The current issue and full text archive of this journal is available at
www.emeraldinsight.com/1066-2243.htm

ARTICLE

Management of information-credibility risk in an ICT society

A social implementation

Yayoi Hirose and Noboru Sonehara
National Institute of Informatics, Tokyo, Japan

Abstract

Purpose – The purpose of this paper is to propose a new direction for managing information-credibility risk in the current information and communications technology (ICT) era, where ICT has had both positive and negative effects on contemporary society.

Design/methodology/approach – The paper takes a practical and inductive approach to study the Kyoto avian influenza panic and countermeasures taken in 2004.

Findings – The paper identifies factors which led to enormous damage through harmful rumors and proposes new perspectives for devising countermeasures, such as increasing consumer confidence in an agency as a source of information and effective management of knowledge transfer from experts to non-experts.

Practical implications – The study gains a better understanding of both technological and social factors that enable or detract from effective nationwide management of information-credibility risk. Many related ICT projects have been based on either human resource systems or advanced technology. It considers the integration of both factors from three perspectives.

Originality/value – This is a new perspective for examining the transfer of knowledge from experts to consumers in terms of practical solutions, in contrast to the many existing knowledge-related articles that have mainly focused on knowledge management among experts.

Keywords Risk management, Society, Knowledge management, Knowledge transfer

Paper type Viewpoint

1 Introduction

As information and communications technology (ICT) has spread, the means of acquiring information available to individuals have changed dramatically. In the past, information conveyed in one direction from mass media to the general public, such as by newspaper or television, accounted for the vast majority of information. Perhaps the only example of technology providing a medium for widespread information communication by the average individual was the telephone, and even then it was not possible for information to be received simultaneously by large numbers of people as with other media. Advances in ICT, however, now enable any person to send information to large numbers of individuals. People can freely contribute opinions,

Internet Research
Vol. 18 No. 2, 2008
pp. 142-154

1066-2243
DOI 10.1108/10662240810862202

The authors are grateful for the helpful advice of Professor Tohkura, who provided many helpful comments regarding institutional design. This work was supported by the Japan Science and Technology Agency.

thoughts and acquired information through Internet blogs and bulletin boards. In addition, web sites such as *YouTube* even make it possible for individuals to easily disseminate visual information along with each contributor's comments.

Unfortunately, these circumstances have facilitated the spread of harmful rumors in recent years. Some companies have even been destroyed as a result of such rumors (Ito and Kagaya, 2006). This is because information, such as statements concerning the safety of a food product, can be misunderstood by some people after they hear about it through a television report or newspaper article, and then such misunderstanding can be expressed through an Internet bulletin board or personal blog, resulting in information without valid grounds being spread to a vast number of people at unprecedented speed. To put it another way, media created basically for the purpose of communicating information to vast numbers of people can, in an unintended way, enable the rapid spread of misleading information or opinions provided by ordinary individuals who have absolutely no particular knowledge of the product or firm in question, and this has created a significant problem for society. Scott and Walsham (2005) assert that an approach to understanding reputation risk which assumes a traditional organization based on top-down or control-oriented logic is unsuitable for a society centered on today's Internet and global media. The central figures of information dissemination in today's so-called Web 2.0 era are ordinary individuals who are free of organizational constraints, so the recent progress and diffusion of ICT mean that the time has come to reconsider our approach to how information is handled in society.

Among the various proposed countermeasures to harmful rumors, this paper takes particular note of information disclosure to build trust in a company and its products on a daily basis, to ensure the firm has the public's confidence when it is most needed. Many firms, non-profit organizations (NPOs), municipalities and other organizations now disclose a great deal of important information, such as financial results, tender information and product information, through booklets, the Internet, cellular phone networks and so on, to cultivate their credibility as a firm or organization. Yet how effective such information disclosure is in building the trust of customers and other interested parties remains a question.

This paper investigates current views on what is necessary to improve the credibility of information with respect to a firm or product and proposes ways to improve on existing methods of information disclosure. We did a study based on the avian influenza panic that occurred in Kyoto in 2004, which is a notable case of misinformation causing serious damage. In this case, the factor that most strongly contributed to the harmful impact of rumors was information provided by TV and newspaper reports, rather than that communicated through the Internet, but in the Web 2.0 era individuals will also be able to quickly and easily spread false or misunderstood information to millions of non-experts, and thus seriously damage related businesses. Therefore, this case provides a practical example of what needs to be done to manage the risk engendered by information or opinions expressed by ordinary individuals in today's ICT era (this paper refers to this risk as information-credibility risk), as advances in and the spread of ICT continue to blur the distinction between existing communications channels, such as TV and newspapers, and new media such as the Internet and cellular phones. We argue here that to manage risk in an ICT society, and convince individuals other than professionals with specialized knowledge regarding the facts of a particular event, it is necessary to not just release valid

information, but also to provide information whose source is a trusted neutral agency, and convey information in a way that makes it easy for information recipients to understand the information and its implications. We also discuss what kinds of system can be considered an ICT system primarily used to convey such knowledge to individuals rather than professionals. Papers concerning ICT and risk management frequently concern themselves with ICT technology itself, or address firms' internal information security systems (Kawaguchi, 2006). The issue of how ICT affects the handling of information within a society, however, is also important with regard to ways of skillfully sharing the results of technological progress with society.

2 What is information-credibility risk?

Let's begin by clarifying the characteristics of the information-credibility risk addressed in this paper. First, information-credibility risk contributes to the reputation risk of a business. In the research concerning risk, though, reputation risk is usually defined as a risk component that can be understood as a visible numerical value, such as the probability that an accident will occur or the probability of the firm's stock price declining. Scott and Walsham (2005) define reputation risk more comprehensively, based on a qualitative notion: "the potential that actions or events negatively associate an organization with consequences that affect aspects of what humans value.". They go on to point out that although a company's reputation is something created through the accumulation of past actions, a reputation is extremely fragile, and there is no guarantee a firm can maintain a good reputation over an extended period of time. Fombrun (1996) enumerates four actors (investors, customers, employees and communities) as the component factors that affect how a firm builds a reputation. Among these four, this paper focuses on customers, who frequently lack expert knowledge regarding a firm's products and are the most likely to initiate harmful rumors, and studies the consequent risk to a firm.

Harmful rumors are defined as "hearsay such as groundless comments or guesses, after an accident or event, which can result in economic or other damage" (Sanseido, 2000). Harmful rumors in recent years, including those related to runs on financial institutions, avian influenza and the SARS panic, have been too frequent to enumerate. Given their character, rumors are often begun by ordinary customers who tend not to be specialists in relevant fields such as finance or food production. Beck (1992) asserts that the concept of risk in modern society stems from the increasing specialization of scientific knowledge. Ordinary customers typically lack, for example, the knowledge necessary to understand management of a financial institution. For example, at the end of 2003 an incident occurred that led to a run on Bank A, a regional bank, as the result of a single customer of Bank A sending an e-mail stating that "Bank A has failed" to 20 friends. Although the bank was being managed well enough that its bankruptcy was unlikely from a financial specialist's perspective, panic ensued as a result of this point being misunderstood by ordinary customers.

The disturbing aspect of rumor risk is that external factors beyond those that risk management specialists imagine to be hazards can similarly act as a trigger. In many instances, perceptions of an event differ depending on whether an individual is a non-professional or a specialist. For example, if a firm announces a large-scale restructuring, non-professionals might think this means the firm is one step away from bankruptcy, while a specialist might regard this as a move towards sound financial

management. How this event is perceived will vary depending on the community to which an individual belongs – for example; an individual who belongs to the traditional community where the majority regard maintaining Japanese-style lifetime employment as proof that a firm is financially healthy may interpret the event differently from a financial specialist knowledgeable about the firm's background and industry. Walsham (2002) has stated that one's way of understanding information provided by individuals will differ depending on the community to which one belongs. The gap is especially large between business people who belong to a community in a specialized field and consumers who belong to non-specialized communities. In the case of Bank A, a number of the bank's loan customers had gone bankrupt during the previous several months, and several other regional banks weighed down with massive debts had gone bankrupt as a result of the reorganization of Japan's entire financial system during the period prior to the incident. This flow of events was therefore interpreted as meaning "now this bank has also failed" and became a cause of the run on the bank (*Kinyu-zaisei Journal*, 2004). The bank's regular customers, though, interpreted these events differently than banking specialists did.

Giddens explains the phenomenon of opinions differing even among specialists as a characteristic of modern social risk (Beck *et al.*, 1994). This risk differs, however, from information-credibility risk as used in this paper. Harmful rumors occur in many cases even when there is a high probability that the facts have already been clarified among the experts. In this paper, we focus on the information-credibility risk that results from information spread by non-professionals; we define this risk as the probability, arising from differences in understanding between specialists and non-specialists, that a party will suffer significant harm as a result of non-specialists misunderstanding facts that have been expertly verified and broadly disseminating their misunderstanding to other non-professionals who are unable to assess the information-credibility of the received information.

3 Avian influenza in Kyoto

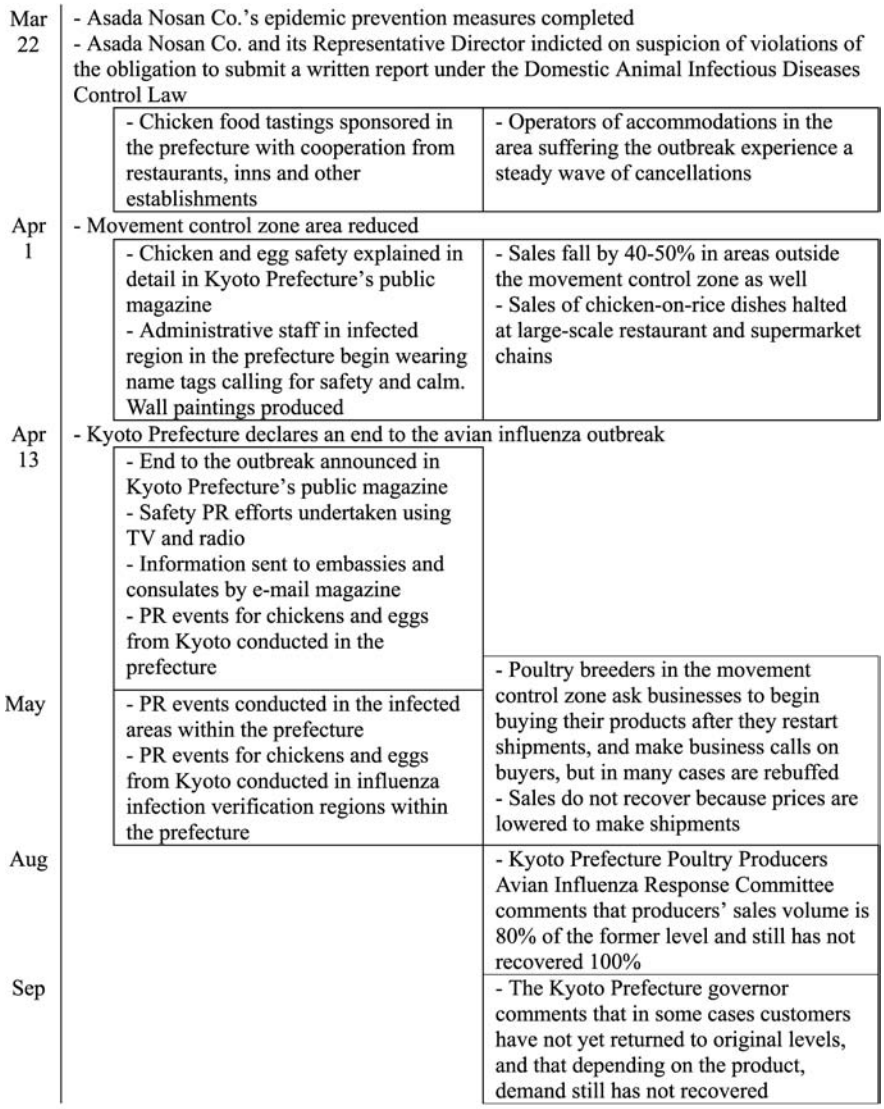
On the night of February 26, 2004, the Livestock Hygiene Service Center in Kyoto Prefecture received a telephone call from a person stating that "A thousand chickens a day are dying at Asada Nosan Co.'s Funai farm …". Verification activities by the hygiene service center began immediately after the phone call, and cases of avian influenza at the same farm were verified the following day. Avian influenza, an infectious disease of birds caused by the influenza virus, includes a particularly virulent strain called highly pathogenic avian influenza (HPAI). HPAI is characterized by its high mortality rate among infected chickens. This infectious disease is a legally specified murrain, which requires the slaughter of all live but infected birds and the incineration or burial of their carcasses, and measures such as the disinfection of affected areas, to prevent the spread of the infection when an outbreak has occurred. However, there were no cases of human individuals being infected by eating infected chicken or chicken eggs, and specialists realized that there were no health dangers as long as consumers ate chickens and eggs prepared in a normal manner.

Administrative agencies and hygiene service centers in Kyoto Prefecture (see Figure 1) formed a task force immediately after the infection was verified, and initiated numerous responses, including the slaughter of chickens at the site and movement control. All relevant information was disclosed, by means such as allowing mass media

2004 Incident Details	Actions to Restore Credibility of Chickens and Eggs Produced in Kyoto	Actions and Harmful Rumors by Mass Media
Feb 27	- Avian influenza infection confirmed at chicken farm (Asada Nosan Co.) in Kyoto Prefecture - Initial epidemic prevention measures undertaken - Infection of mature fowl shipped to Osaka and other prefectures by Asada Nosan confirmed	
	- Task Force established in Kyoto Prefecture - Kyoto Prefecture Task Force meetings fully opened to the media - All related information, including Task Force meetings and status of virus searches, are disclosed on the prefecture's website on the same day	
Feb 29	- Order for slaughter and movement restriction of infected fowl implemented based on the Domestic Animal Infectious Diseases Control Law - Slaughter of infected fowl begun	
Mar 1	- Burial of slaughtered chicken carcasses begun	
	- Calls for a calm response announced in the prefecture by Kyoto Prefecture's public magazine	- Media carry extensive coverage of workers wearing white protective garb entering successive chicken farms - Reports of the infection spreading to crows also receive extensive coverage
Mar 3	- New positive reaction reported at one company in a nearby region	
	- Kyoto Prefecture staff visit each chicken and egg retail shop, including stores in other prefectures, asking stores to help with safety PR message and continue doing business deal	
Mar 5	- Infection of crows from the surrounding area confirmed	
Mar 11	- Epidemic prevention measures completed at company that reported the new positive reaction	
	- Kyoto Prefecture responds to consumer inquiries by preparing posters and a Q&A booklet - Kyoto Prefecture responds to consumer inquiries by preparing posters and a Q&A booklet	- Numerous department stores and supermarkets display signs reading "We do not sell chicken or eggs produced in Kyoto Prefecture", and many school cafeterias halt the use of chickens and eggs produced in Kyoto Prefecture - Plummeting sales confirmed, as daily volume at the Kyoto Central Wholesale Market falls to 10% of the normal level and retailers experience an 80% drop in sales. Wholesale prices for chicken eggs decline substantially in the Osaka region

Figure 1.
Sequence of events in the Kyoto Avian Influenza Panic

(*continued*)



Source: Kyoto Shimbun, Home page of Kyoto Prefectural government

Figure 1.

staff in the task force conference room, permitting television coverage of task force meetings, announcing to the media all actions taken and placing detailed information on a website. With the exception of Asada Nosan Co., all concerned parties acted appropriately concerning information disclosure. Thanks to the prompt actions of related organizations, and the cooperation of the local population, the epidemic prevention measures at Asada Nosan's farm were concluded less than one month after

the infection was verified, and on April 13, Kyoto Prefecture was able to end all avian influenza countermeasures.

Kyoto's response following discovery of the infection was prompt and effective, and the incident was declared over within 48 days from discovery of the infection, six days less than in an earlier case in another region, Yamaguchi Prefecture. Nevertheless, many harmful rumors concerning chicken eggs from Kyoto were widely circulated, and there were numerous instances of economic damage. For a period of time, sales of eggs from Kyoto plummeted by more than 30 percent. Industries with no relationship to chickens also suffered – large-scale retailers refused to sell vegetables produced in Kyoto, for example, and many travelers canceled reservations at lodgings near the area where the infection occurred. Even as conditions gradually returned to normal after the crisis-over declaration in April, the harmful rumors continued, and in August 2004, six months after the discovery of the infection, a spokesman for Kyoto Prefecture poultry farm producers commented, "Sales have still only recovered to about 80 percent" (*Kyoto Shinbun*, 2004). At the height of the furor, the local municipal governments, egg marketing and producer groups and other organizations repeatedly attested to the safety of eggs from Kyoto (*Kyoto Shinbun*, 2004). Nevertheless, the extended time needed for chicken and egg consumption to recover was apparently due to consumers' concerns manifested in the feeling that "*somehow* I just don't want to buy them" (Food Safety Commission, 2004).

The major problem during this incident was that Asada Nosan Co., the company managing the farm where the infection came to light, concealed the outbreak for one week even though it realized it was an outbreak of avian influenza. As a result, in contrast to infection of about 1,000 chickens immediately after the outbreak, the number of fowl that died as a result of infection had climbed to approximately 10,000 by the time the infection was made public one week later.

Because concealment of the infection continued for one week, the damage expanded in two directions. First, the infection spread to other regions, including Kyoto, Osaka, Hyogo, and Kanagawa, because mature fowl and eggs were shipped even though infected. Second, during the week the infection was concealed, the infection spread to other poultry farms in the same region as a result of the avian influenza virus proliferating with extraordinary speed. On March 3, five days after discovery of the event, an avian influenza infection at a poultry farm operated by another company was verified in the same town. After five more days, an avian influenza virus identical to the strain at Funai farm was detected from a crow that had been poking at corpses of infected chickens in the same town, which was the first verified case worldwide of the infection spreading to crows (Yamada, 2005).

4 Managing information-credibility risk

What could have been done in the Kyoto case to better manage the information-credibility risk? Scott and Walsham (2005) argue for the necessity of aggressively implementing "trust building" to manage reputation risk. Even when harmful rumors spread, the amount of damage varies depending on how well trust is restored at an early stage. Specifically, we believe two factors regarding trust are critical, and the negative impact of these factors hindered efforts in Kyoto to negate harmful rumors.

The first factor is whether trust has been firmly established among a firm's regular customers regarding the company or organization that disseminates information. Two months prior to the avian influenza outbreak, a chicken-egg business in Kyoto Prefecture had been found to have falsely labeled six-month-old eggs. When a Kyoto poultry breeder was then found to have concealed avian influenza infection for one week, trust in all poultry farming businesses in Kyoto collapsed.

The second factor is the importance of convincing millions of consumers, at an early stage, that information released publicly by the firm or individual in question is trustworthy. From the time the infection came to light, Kyoto government agencies openly disclosed the status of their investigation concerning the infection in detail, and distributed many posters and booklets attesting to the safety of chicken meat and chicken eggs from Kyoto. Nevertheless, these efforts did not squelch the harmful rumors because at the height of the avian influenza furor, consumers – even when they obtained accurate information pertaining to food safety at the time – were unable to convert this information into the "knowledge" required to judge whether chicken eggs from Kyoto could be consumed safely. When harmful rumors abound, the knowledge that consumers require to decide on their purchases cannot be acquired simply through information disclosure. Walsham quotes Polanyi to explain the process by which individuals transfer knowledge from one to another, and shows how difficult it is to share knowledge between individuals who live in separate communities with different backgrounds when one member provides information without thinking about this process, because the technical terms the individuals from different communities use, their work objectives, and their cultural standards differ (Walsham, 2002).

Consumers lacking a clear understanding of the threat presented by avian influenza could not help but rely on the flood of visual and often simplistic information provided by television and newspaper reports, and they converted this information into misunderstood knowledge. (The terms "television" or "newspaper" can easily be replaced by "YouTube" or "Internet bulletin board" in the Web 2.0 era because such media aim to provide easy-to-understand information for ordinary people). Before the Kyoto case, Japan had passed through a period when news reports on avian influenza had been broadcast frequently and the public was greatly concerned about such events. The mass media reported daily on numerous incidents of avian influenza which had occurred in countries throughout Europe and Asia (which resulted in the slaughter of more than one million chickens in China, two million chickens in each of Indonesia, South Korea and Vietnam, and over ten million chickens in Thailand) and infections in other regions of Japan had been verified roughly one and a half months before the events in Kyoto. Avian influenza also can infect humans who come into close contact with chickens: 15 people died in Vietnam, and eight died in Thailand and the Netherlands, including a veterinarian who was working to prevent an epidemic.

Following discovery of the avian influenza infection, television channels and newspapers carried very few reports addressing the safety of chicken eggs and chicken meat, but reported extensively on the concealment of the infection and the fact that large numbers of fowl had been shipped. Furthermore, images of workers entering henhouses garbed from head to foot in white protective suits, which gave an impression of extraordinary circumstances, were widely shown on television and in newspapers, and the fact that this was the world's first confirmed case of crows being infected was also reported extensively. As a result, for a long period of time many

consumers continued to have a poor understanding of information such as what actions might result in humans being infected by birds[1].

5 A strategy for building trust with non-experts

To deal with such harmful rumors and establish trust with consumers, many businesses and organizations focus on proactive information disclosure. In the case of avian influenza, infections were verified in other regions during the same year, but in Kyoto the government worked continuously to disclose information concerning chicken safety via the Internet. Kyoto Prefecture also learned a lesson from the avian influenza furor, and in fiscal 2005 introduced a traceability system for chicken eggs – in cooperation with related organizations including producers, distributors, consumer organizations, and local governments in the prefecture – as a means to secure customer trust as well as to combat salmonella, improve quality control, and prevent false labeling. It was said that during the avian influenza incident, the inability to ascertain marketing channels for infected mature fowl caused considerable confusion and damaged consumer confidence (*Nikkei Shimbun*, 2004). A traceability system, which can be used to investigate the cause of a food accident and to disseminate information concerning food safety to consumers, is a"system to enable reverse tracking by preparing and retaining records of identification numbers, food product suppliers, food product purchasers and other information, by food product, at each stage including production, processing, distribution and sale" (Ministry of Agriculture, Forestry and Fisheries, 2006). This system also provides a mechanism by which data such as the variety of chicken, salmonella inspection results, feed used, inspection results, and disinfection can be verified when the consumer reads the code with a cellular phone equipped with a camera. As individuals can use their mobile phones at the various locations where they shop, consumers can conveniently access this information at an early stage after harmful rumors have begun to spread.

Was consumer "uneasiness" eliminated, though, once production schedule information became available? Without taking the two factors discussed in the previous section into consideration, harmful rumors may not be eliminated even after the marketing channels are understood. First, Kyoto poultry farms who claimed their chicken and eggs were safe for consumption were not necessarily trusted since one of these firms had tried to conceal the problem. One reason the run on the regional bank at the end of 2003 was settled comparatively quickly (Matsuo, 2004) was that announcements explaining the rumor was false were released not only by the regional bank in question, but also by many neutral organizations, including the Bank of Japan, trusted by the bank's regular customers. Consumers are more likely to trust information provided by a neutral expert who is seen as a disinterested party.

Second, it is important to consider that the public did not understand the threat that avian influenza represented to humans, as consumers were unable to convert available information into the knowledge needed to make a decision. For example, even if the type of feed given to chickens were to be disclosed through a traceability system, consumers might still not understand the relationship between specific feeds and safe ingredients because they are not specialists. They will only be aware that, for example, under normal conditions, feed β currently used by poultry breeders is safe, without

understanding the grounds supporting such a claim. Therefore, if a rumor is circulated that feed β might be related to a viral infection, consumers may not be able to decide whether the feed β implicated by the rumor is the same as feed β disclosed in the traceability system, and moreover may not be able to judge whether it is safe to eat chicken that was raised on feed β.

In contrast to numerous papers on knowledge management systems – generally, corporate systems aimed at creating new concepts and businesses by pooling the ideas of employees (McDermott, 1999) – very little research has been done on the transfer of knowledge from specialists to non-expert consumers. Brown and David (1998) describe translators and knowledge brokers as social tools which can be used to spread knowledge to other communities. During the avian influenza incident, concise explanations by specialists eased residents' concerns in many cases. A special investigation committee organized by the government included researchers in sectors such as microbiology and infectious diseases who participated in the field investigations one week after the infections came to light and attended the briefings given for local residents. At the time, the specialists eased residents' worries by using readily understandable terms to explain the theory that bird flu is not transmitted to humans in the course of normal daily activity (Yamada, 2005).

If disseminated information is based on reliable grounds and conveyed clearly in easy-to-understand language, consumers can acquire a better understanding of the true situation, making it more likely that harmful rumors can be stopped. Apparently, over 70 percent of the people who felt anxiety concerning avian influenza had their worries lessened when they became aware that there was no danger of infection from direct contact, as explained by easy-to-understand facts, such as "avian influenza virus is destroyed easily by acid and is thought to be killed by stomach acid" (Food Safety Commission, 2004).

6 Social implementation

We will now discuss how ICT systems can be applied in the social application of the factors affecting the building of trust that this paper has stressed. Regarding the first factor, we support prompt dissemination of specific knowledge by trusted neutral specialists. In the Kyoto case, the Web played a very limited role as a countermeasure to the harmful rumors. Neutral experts were able to visit the same regions afterwards and quickly rectify misunderstandings concerning avian influenza. Measures to counter harmful rumors must target a large number of consumers, however, and the effects of only face-to-face briefings were limited. When rumors spread across the entire country, it would be difficult for each specialist to separately meet each consumer, listen to questions, and explain the facts. In an era when harmful rumors can spread more rapidly than ever, the use of ICT is necessary to simultaneously transfer knowledge based on specialists' opinions to large numbers of people.

Regarding the second factor, we discussed how best to transfer specialized knowledge to consumers. In the case of Kyoto avian influenza, the web again played a very small role since the information the Kyoto government disclosed was mainly a list of administrative countermeasures rather than an expert's concise explanation translated into easy-to-understand terms. To manage information-credibility risk in an ICT society, the applied ICT will need to include translator functions that enable

ordinary people to easily gather and understand relevant knowledge in terms they are comfortable with.

Based on the lessons of the avian influenza panic, the Ministry of Agriculture, Forestry and Fisheries and Kyoto Prefecture are now taking countermeasures such as providing information concerning the safety of food products and conducting exchanges of opinion among consumers, producers, businesses, and other concerned parties. This "risk communication" project should work well as a trusted neutral organization has continued to openly provide specialized knowledge to consumers from a non-expert's perspective. However, there has been no direct mention of how specific knowledge can be quickly transferred to millions of people if necessary. We believe the application of ICT will extend the project's effectiveness to a much wider range of consumers. There are existing ICT approaches that efficiently provide ordinary people with specialized knowledge via the Internet[2], but there is still a need for better ICT applications that can be used to disseminate valid information to combat rumors. For example, an easily accessible authorized web site comprising a widely ranging database of peer-reviewed academic articles would be useful for spreading easy-to-follow specific information if it was equipped with an effective translator function.

Furthermore, we need to pay attention to the applicable social system, which affects under which circumstances consumers will choose to believe correct information and make a correct decision. A customer-window function would be beneficial as consumers often cannot easily judge why information provided by a particular expert differs from the various other types of information from different sources. Orlikowski studied a social system that enables the efficient dissemination of specific information to large numbers of consumers. They studied the procedures used by employees at customer service windows to explain information to consumers, and the knowledge management system implemented for this purpose from the viewpoints of ICT and human resources systems (Orlikowski and Hofman, 1997). They found very few customer inquiries could be completely addressed with a simple answer; many inquiries required several hours of investigation. In this sort of situation, a response was organized around steps such as preparing response-related support manuals and sharing knowledge between veteran employees and inexperienced employees, and arrangements were devised to combine both types of human resources.

In the case of the food industry, consumers most want information concerning food product safety when they are making purchase decisions at retail outlets such as supermarkets. In the future, we believe retail stores will have to become customer windows that can respond to consumers' specific questions concerning food safety asked through an ICT system. Many consumers tend to develop distorted mental images based on sensational TV and newspaper reports. A system that enables retail stores to convey the opinions of specialists to consumers nationwide could significantly help to quickly stop harmful rumors, even in circumstances that have previously favored the proliferation of such rumors. Although several considerations must still be taken into account, such as the cost-effectiveness and user-friendliness of such systems[2], a comprehensive knowledge-transfer system designed around today's available ICT and applicable social factors is desirable to better manage information-credibility risk.

7 Conclusion

Information-credibility risk is a significant concern in today's ICT era, and it will be increasingly important to find ways to make it less likely that harmful rumors started by individuals who lack expert knowledge will spread widely and rapidly through media such as television and the Internet. We need to think about new ways of applying ICT to effectively communicate knowledge to consumers that is based on specialized expertise and ensure it is properly understood, instead of relying on existing information disclosure systems, such as a traceability system, that are useful but not convincing to the general public. It will be necessary to integrate assessments provided by trusted neutral parties and translator functions into existing information disclosure systems to effectively manage information-credibility risk. To ensure consumers can effectively utilize such an ICT system, it is important that characteristics of the relevant social system be taken into account when designing the system.

In today's ICT society, it is important to find new ways to organize specialized knowledge and create understanding of complex issues among ordinary people who are not knowledgeable professionals. Existing knowledge management systems can enhance knowledge by conveying information within organizations where the system users all share specialized knowledge. In the future, however, it will also be necessary to develop systems to convincingly disseminate specialized knowledge to the general public in an easy-to-understand format.

Notes

1. Food Safety Commission (2004). Of the individuals who responded that they felt uneasy about avian influenza in a survey by Japan's Food Safety Commission, 44.8 percent of the individuals with employment experience in food-related research indicated they felt uneasy, while 73.7 percent of ordinary consumers (without relevant employment experience) felt uneasy; this difference between the two group clearly indicates a greater sense of insecurity among those lacking "professional" knowledge. Furthermore, 70 percent of the individuals who felt such unease indicated "although I don't believe humans can be infected through food, I feel uneasy about the safety of eating chicken and eggs," and 40 percent of the individuals who felt substantial anxiety responded "I thought humans might be infected through food".
2. For example, the NLM has implemented the Consumer Health Information Service for the general public since the late 1990s. This service allows US citizens to easily retrieve biomedical documents which they would otherwise need special knowledge to efficiently retrieve (Sakai, 2006).

References

Beck, U. (1992), *Risk Society*, Sage Publications, Newbury Park, CA.

Beck, U., Giddens, A. and Lash, S. (1994), *Reflexive Modernization Politics, Tradition and Aesthetics in the Modern Social Order*, Polity Press, Cambridge, MA.

Brown, J.S. and David, P. (1998), "Organizing knowledge", *California Management Review*, Vol. 40 No. 3, Spring.

Fombrun, C.J. (1996), *Reputation*, Harvard Business School Press, Cambridge, MA.

Food Safety Commission (2004), *Attitude Survey Concerning Food Safety*, Food Safety Commission, Msida.

Ito, K. and Kagaya, T. (2006), "Brand risk management and corporate value", *Hitotsubashi Business Review*, Winter.

Kawaguchi, S. (2006), "Information security governance", *Hitotsubashi Business Review, Winter*, Japan.

Kinyu-zaisei Journal (2004), "News eye: lesson learned at the run on the Saga bank", *Kinyu-zaisei Journal*, No. 9558, January 29, pp. 16-19.

Kyoto Shimbun (2004), March 2, March 6, March 12, March 17, March 18, April 1, April 6, April 9, April 10, April 13, May 1, January 14.

McDermott, R. (1999), "Why information technology inspired but cannot deliver knowledge management", *California Management Review*, Vol. 41 No. 4, Summer.

Matsuo, Y. (2004), "How to prevent harmful rumors", *Kinyu-zaisei Jijo*, May 31.

Ministry of Agriculture, Forestry and Fisheries, Food Safety and Consumer Policy Division (2006), ""Risk communication", available at: www.maff.go.jp/syoku_anzen/index6.htm

Nikkei Shimbun (2004), "March 1".

Orlikowski, W.J. and Hofman, J.D. (1997), "An improvisational model of change management: the case of groupware technologies", *Sloan Management Review*, Winter.

Sakai, Y. (2006), "Healthcare Information Project by the United States National Library of Medicine (NLM) and National committee of Library Informatics", *Current Awareness*.

Sanseido (2000), *Daily Shingo Jiten*, Sanseido, Tokyo.

Scott, S.V. and Walsham, G. (2005), "Reconceptualizing and managing reputation risk in the knowledge economy: toward reputable action", *Organization Science*, Vol. 16 No. 3, pp. 308-22.

Walsham, G. (2002), "What can knowledge management systems deliver?", *Management Communication Quarterly*, Vol. 16 No. 2, pp. 267-73.

Yamada, K. (2005), *Crisis Attack*, Kyoto Prefectural Government Research Committee edition, Kyoto Shimbun Shuppan Center, Kyoto.

Further reading

Markus, M.L. (2004), "Techno-change management: using IT to drive organizational change", *Journal of Information Technology*, Vol. 19, March.

Corresponding author

Yayoi Hirose can be contacted at: hirose@nii.ac.jp