

FINANCIAL INSTITUTION'S SMART CARD INFRASTRUCTURE AS ENBLER FOR PUBLIC SECTOR SERVICES ENHANCEMENT

MOGUĆNOSTI POBOLJŠANJA USLUGA JAVNOG SEKTORA KORIŠTENJEM INFRASTRUKTURE PAMETNE KARTICE FINANCIJSKIH INSTITUCIJA

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Abstract: *Sophisticated financial institution's smart card infrastructure in Croatia could be used for public sector services enhancement. Retail customer oriented institutions, with card business in its center, rely heavily on smart cards and electronic distribution channels, all resulting in rapid infrastructure growth. Banks are turning focus on services as future profit pipelines. Meanwhile, Public sector services offered to citizens are taking slower pace, although Government took strong commitment towards E-Government projects. The goal of this paper is to analyze smart card attributes, which could improve Public services varying from healthcare to transport, reusing existing card infrastructure owned by the banks.*

Key words: *smart cards, authentication, payment, public services, E-government*

Sažetak: *Napredna infrastruktura pametnih kartica financijskih institucija u Hrvatskoj mogla bi se koristiti za poboljšanje usluga u javnom sektoru. Institucije orijentirane na korisnike usluga u maloprodaji s kartičnim poslovanjem oslanjaju se u velikoj mjeri na pametne kartice i elektroničke distribucijske kanale, rezultat čega je brzi rast infrastrukture. Banke posvećuju pažnju uslugama kao budućim izvorima zarade. U međuvremenu usluge javnog sektora koje se nude građanima razvijaju se sporije iako se Vlada obvezala poduprijeti projekte elektroničkog upravljanja. Cilj ovog rada je analizirati značajke pametnih kartica koje bi mogle poboljšati usluge javnih službi od zdravstva do prometa korištenjem postojeće infrastrukture pametnih kartica kojima se koriste banke.*

Ključne riječi: *pametne kartice, potvrda autentičnosti, plaćanje, javne službe, elektroničko poslovanje*



1. Introduction

Plastic cards are part of way of life in most industrialized countries. We use them to identify ourselves, to travel, to gain access to buildings, to obtain cash from our bank and to pay for goods (Hendry, 2001). Croatia is not an exception, especially in terms of conducting banking transactions, all resulting in rapid card and infrastructure growth. By the end of Q3 2007, banking sector successfully reached more than 8,7 mil cards, 2,900 Automated Teller Machines (ATM) and over 67,000 Electronic Fund Transfer at the Point of Sale Devices (POS) terminals were reported (Croatian Chambers of Economy, 2007). Those impressive figures are most surely indicating good card adoption by the Croatian citizens and inevitably highly developed beneath infrastructure, connecting cards, accepting card devices and banks in interoperable networks. Due to security reasons cards infrastructure in Croatia is moving swift towards smart cards, which apart from carrying payment application can be equipped with additional functions ensuring positive identification, low value payments for transportation or additional healthcare services. Banking sector is already taking advantages of multiplication cards for purpose of positive authentication for Internet banking as well as for secure internet shopping. This experience can be crucial for Public sector in need for similar functionalities. Apart from issuing cards for Public sector, banks are equipped to offer additional services on existing ATM and POS networks. On the other side Public sector led by the Government in their goal to make Croatia an E-country (E-government projects) is surely maturing in its awareness of both technical/organizational and budgetary difficulties of such projects. Although E-government project goal is to make Internet main distribution channel of their services, this channel has not reached its full potential. The objective of this paper is to investigate possible fields of mutual interest in sharing existing card infrastructure for public sector services enhancements.

2. Smart cards and distribution channels in banking industry

Smart cards entered into banking industry as a supplement to magnetic stripe cards for reasons of enhanced security and additional usage possibilities on multi application cards. Smart card with embedded chip, in opposition to its ancestor magnetic stripe card, offers: confidentiality, positive authentication, data integrity and non-repudiation (Hendry, 2001). These attributes helped banks to reduce fraud originated by cards conducting banking transactions, especially among European countries with strongest card tradition and consequently highest penetration rate of cards in everyday life. France smart card case shows inverse relation of card fraud to smart cards issuance (Durix, 2006). France is also known as country that pioneered the smart card world from both perspectives of innovations and first mass usage of smart cards. After reducing fraud in physical payment channels, banks evolved scenarios of enhancing current services on Internet banking channel as well as unifying banking channel access using multi application smart cards. In this scenario banks are promoting smart card usage as powerful and secure tool for both worlds: Physical – (payments on POS and obtaining money on ATM); Virtual – (strong

authentication for Internet banking and E-commerce). Croatian banks followed global trends and subsequently both, single and multi application cards are nested in portfolios of all the market key players. Presence is accompanied with strong growth figures of cards migrated to smart card platforms. On the end of Q3 2007 Croatia evidenced presence of almost 3,5 million smart cards (41% of the market share), with strong annual growth trend of over 75% (Dominović, 2007). As smart card usage requires, apart from card itself, smart card accepting device, this brings to focus most common physical distribution channels: ATM and POS. Consequently migration to smart cards was followed by severe technical upgrades to cards issuing, authorization and distribution channels infrastructure. Change took place on hardware as well as on software layer, resulting in fact that today's ATMs are run under Microsoft Windows, and eventually it is quite common for ATMs to run more than simple money withdrawal application. New ICT trends on existing channels brought technology changes such as: open WEB technologies and Internet Protocol (IP) enabling multiple logical application connections. Due to the visual WEB development tools and possibility of WEB browsing these services are easy to implement, fast to deploy, and centrally manageable. Banks recognized opportunities, and developed additional services ranging from displaying marketing materials to selling tickets, coupons, and mobile phone vouchers. Parallel usage of single device to cover for more than one service brings to attention evolving possibility to use an ATM as distribution channels for Public Sector purposes.

3. Public Sector

Croatian Government is taking steps in commitment to make Croatia an E-country. Globally we witness initiative to ensure Internet broadband access for citizens and a lot of distributed web site projects from Government itself to local Counties and Cities. All of those share mutual aim to offer 24/7 on-line services to citizens in areas of income generating, registration, returns and permits & licenses clusters. To measure the online availability sophistication, estimation & sampling model was adopted. Model differ four levels of online sophistication and sampling:

- No information – Relevant information of public service not available on the network or service provider has not web site (0-25%)
- Information - Relevant information of public service is available only on the network (25-49%)
- One-way interaction – Availability to download forms in electronic shape and store them on a computer (50-74%)
- Two-way interaction – The publicly accessible web site offers the possibility to of authentication and electronic intake (75-99%)
- Transaction – Service is available online: completing forms, authentication, payment and deliver of confirmation, orders or other forms to completely treat the service (100%)

None of the services scored 100% availability with exception of Hospitals in Splitsko - Dalmatinska County (E-Croatia, 2007), indicating potential for banks and Public sector cooperation.

4. Public and Private - Possible fields of mutual interest

Possible fields of mutual cooperation are given through examples, relying strongly on smart cards and its infrastructure along with consequent attributes of smart card technologies: possibility to support strong authentication, ensuring both customer and public security in conducting “transactions”; possibility of infrastructure to accommodate new applications on cards and physical/virtual channels. Respect to key difference between public and private sector is given. While Public sector serves customers, aspiring good services and not apparent wish for profit, private sector clearly serves customers for tangible financial and intangible gains such as: good reputation or etiquette of social awareness. Constant profit hunger and high rivalry made private sector (especially banking) very cost efficient, resulting in excellent services at low prices. Previous could not be claimed for certain public services. Three examples are given from perspective of mutual benefits, possible problems and technical possibility.

4.1 Authentication and payment - added functionalities in E-government projects

Banks customers are already using dual application smart cards for payment and authentication on internet channel. These services could be implemented to any of E-government web sites supporting clusters which demand any combination of payment only or authentication and payment functions. Bank would treat any Governmental web page as web shop, and would charge customers for amount delivered by already existing web page. Customer charging function is taken over by the bank. Customers are charged as regular without any extra fees. Government or local body clears and settles directly with the acquiring bank for certain acquiring fee. Benefits are non-stop service availability and cost reduction by avoiding stamp duties distribution and money collection. Problems do not exist if local body or Government is willing to pay acquiring fee. From technical perspective it could be achieved because Croatian banks are already supporting secure E-commerce channel for credit cards. There is also a possibility for banks to authenticate only citizens on behalf of Government (similar to already existing Internet banking channels). In this scenario banks would not get any fees but would rather enjoy customer loyalty through new public services (lowering customer churn). There are possible problems considering that banks have their own Internet authentication channels serving for their own customers, resulting in each interested banks need to authenticate their customers only. Although scenario is technically possible (banks are already supporting strong authentication prior to customer access to internet banking services), multiple projects are needed.

4.2 Health Care & Medical Services

Some of the banks could issue multiplication cards not only efficient for “payment” and control of given medical services, but able to store patient’s data such as current medical treatment for acute states, list of chronic diseases, etc. Public benefits from better control of medical treatment expenses and rights; card can be used offline by emergency service or in pharmacies. Banks could profit from card issuing fees.

Problems of legal nature are possible due to confidentiality of medical data. Banks already started projects of issuing/acquiring cards for private healthcare institutions.

4.3 Public transportation

As public transportation is mainly handled by the cities, different projects depending on currently used public transport infrastructure could be taken into consideration. Infrastructure and organizational differences in the way each city handles its public transport issues, should be examined separately. Generally, modern public transport as seen in industrial countries relies heavily on smart cards, especially contact-less ones. They are used in different manners and sustain different functionalities, among which some common ones can be easily recognized: access/exit control to/off the means of public transport, fast payment function based on contact-less technology, ability to reload cards with transport credits (single application cards like e-purses, with functionality to reload card on certain spots using standard payment cards). If no interest is found in issuing contact-less payment cards, usage of ATMs or Info kiosks as dispensers for tram and bus tickets could be considered (similar to buying mobile phone vouchers). Additionally ATM could print unique barcodes on receipts, and customer would use bar-coded receipt to enter public transport means. Scenarios descriptions gave enough information on benefits, while due to obvious differences, problems and technical aspects were not analyzed within this paper.

5. Conclusion

The goal of this paper was to present current status of smart card technology and infrastructure owned by the banks, and to investigate possible parallel usage in interest of public sector. Service development trends were presented. Possible fields of mutual interest were analyzed in three fields. Clearly, currently existing E-government projects could be improved by additional functionalities offered in the domain of chip cards such as strong authentication followed payment function. Fields of mutual cooperation in public sector can be extended to transport and health care, where there is evident need of banking physical distribution channels.

6. References

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