, and broader than e-commerce. Increasing profitability and market share, improving customer service, and delivering products faster are some of the organisational performance gains allegedly possible with electronic commerce. Activities such as the buying and selling of goods and services as well as transferring funds, utilising digital communications and all aspects of an organisation's electronic interactions with its stakeholders, such as customers, suppliers, government regulators, financial institutions, managers, employees, and the public at large are included in e-commerce (Singh, 2002). Singh also explains that all inter-company and intra-company functions including marketing, finance, manufacturing, selling and negotiation that use electronic mail, EDI, file transfer, fax, video conferencing, workflow, or interaction with a remote computer are components of e-commerce. The rapid adoption of the Internet and the World Wide Web by businesses as a commercial medium in Australia and other parts of the world is changing the face of business. The Internet has created electronic marketplaces where buyers and suppliers meet to exchange information about prices and product and service offerings, and to negotiate and carry out business transactions (Archer and Gebauer, 2000). Archer and Gebauer are also of the opinion that although electronic marketplaces involve business to consumer (B2C) and business to business (B2B) systems, growth in B2B is estimated to be five times the value of B2C.

E-commerce enables businesses to reduce costs, increase demand and create new business models. It has the potential to benefit all consumers through reduced prices and improved products and information flows (Dunt and Harper, 2002). Small and large firms alike can access the Internet and exploit near-zero marginal costs of distribution for their products (Dunt and Harper, 2002). Although electronic commerce has been proved to be popular with large business enterprises, small and medium companies also create value by marketing and selling goods and services electronically (Dublisch, 2000). Each company is constrained by the amount of graphics and design capability that the Internet can deliver, so everyone starts from the same position with their Web sites.

With e-business development, technical, management and governance issues, in both large and small companies, have been evolving continuously. Johnson and Griffith (2002) suggest that for established firms, a well-designed Web site helps reinforce the firm's brand equity, while a poorly designed Web site can devalue its established brand equity. For new firms, whether dot.coms or local and regional traditional firms going online nationally or globally, a well-designed Web site can help start the process of building brand equity, while a poorly designed Web site may not engage the consumer, causing them to move to another Web site without evaluating the site's content. Ho and Wu's (1999) research indicated that the most important factors in electronic commerce appreciated by customers are logistical support, technological characteristics, information characteristics, homepage presentation and product characteristics. Logistical support requires quick response to customers' needs via e-mail or fax, quickly delivering goods to customers, and providing after sales service. Technological factors include modern computer and network facilities and well-structured information systems. Information factors encompass reliable output information and secure transaction. Homepage presentation should provide for an easy to use interface and detailed information about goods. Product characteristics include the details of a variety of goods and services made available at lower prices.

Relevant legal issues support and validate online contracts, ensure confidentiality and privacy, protect intellectual property, defamation, censorship, taxation, payment systems and the rights of consumers in the online world (Stoney and Stoney, 2003). The consumer needs assurance of privacy and the protection of consumer rights just as the trader needs jurisdiction to validate and enforce electronic contracts. This has led to the need for standards and regulations for online businesses both regional and global. Socio-cultural barriers to e-buying identified by Harrison-Walker (2002)

include language preferences, income and literacy levels, attitudes toward distance buying, security and privacy of information, methods of payment, and the possibility of credit card fraud.

Australia is well placed on most measures of the adoption of new information and communications technology and the growth of e-commerce, especially B2B (Dunt and Harper, 2002). To support B2B e-business, Australia has also seen the proliferation of intermediaries such as private exchanges to facilitate B2B exchanges. The increase in B2C e-business in Australia has been for online services such as online banking; an increase from 2.71 million in 2001 to 5.23 million in 2002 (NOIE, 2003). E-business was particularly popular for early adopters in the Australian Food Industry with the prospects of launching online grocery for B2C e-business and e-procurement for B2B e-business.

In 1999, food organisations in Australia that launched e-business were Coles Myer www.colesmyer.com.au for online grocery, Aussie Greengrocer www.aussiegreengrocer.com.au, Getfresh www.getfresh.com.au, Woolworth's 'Fresh Food People' www.woolworths.com.au, Virtual Wine www.virtualwine.com.au, Pizza Now www.pizzanow.com.au, and others.

E-business has had an impact on all industries in Australia, however, the following discussion includes its application to the Food Industry addressing issues for the early adopters of e-business.

RESEARCH METHODOLOGY

This research project on e-business was carried out in the year 2000 to identify e-business issues in the Australian Food Industry. The research was initiated as more large food organisations, both suppliers and buyers, supermarkets, grocery outlets and existing traditional retailers, adopted the Internet and the World Wide Web to enhance business. It was funded by the Australian Research Council to understand the developmental patterns in e-business in the food industry by identifying and establishing the objectives and opportunities, challenges, development issues, and improvements achieved by the early adopters of e-business.

It was an exploratory study accomplished via interviews. The interview tool used was a semi-structured questionnaire. Yin (1994) describes exploratory studies to contain a number of 'what' and 'how many' types of inquiries, which were the type of questions included in the interview tool used to collect data. With the permission of the interviewees all interviews were recorded on tape and later transcribed for analysis.

The companies investigated were selected on the basis that they had been identified as significant e-commerce initiators within the states of Victoria and New South Wales, and those that agreed to participate in the project. Eleven organizations agreed to participate in this project. Initial contact was made by telephone with the person who headed the electronic commerce project at these organisations.

Data collected were qualitatively analysed. Findings of the study are presented in Tables 1 to 4 and discussed in the following section of this paper. For reasons of confidentiality, names of companies discussed are not identified. In this paper they are referred to as Companies A to K.

FINDINGS

A comparative study of the 11 organisations investigated reveal that some of the findings are common to all while some are quite different. Although the reasons for the differences were not identified in this study, it is assumed that knowledge of electronic trade practices, existing technology, size of business, and in-house IT support are some of the factors responsible for the variations.

Organisations investigated were mostly Australian owned, well established and a combination of large and small businesses. Although all of them were classified as organizations in the Food Industry, their business activities ranged from wholesalers, retailers, caterers, importers and distributors. All 11 organizations were traditional businesses with an online presence generally classified as 'bricks and clicks'. Electronic initiatives at these organizations were as old as ten years if the medium was an EDI system, or 18 months to 2 years if they were based on the Internet. Data

presented in Table 1 are findings representing the e-business model or models adopted, technologies that supported e-business, the project leader who managed the development.

E-Business Models, Infrastructure and Champion

The e-business model at these organizations was predominantly B2B (9 out of the 11 organisations), 2 had B2C, and 1 had both B2B and B2C. Organizations with a B2B e-business model were suppliers and buyers, and both small and larger organizations.

Table 1: E-Business Models and Infrastructure

Co	E-Bus Model	Technology	Extra-net	Intra-net	E-Bus (Fully electronic)	E-Bus Champion
A	B2C	1800 number, Internet & fax	No	No	Yes	Owner
B	B2C	Internet	No	No	Yes	MIS Manager
C	B2B	EDI	Yes	Yes	No	CEO
D	B2C & B2B	EDI	No	Yes	No	Regional Director
E	B2B	EDI	No	Yes	No	MIS Manager
F	B2B	Internet	No	Yes	No	Accountant
G	B2B	EDI	No	Yes	Yes	Financial Controller
H	B2B	EDI	Yes	Yes	Yes	CEO
I	B2B	EDI	No	No	Yes	MIS manager
J	B2B & B2C	Interactive website	No	No	Yes	Owner
K	B2B	Internet and extranet	Yes	Yes	Yes	Managing Director

Technologies on which e-business was developed in these organisations were predominantly EDI systems and the Internet. B2C e-business models were adopted by those organizations that supplied consumer goods such as meat product, fresh fruits and vegetables to buyers with home deliveries. Three of these companies had implemented extranets to support B2B exchanges with business partners and 7 had intranets to support business to employee (B2E) functions. When asked about the stages of e-business applications, 7 had full e-business capacity (i.e. orders, acknowledgement, marketing, payment, dispatch information, product tracking, etc.), whereas 4 had limited applications, generally advertising and online catalogues, indicating a phased development strategy. The two organisations that adopted B2C and B2B models clearly indicate that the two models adopted concurrently support customer reach as well as business exchanges with suppliers. The leader of e-business project in most organizations was someone at the senior management level. Three of these were MIS managers while others ranged from accountants and financial controllers to CEOs and managing directors who were also business owners in a few cases.

Objectives of E-Business Development

As seen from the data presented in Table 2, the main reasons for developing B2C e-business were to have a 24 hour, 7 days a week shop front, for better customer service and for online marketing. B2B e-business development, however, was predominantly for supplier collaboration and to achieve e-procurement efficiencies. These were reduced costs, accurate data, transparent purchasing

processes, improved communication with business partners, ability to participate in reverse auctions, select new suppliers and for improved supply chain management. Other reasons identified from this research were integrated business processes and backend systems to achieve business efficiencies and to manage larger volumes of data. Company G was a supplier to large supermarkets which had changed all its operations to electronic means, compelling all its business partners to adopt e-business. Enhanced business communication and improved internal communications were other reasons for developing e-business identified from this research.

Table 2: Reasons for adopting e-business

Company	Objectives
A	Reach out to more customers Achieve delivery efficiencies Quick dissemination of sales and marketing information
B	To be able to operate 24*7 Better customer service, to stay in the marketplace, to stay customer focussed and to extend our distribution Opportunities to expand business into other products
C	Manage a larger volume of data via EDI To integrate and automated the backend system, to be more efficient, to reduce the operational cost, to improve accuracy, to facilitate decision making. To have good communication with the companies, improve internal communications, increase market awareness and to possibly grow our market niche.
D	To streamline business, save costs, for accuracy of data. Savings in regards to procurement and purchasing (reverse auctions), speed, streamlining reducing errors in the system, reduce working capital.
E	A follow on strategy from business partners. B2B Hubs More suppliers, integration of technology with existing suppliers, better information sharing and management
F	To achieve business efficiencies and to use state of the art technology
G	Directive from buyers (major supermarkets) Improved business , convenience, easier, quicker and to make staff work smarter
H	To remove the non-value adding processes in the supply chain. To collaborate with suppliers for increased business To maximise sales
I	Achieve business efficiencies, automate business processes, smart applications of technology Reduce costs, smarter ways of operating, increase profits, increase marketshare and for 24*7 business hours
J	24 * 7 business, to generate home shopping for our customers
K	To achieve business efficiencies, reduce costs, integrate and automate business processes, improve purchasing

Since most of the organisations engaged in B2B operations, it is apparent from this research that efficient and improved procurement processes, access to new suppliers and buyers, business efficiencies achieved from linking ERP systems to front end operations and online real time processing of information for supply chain management were the most important reasons for developing e-business. Making employees work smarter with technologies was also identified as a reason for e-business.

Challenges and Achievements of E-Business for Early Adopters

While the opportunities of electronic commerce are undeniable, responses listed in Table 3 indicate that early adopters faced numerous challenges.

Table 3: Challenges of e-business implementation

Co	Major Challenges	Achievements
A	Streamlining delivery system, distribution systems and ordering systems.	Improved supply chain, improved customer relationship management, automated business processes - absolutely A new distribution channel - yes Disintermediation - yes.
B	Changing order fulfilment (filling orders) from traditional to automated system	Reduced advertising costs, Increased customer base, Improved customer relationship management, automated business processes
C	Integrating and automating business processes internally and with business partners	Improved supply chain, improved customer relationship management, integrated backend system, automated business processes, reduced procurement costs, competitive advantage, disintermediation.
D	Keeping up with evolving technologies, Debugging technologies and to make them work, Getting something that will work for everyone.	Reduced advertising costs, improved supplier relationship, reduced procurement costs, some disintermediation
E	A shortage of skills in-house and the huge costs of hiring IT consultants	Improved supply chain management, improved customer relationship management, integrated backend system, automated business processes, knowledge management
F	Getting business partners to use e-business, 'Every piece of paper has our web address on it, ... but nobody uses it'	Improved supply chain management with e-mail, knowledge management
G	Training staff	Improved supply chain management, improved customer relationship management, automated business processes.
H	A large and complex project - Managing e-business development was like 'Trying to move a Goliath'	Improved supply chain management , Improved supplier relationship management, Integrated backend system, automated business processes, Knowledge Management, Reduced procurement costs, Competitive advantage, A new distribution channel
I	Keeping up with technology costs	Improved supply chain management, Improved customer relationship management, automated business processes. Reduced procurement costs,

		competitive advantage.
J	Unable to realise benefits	To achieve competitive advantage.
K	For our suppliers to accept technology and implement technology take hold of what we developed for business exchange and collaboration	Improved supply chain management, Integrated back end system, Automated business processes, Knowledge management, reduced procurement slightly

Findings presented in Table 3 indicate that with the adoption of e-business, early adopters faced the challenges of managing change from traditional business processes to automated processes, as well as getting their business partners to accept this new way of doing business. High cost of technologies is another important challenge identified from this research. Unable to manage and organise a fast delivery system, changing the existing distribution system and integrating systems of business partners and internal business processes that were essential for e-business were also apparent. Keeping up with evolving technologies and their applications, and getting a return on investment, were other issues identified as problems. A shortage of skilled staff to implement and manage e-business was highlighted as an important challenge faced by early adopters, as e-business was new and there were very few skilled personnel or consultants at the time.

However, achievements from e-business, however small include supply chain improvements, reduced costs of operation, better customer and partner relationship management, better knowledge management, a competitive advantage and disintermediation of brokers and other sales agents. Eight organisations indicated improved supply chain management to be the most important outcome. Two indicated a reduced advertising cost; 6 indicated improved customer relationship; 3 successfully disintermediated middle people; and 1 increased its customer base. Company A, which is a small organization, was happy to have acquired a new channel of business with a B2C e-business model. Companies E, G, H and K indicated achievement of improved knowledge management within the organization with e-business. Automated processes and integrated back end systems for efficiencies in data processing were achieved by 8 of the 11 companies. Procurement efficiencies were achieved by five of the organizations that were all B2B and large organizations.

Other benefits of e-business achieved were improved marketing, business efficiencies from automated processes, reduced costs, a force with technology skills, speedy communication with customers and business partners, and better use of technology in the organization.

Other E-Business Development Issues

Other e-business development issues identified from this research are presented in Table 4. It is apparent from the findings listed in Table 4 that most of the organisations depended on outside providers to develop and implement their e-business application. Five respondents indicated that their e-business was developed in-house with the help of IT consultants and Web developers. Only one organisation (Company D) developed the entire e-business in-house. It is interesting to note that although most organisations extensively planned the project, companies E, F and J launched their e-business with no formal plans. For all those companies that outsourced e-business development, formal contracts were agreed upon, while those that developed in-house depended on a strategy developed in-house for project management. It is also evident that for the companies that developed e-business in-house either exclusively by their IT Department or in conjunction with IT consultants managed regular updates of their web sites which is an essential feature of e-business. Update of information on the web sites was identified to be periodic, ranging from daily, weekly to six monthly. Those organizations that that outsourced e-business development updated their web sites weekly or less frequently.

This clearly indicates the importance of having staff with IT skills within the organisation. It is apparent that companies with IT departments had an important role in the e-business project, while those that did not depended entirely on outside support.

When asked about the volume of transactions, companies B, D, G, H and I indicated that it was high. It is also important to note that these companies also indicated that their e-business project was very

successful. Companies A, C, D and K indicated that the volume of transactions with e-business was moderate indicating that they were somewhat unsuccessful. Companies E and F indicated that their e-business was completely unsuccessful. Companies E and F, were subsidiaries of larger organizations that lodged e-business without a formal plan and did not have skilled staff in the organisation.

Table 4: E-business Development Issues

Co	E-Bus Development	System Dev method and planning	Web site updates	Role of the IT Dept	E-Bus Transactions
A	IT consultant with an in-house team	Extensive planning	Updated weekly	None	Moderate – somewhat successful
B	Bought a EC product from Telstra, Web designers, web hosting Co	Formal planning	Mentally a lot of effort, financially not. Weekly update.	None	High – Very Successful
C	Web development Co. and IT Department	Aligned to business plan	Marketing people do content management.		Moderate - Neither successful nor unsuccessful
D	Predominantly in-house.	A formal strategy	Considerable amount of time.	Aligned to business strategy	High - Slightly successful - just starting
E	IT Consultant	No formal plans	Not asked	Facilitating role.	Very low - Unsuccessful
F	Web Development Co	No formal plans	E-business leader	None.	None - Very unsuccessful
G	Financial Controller and a Web Development Company	As directed by Coles and Woolworths	Half and hour each day.	Some role	EC is only applicable to 3 departments. One successful, other two negligible
H	Myself and my group	Formal plans	No response	Installation support and backup by vendors	High - Very successful -
I	Our current department	IT department developed plans	Not arduous but ongoing.	Transparent information	High - Very successful
J	Two private programmers and consultants	No formal plans	I have not been shown how to update.	-	None - Very unsuccessful
K	Self and Contract programmers	Project management tasks and formal plans	as required - prices monthly, business information every six months	Their role was probably pivotal, Without them we couldn't do it.	High 100 Orders per week - Slightly successful

DISCUSSION

This research has highlighted some B2B developmental issues gleaned from early adopters of e-business in the Australian Food Industry. Discussion arising from this research mostly addresses B2B e-business issues, presented under the common themes of technology, business, and B2B e-business applications.

Technology

From this research it is apparent that EDI systems form the foundation technology supporting B2B e-business. Being proven and trusted technologies, EDI systems supported the adoption of other new technologies to further develop e-business. Other technologies supporting early developers of e-business, besides the Internet and the World Wide Web, were extranets, intranets, ERP systems, and technologies to support online auctions, supply chain management, and e-procurement. Although extranets may be regarded as an extension of the EDI system, the increased adoption of intranets to support internal employee management clearly indicates the realisation of benefits of new technologies by these organisations. Using known technologies minimises mistakes, costs and the need to customise software.

Some organizations developed e-business in-house and some outsourced its development. In-house development is dependent on the skills and expertise of the IT Department within the organization. E-business systems developed in-house also have the advantage of regular updates, an essential feature of successful e-business. Developing e-business in-house also has the advantage of making the IT manager or e-business project leader accountable for errors and warrants quick solutions. The indication that many of these organisations integrated back end systems to their front end e-business shows the value of integrated and automated business processes was well understood by organization in the food industry. Rapid exchange of data and documents and electronic transactions are easily transferred to back office systems for record retention, information management and data mining, to predict demand and inventory management. Outsourced e-business development lacks continuity and ongoing support. Research also shows that e-business technology is fast evolving, therefore having technical expertise within the organization is an advantage enabling companies to capitalise on the benefits of new technologies. Education and training bridge the gap between development and successful implementation of new technologies (Singh, 2000). Training provides new skills and methods required to maintain the new Internet based electronic trade. For those organizations that do not have an IT department or technical expertise, it is essential to provide ongoing training for staff to meet the needs of e-business. Application of technology leads to quick retrieval of information, which also leads to improved supply chain management.

Business Issues

Business opportunities of e-business and its adoption are positively related. Efficiencies of reduced costs; managing partner relationships; using the Internet as a marketing tool; market expansion; promotion and improved image; and a competitive advantage are returns that early adopters of e-business anticipate from e-business. Promotion of goods to an increased number of buyers, and trading online with electronic ordering; online tracking of orders and sales; improved deliveries; online supply chain information; and electronic communication enhance trust amongst business partners and further expand business.

Disintermediation occurs when the services of middlemen become irrelevant. Research findings indicate that many organisations aimed to transform the market chain; that is, reach out to their customers and business partners directly. Not having to deal with middle people meant reduced costs for the sellers, providing faster service and sometimes more accurate information to buyers.

Organisations investigated achieved improved business efficiencies by automating business processes. Automated processes result in efficiencies such as reduced paperwork, errors, time and

overhead costs. As suggested by Cameron (1997), although the establishment and maintenance of a Web site has costs of its own, the price of using the Web compared to other sales channels is significantly less. As an advertising medium, promotion using a Web site results in the sale of ten times the number of units with one-tenth of the advertising budget and one quarter of direct mail expenditures (Cameron, 1997). There is no time lag between publishing information on a web site and it being accessed by buyers, manufacturers and other business partners. It is useful to note that even the early adopters of e-business had realised the opportunities of technology to evolve into a 'smart and innovative organisation', and used knowledge management to improve business.

B2B E-Business Application

E-procurement is the most important B2B e-business application in Australia (NOIE, 2001). It includes catalogue management, requisition, control and approval, receiving and exception processing of orders, and financials and payment processing. Singh and Thomson (2002) advocate that e-procurement processes include sourcing of buyers and sellers, a digital catalogue of products, online bidding, ordering, payments, goods dispatch notices (fulfilment), logistics and supply chain management. Research in the Australian Food Industry indicates that in spite of the hype surrounding online groceries, which were to be achieved from B2C e-business, B2B exchanges and e-procurement were more important applications of e-business. EDI systems have supported business purchases for the last ten years. The application of the Internet, the World Wide Web, electronic market places, and other business applications further enhance B2B exchanges as apparent from this research. An improved supply chain management also leads to inventory management, which leads to reduced costs and additional business efficiencies.

CONCLUSION

This research identified issues faced by early adopters of e-business. It highlights that proven technologies, such as EDI systems are important foundation technologies supporting e-business development. E-business developed in-house warrants continuation and ongoing support, while those outsourced generally are given ad hoc attention. For e-business organisations an IT department is an advantage. E-procurement has developed a lot more since 2000, with an increase in intermediary functions. More e-market makers resulted as business enterprises facilitating B2B exchanges. Therefore instead of disintermediating middle people, there is now an increased reliance on them for e-procurement in the B2B e-business. Application of e-business has also resulted in improved supply chain management for organizations, which was an unanticipated outcome at the time of implementation.

The development of e-business for early adopters was 'learn as you go', evidenced from this research. However, the achievements show that the B2B e-business model will have an important role in the Australian Food Industry.

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