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CASE STUDY: SMS-BASED QUALITY FEEDBACK SYSTEM OF DAIRY COOPERATIVE E-PIIM, ESTONIA

Abstract

The commercial association E-Piim is a dairy co-operative owned by Estonian milk producers. Milk is collected from 500 producers and processed into cheese, milk powder and butter. In order to provide quality assurance and take full advantage of modern technological solutions, E-Piim launched already in 2002 an SMS-based milk quality feedback system. After the quality of milk has been checked by e-Piim, a milk producer receives immediate feedback via SMS and/or e-mail. SMS content generated by client software is forwarded to EMT service centre using UCP/EMI over the secure channel on the Internet. Prompt feedback enables the producer to implement immediate changes in the production system. This solution has generated a remarkable increase in the quality of raw milk.

Case Characteristics	
Full name of the company	Dairy Cooperative E-Piim
Location of the company	Järva-Jaani, Estonia
Sector	Manufacture of dairy products: milk processing, production of cheese, milk powder and butter
Year of foundation	1997
Company size (no. of employees)	200 (2003)
Turnover in last financial year	34 Million euro (2003)
Primary customers	Consumers / other businesses
E-Business Focus	
Supplier quality management	***
Supply chain management and logistics	**
Automation of business processes	**
URL of the company	www.epiim.ee
* = in implementation stage; ** = used in day-to-day business; *** = critical business function	

Background and objectives

The commercial association E-Piim is a dairy co-operative created to support and promote the economic interests of its members (325 in 2003). The members are engaged in milk production through joint activities in milk processing.

E-Piim was established in 1997 as a result of a merger of three dairy producers who all had long traditions and favourable location in a strong agricultural area that provided the necessary basis for successful milk processing. By now E-Piim has become one of the leading processors of milk in Estonia.

E-Piim earned EEK 525 million (34 million euros) turnover and EEK 14 million (0.9 million euros) of profit in 2003, and the company was the 74th largest enterprise in Estonia in 2003, ranked according to total turnover. The company stored 93,923 tons of raw milk, which constitutes 20 percent of the raw milk purchased by the entire Estonian milk industry in 2003. The milk is collected from 500 producers and processed into cheese, milk powder and butter. The dairy producer exports 90% of its output into the EU countries.

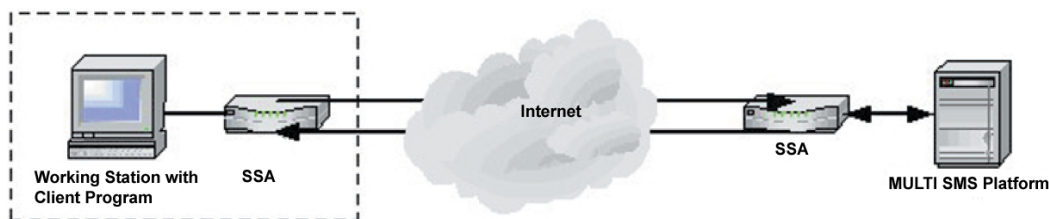
Similar to other sectors in Estonia, the food sector has been very active in increasing both its effectiveness as well as efficiency. In order to satisfy increasing needs and take advantage of modern technological solutions, in 2002 already E-Piim launched an SMS-based milk quality feedback system. Namely, after the quality of milk has been checked by e-Piim, a milk producer receives immediate feedback via SMS.

Activities : Implementation of SMS-based Quality Feedback System

In order to increase the association's effectiveness and efficiency, e-Piim came up with the idea to elaborate an m-commerce solution to support the communication with the milk producers. The project was initiated in spring 2002 and was developed in co-operation with the leading Estonian mobile telephone operator AS EMT. As a result of the project, every milk producer that has joined the system receives the analysis results for the quality of raw milk via their mobile phones and/or e-mail.

Studies from 2002 already demonstrated that some 95% of milk producers were equipped with mobile phones, used them very extensively and considered them the best channel for obtaining urgent information. Thus, after the system was introduced, some 350 milk producers joined the system immediately. Jaanus Murakas, CEO of e-Piim, explained in 2002 *"Although a lot of milk producers have Internet at home, even more have mobile phones with them in cowsheds. Receiving SMS is remarkably easier compared to surfing on the Internet, not to mention getting news from the mailman"*. After the introduction of the system in 2002 EMT product manager Urmo Parm also expressed satisfaction with the solution, especially considering that this kind of a system was implemented for the first time in the agricultural sector: *"SMS has so far been mostly considered a channel for advertising, marketing or a channel for young people to communicate over. E-Piim has demonstrated that it can just as well be used as an efficient business for milk producers and processors"*.

The main reason for the introduction of the system had to do with the quality issues. As the quality of milk products is directly dependent on the quality of raw milk, the feedback system based on postal notices (and on delays of up to a week) that was used earlier needed urgent improvement. The solution was developed in co-operation with EMT for whom E-Piim was the first client to use its multi-SMS service. As there were no organisational changes needed, technological adaptations were of no issue and the cost of the whole system were negligible, the whole system was up and running within three months.



Source: EMT

In technological terms the system works as follows: the SMS content generated by client software (which in the case of e-Piim is integrated with their corporate information system) is forwarded to EMT service centre using UCP/EMI (Universal Computer Protocol/External Machine Interface) over a secure channel on the Internet. The secure channel is generated by Secure Sockets Agents (SSA) software that EMT provides its clients with and which generates encrypted Secure Sockets Layer tunnel (exhibit above). As of 2005 the "MULTI SMS" service is a regular item on the list of services that EMT offers its clients.

The SMS or e-mail to raw milk producers contains information on the most important characteristics of raw milk¹.

Lessons learned

As of 2005, the system has established itself in the everyday production process and 70% of milk producers are currently its active users. Some of the producers are using both SMS and e-mails in parallel. The latter is good for storing information and analysing it over the longer periods.

The main reason for the introduction of the system had to do with the quality issues and the impact has also been great in this respect. The former system of postal notices and of delays of up to a week has been substituted with a system where producers receive prompt feedback on quality of raw milk and can now implement immediate changes in the production system. As a result of this solution, the quality of raw milk has increased remarkably. The e-business solution has also turned out to be cost-effective, as it reduces labour cost and the cost of delivery notices. No quantitative estimation of such saving is available.

To conclude, the SMS-based Quality Feedback System of Dairy Cooperative E-Piim is a good e-business practice. Its introduction was based on the most widespread technological platform of clients (mobile telephony) and addressed one of the most crucial aspects of food industry – quality issues. It was implemented in co-operation with the major mobile telephone operator in Estonia and using the highest competence level possible. Overall, the system has turned out to be cost-effective and efficient.

Sources and references

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¹ The message could look like "8000 PROOV=17.01.04 PS=K T=1.032 H=16 B=10 BGeom=12 S=215 SGeom=206 L=880 V=3 temp=5 A=ei K=-0,520 P=1 Va=3.40 R=4.44 C=374", where 8000 is the unique identifier of the producer, PS indicates the general quality level followed by more detailed results.

References

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Contact

For further information about this topic or about the *e-Business W@tch*, please contact:



e-Business W@tch
c/o empirica GmbH
Oxfordstr. 2, DE-53111 Bonn
Germany
Fax: (49-228) 98530-12
info@ebusiness-watch.org



European Commission
Enterprise & Industry Directorate-General
Unit D4 'Technology for Innovation / ICT Industries
and e-Business'
Fax: (32-2) 2967019
entr-innov-ict-ebiz@cec.eu.int