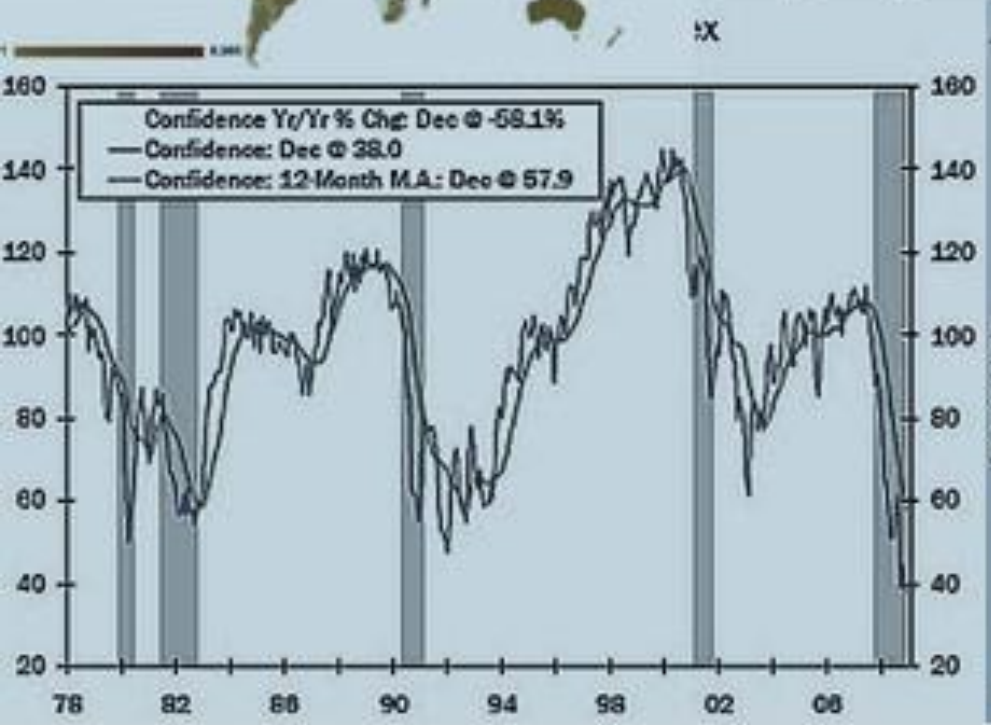
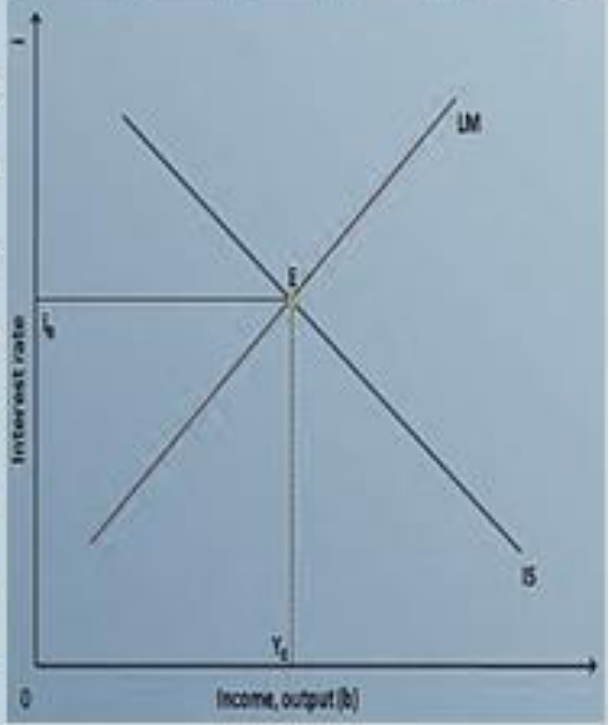
Vol. 4, Issue 1(4), 2016
ISSN 2343-7995 (online)

Hyperion Economic Journal





HYPERION ECONOMIC JOURNAL

Quarterly journal published by the Faculty of Economic Sciences from the Hyperion University of Bucharest, Romania

YEAR IV, NO. 1(4), MARCH 2016
ISSN 2343-7995 (online)

Editorial Office: Hyperion University, Faculty of Economic Sciences,
Calea Calarașilor no. 169, district 3, Bucharest, 030615
http://www.hej.hyperion.rohej@hyperion.ro

CONTENTS

SECURITY OF INTERNET PAYMENTS

Alin Titus PIRCALAB, PhD
"Vasile Goldis" West University, Arad
tel. 0040744487758, email alin_pircalab@yahoo.com

Abstract: *Recently, with the increasing availability of Internet, E-commerce has captured the interest of individual consumers and companies of all sizes and interests. Moreover, with the advanced technologies now available, it is more and more spoken about the Digital Economy (DE - Digital Economy). The basic idea is that through e-commerce one can achieve the exchange of ideas, goods, knowledge, beyond simply buying / selling of products and services. E-commerce technologies can be used to run a business using the Internet for communication, Intranet or other computer networks. The concept of virtual value is very important because it offers the possibility of digital information in the usual processes occurring in conducting business activities. One of the main goals of e-commerce strategies is to identify and encourage users of information via the Internet, giving them the necessary support. Electronic commerce offers the ability to run a business in a flexible manner that can benefit from the various opportunities as they arise.*
But bear in mind that the introduction of electronic commerce in a business requires some changes in the structuring, development and tracking of activities. Using multimedia techniques or adaptation facilitates the inclusion of details of disclosure forms processed. Presentation of information takes on importance as large as the content. The Internet allows two-way exchange of information, without limits of time and space.

Keywords: electronic payment system, transaction, access control, digital signatures;

Jel codes: A12, F02, G23, G35;

1. The structure of an electronic payment system

Electronic payment systems can be viewed in a hierarchical tiered system architecture derived from OSI-ISO. An architecture level contains a set of objects that cooperate in order to provide services for the upper level. To achieve this objective, use of the services provided immediately below. An EPS consists of two levels: user, which is higher hierarchical level, and system level, which is lower hierarchical level.

A whole people using EPS - called generic users - are grouped into roles, the way it interacts in business relations between them. For example, typical roles in such a system are the buyer, the seller, the issuer of electronic money (the bank). Users, playing different roles, issue commands and responses in the dialogue process at the access points of an EPS. These dialogues are transactions - for example, getting cash from your account, make a payment or deposit of electronic money in a bank.

Level system consists in the set of physical entities and the relationships established between them. By entity is a device (electronic), seen as a whole hardware and software, and playing one of the following roles: bearer of electronic money or cash book. Devices that implement

these functions are in order, electronic wallet (e-wallet) and point of sale (Point of Sale - POS). EPS in a real interaction takes place between electronic wallet - which implements the bearer of electronic money the buyer (usually a smartcard) and POS - implementing the vendor's cash register.

In summary, an electronic payment system can be defined as a set of transactions required by:

- convert the money cash (or cash account) for electronic money and vice versa;
- electronic money transfer between users of this system.

To make payments in EPS, the buyer must withdraw from his account, the issuer real money (bank), a certain amount he deposits into his account, an issuer of electronic money (bank Internet) - stream 1. In particular, the two roles mentioned, issuers of money, can be played by the same bank. As a result, the buyer can withdraw electronic money based on real money deposited in the account - electronic money flow 2. These can be used in a payment transaction, the buyer pays the seller's goods or services - flow 3. The payment transactions diminishes the value of electronic money stored in the carrier and the corresponding increase in the cash value of the seller. As a result of a payment made, the seller transfers the goods or services the buyer - flow 4. From time to time, the seller deposited the proceeds of their electronic money issuer - flow 5, which he put in the seller's account equivalent amount in real money - flow 6.

2. Devices used in electronic payment systems

1. Electronic wallet is the implementer of a bearer of electronic money. It is used by the buyer for storing electronic money. The structure depends on hardware cryptographic protocols that implement EPS transactions, the most common configurations following principles:

- *A personal computer structure* - the user has full access to the device hardware and software resources. Architecture, typical of a PC with limited resources pocket calculator type (hand-held computer), includes: CPU (around a microprocessor 8 or 16 bits), RAM (from 256 bytes to 2 kbytes), 8- 10 kbytes EPROM, EEPROM 2-10 kbytes of which the device containing the secret keys must have access restrictions. The user interface consists of a keyboard and a display. Connecting to access points of EPS is usually via a serial infrared. This type of structure penalizes banks, restless user total control over resources payment device

- *A structure that is sensitive to opening called smart card*. This takes the form of a chip embedded in a plastic card. The difference between a regular credit card and a smartcard is shown in Figure "credit card and smartcard". A typical smartcard comprises an 8-bit microprocessor (the most commonly used being from Motorola and Intel 80C51 68FC05), 256-512 bytes of RAM, 8 kbytes EPROM 8 kbytes EEPROM. Communication with the access point is through direct contact with a card reader. The user has access to the hardware and software resources, which favors banks. Security of such devices are based on assumptions made on cryptographic protocols and the impossibility of "openness" SmartCard and perform a "reverse-engineering" of its software. Smart cards are rapidly evolving architecture. Latest achievements of smartcard implements a 32-bit RISC processor that GemXpresso RAD (Rapid Applet Development) presented in Paris in 1997 by Gemplus company, which can provide Java card (www.gemplus.fr/). Also, it should be noted MC68HC05SC49 Motorola microcontroller, dedicated applications that use public key cryptography co-processor that integrates a modular arithmetic.

❖ *Electronic wallet type structure* with cumulative benefits of earlier structures observer reaching a compromise between the bank and the owner's interests. Device architecture includes two microcomputers communicating on during the transactions. The first microcomputer, the user - called Purse, has the task to communicate with the access point of the EPS. He is actually shaped like a pocket PC with keyboard and display. The second microcomputer - called observer or by abuse of language, smartcard, serves the interests of the bank. It is inserted into the first computer. While the computer allows the user to control the fairness of transactions, the computer observer prevents double spending of electronic money, endorsing each transaction made by the first computer.

2. Point of sale (POS) cash register implements, which is the entity that temporarily stores - the seller - electronic money. The device is made from a technical point of view, as a PC-type structure having both a serial link interfaces to the infrared reader and a smartcard.

3. Distributor of electronic money is the device through which electronic money charging electronic wallet buyers. Implementation of technical solutions used to recall:

❖ *Distributor account electronic money solution* that allows incrementing the value of the wallet, based on the withdrawal of a real money account opened by the buyer. The organizer has an infrared or serial link smartcard reader, the networked computers serving various banks issuing electronic money.

❖ *Distributor credit-card electronic money* solution that allows incrementing the value of the wallet, on lending by a home buyer credit. The organizer has a reading device for the credit cards (magnetic) buyers. Also, there is an infrared channel for connecting smart card and wallet. In this case, the distributor must not be networked with computers banks.

❖ *Distributor-cash electronic money wallet* solution that allows increment value from the buyer based on the collection of an amount in cash.

3. Transactions processed in an electronic payment system

User-ID transactions allows an entity to verify if a user at the other end of the connection is really the one who pretends to be. It is a preliminary stage for a "conversation" later. They are using protocols based on public key cryptographic algorithms. Recall that in these criptosisteme, each entity has a pair of the public key and secret key. A user P, called evidentiary, that made known public key can be identified before any other user V, called the verifier. V creates a random challenge message you send as a cryptogram, encrypted with the public key P. It's using the key to the secret, restores original shape of the challenge then send clear V. If the return value is identical to that originally sent, then V is convinced's true identity P. obtaining the public key of P by V is based on the transaction will be set forth below for obtaining certificate from center certification will sign its own secret key public keys to authorized users to use the system. The message format of the public key of P and signature associated center, is called public key certificate or simply certificate.

The transaction for obtaining a certificate. All public keys used in EPS for digital signature and the identification protocols are certified by one or more certification centers. The solution used to authenticate users to the center consists of public key signing with user-specific information using the secret key for this purpose center. Information assigned to a user and used during the transaction identification are called loans. A lot of credits, accompanied by their signature on the center, is referred to with the term of the certificate. Generally, these

certificates have a limited validity period so that entities involved in an EPS - if you are accepted into the system - must obtain such certificates periodically.

Access control transaction provides protection against unauthorized use of entities in the system, by checking that any user who, through an access point, try to access the entity plays an appropriate role. The protocol is started by the user who sends the information to the entity-level identification system that wishes to access. Level system analyzes user belonging to the role that verifies claims and rights with respect to access to this role. The result of the review enables user access to the system or not. This transaction access control can be used in monitoring operations, a user playing a certain role requires an entity at a specific information system. For example, a user on the buyer may want to know which is the amount of money that she possesses electronic wallet.

The charging transaction is conducted between the bank and distributor. Upstream of the transaction itself, the two sides carried out a mutual authentication, consisting of one transaction of mutual identification. The transaction is triggered by the bank issuing the message "transfer sum s" at the distributor responds with a confirmation message "received the sum s". If successful conclusion of the transaction, the system confirms that an amount s. The transaction may fail if, for example, the amount claimed exceeds a ceiling set by the bank if the amount claimed exceeds the account balance buyer requesting uploading or if one of the two devices physical at both ends (or line) is defective.

The withdrawal transaction involves the dealer and buyer. In this case the actual transaction is preceded by mutual authentication entities. Then, the distributor sends the message "transfer sum s" to the buyer responds with the message "received the sum s". In this case, the buyer obtain electronic money s worth, following an advance bank transfer, by providing direct cash or credit cards. The transaction may fail if: the amount requested by the purchaser exceeds the limit that can be loaded into the electronic wallet; amount requested exceeds the account balance or value buyer with real money bank introduced; devices at the two ends or the link between them is defective.

Payment transaction takes place between buyer and seller. There payment transactions offline or online. At the online bank is involved. The transaction is initiated by the seller, which require purchasers sum s. If it agrees, sends a message to "pay the sum s", which the seller confirms the message "received the sum s". The failure of such a transaction can be either because the buyer does not have enough money, electronic or communication devices or failure of them.

The cancellation transaction refers to the last payment transaction between buyer and seller. It is intended to correct some errors committed by the human operator in connection with the payment transaction in progress, such as typing the wrong amount of payment.

Deposit transaction involves the seller and collector. It is started by the seller by texting "transfer sum s" followed by confirmation by the message Collector 's amount received. " Possible failure of the transaction can be either because the seller does not have enough cash to electronic cash registers to cover the second or defects of the devices involved.

The clearing transaction takes place between the collector and the bank or between two banks. Is initiated by the entity transferring the money through a message like "transmit sum s". Once the bank receives money, acknowledge receipt thereof by the message "received the sum s". The transaction may fail if the electronic money transfer or bank collector are not accepted by the bank that receives them.

4. Digital signatures

Among its many applications, digital signature underlies the security of smart cards. Unlike a handwritten signature that identifies the sender, digital signatures provide a means of ensuring the integrity and content of the electronic message received.

Digital signature is a small amount of data stored on electronic media which are transmitted with the message. It is produced by certain calculations made by the transmitter based on a content key and the message. This process is called function signature. At the reception, through a check function, is another set of calculations on the signature and message, finding or signature validity.

There are some parameters in these calculations - called keys - which varies from one signature to another and which are specific to that which produces signature.

Production of digital signatures can rely on criptosisteme both symmetric and public key ones.

Digital signature methods based on traditional key systems (symmetrical) both use the same key signature and verification. Figure "Digital signature symmetrical systems" illustrates this process. In the function signature, the message M is signed using the secret key as a parameter. Verification using the same secret key and the clear message is valid or invalid verdict of the received digital signature. The disadvantage of this method is the need to establish and distribution prior to the secret key between the transmitter and receiver. Figure 4

Digital signature public key (asymmetric), illustrated in Figure "Digital signature public key" secret key used to sign the entity transmitter (Dent) and the verification of its public key (Eent). As a result, a signature can be produced only authentic transmitter, which alone knows the secret key, but it can be verified by anyone who knows the public key of the transmitter.

1. Creating digital signatures - In electronic payment systems (EPS), digital signatures are made by a slightly different procedure. First, if they use a symmetric cryptographic system would risk exposing secret key verification, which must be stored in the equipment vendor. Therefore, this equipment must be protected with a protection mode key that can be controlled only from the vendor. Therefore, public key systems is preferred that the terminal only has to store the public key. But these systems creates problems in EPS because the calculations require a fairly large volume, which are slow on a device with low computing power, such as smart card (smartcard). In addition, the smart card at risk exposing secret key that is stored.

Signing function - in this case called signature transport - it is divided into two sub-phases (Figure "Digital signature by signature concept of transport"):

- First, pre-signature, the signature intensive creation occurs once outside the smart card; outcome of this phase, specific Card and its owner, is then transported and stored in the smart card;
- second, completing the signature which requires modest resources, is in the smart card and is dependent on the signed message.

2. Using digital signatures - An alternative use of the concept of transport of the signature, if EPS is explained in Figure "Taking the concept of transportation public key signature to checks". Smart card provider, usually the bank, creates pre-specified signature of a person through a process off-line. It is as if the bank would give some white person's electronic checks. For their creation, the Bank uses the key to the secret and then stores them on the card. During a payment transaction, the card turns into a complete check with the payment

amount. Then the seller at his terminal, the check verifies the signature with the public key of the bank's key that is stored on his terminal. Company DigiCash (www.digicash.com/) has developed a technique for compacting hard that can be stored in nonvolatile memory card (1K EEPROM) hundreds or even thousands of checks.

Another option for using smart cards with public key systems is based on the concept of money transport (Figure "Taking the concept of public key signature transport the coins"). In the card balance is a counter which can be incremented by the bank. When the buyer makes a payment card, the amount will be signed (coins) with secret key exists on the card. Because the card has two sensitive information - balance value and the secret key - it must be resistant to opening. The seller through existing in-store POS terminal will verify the authenticity of coins, using the public key. Safer transport systems based payments to electronic money have a great future.

5. Schnorr signature system

Cryptographic parameters of this system are as follows:

- a prime integer n 512 bits;
- a prime integer number of 140-bit q such that q divides (n-1);
- a generator g order q modulo n used by users so that GQ mode n = 1;
- a generator G of order q used by the bank in carrying signatures so that G q = 1 mode n.

All arithmetic operations are executed in Abelian group of order q, Gq, with the operation of multiplication modulo n. System parameters are generated by a central authority that knows the value Loggia G or loggia g. The other parts of the system - the bank, the buyer and seller - I do not know this value.

EPS keys used are:

- (s,p) - public key pair secret key that is used for smart card electronic wallet of the buyer (evidential);
- (S,P) - public key pair secret key used by the bank (checker).

Keys check the following equations:

$$\mathbf{p = g^s \bmod n}$$

$$\mathbf{P = G^S \bmod n.}$$

Schnorr's identification scheme - is based on a protocol that runs between evidential and checker Ve Pr. S is the secret of Pr, he wants to prove in a manner called "zero-knowledge" of Ve. It has public information mode n p = gs, which is the public key of Pr. Here's the reliable identification of evidentiary protocol by the verifier:

1. Pr randomly pick a value w ZQ on which calculate the so-called "original control":

$$\mathbf{a = g^w \bmod n,}$$

forward it to the checker:

Pr---->Ve : [a]

2. Ve choose a random integer c of ZQ ("Challenge") which transmits Pr:

Ve----->Pr : [c]

3. Pr calculates the answer r to challenge

$$r = w + c*s \bmod q$$

using secret key to the response, which sends it to the verifier:

Pr----->Ve : [r].

4. Ve calculated "final witness" to a'

$$a' = g^r p^{-c} \bmod n,$$

the reply r, to challenge c and public key of Pr. Pr identification is acceptable if a '= a mod n, which certifies that Father used the key to the secret, known only to him.

A numerical example will simplify the understanding of the scheme. Whether the following parameters:

- How it works module n = 88667,
- module q = 1031, factor prim al lui (n-1),
- security parameter t = 10, so $q>2^t$.
- element g = 70322 is of order q în Z_n.
- keys evidences Pr:
- secret exponent (secret key), s=755;
- public key p, calculated a little differently than the submission method (solution prepared in practice) is:

$$p = g^{-s} \bmod n = 70322^{1031-755} \bmod 88667 = 13136.$$

For identification, let's say that Pr probative will choose a w = 543, which will be calculated based on the original witness:

$$a = g^w \bmod n = 70322^{543} \bmod 88667 = 84109 ,$$

which will send to Ve. It selects a challenge, for example c = 1000, provided 1 <= c <= 2t. Pr probative r will calculate the answer to the challenge, using the key to the secret and that only he knows:

$$r = w + c * s \bmod q = 543 + 1000 * 755 \bmod 1031 = 851 ,$$

that it will send to verifier Ve. This onewill make the final check, on which identifying verdict:

$$a' = g^r p^c \bmod n = 70322^{851} * 13136^{1000} \bmod 88667 = 84109 = a.$$

Therefore, a = a' and identification is successful.

Schnorr signature scheme - Based on published Schnorr identification protocol, has built a digital signature scheme protocols used in electronic payment systems. Is replaced with the result of the challenge c functions Summary (hash) H, the concatenation message applied to "witness initially." The digital signature is composed of the pair of integers (r, c), where r is the response, and c is the initial challenge. Verifier constructs "final witness" and final challenge is calculated by applying the function H concatenation of message signed "final

witness." The signature is accepted if the final challenge has the same initial challenge. Signature scheme is as follows:

- signatory of the message randomly choose an integer M w ZQ, on which calculate the so-called "original control":

$$a = g^w \bmod n.$$

Then calculates the initial challenge c:

$$c = H(M,a)$$

and with the secret key, known onlyby him, response r*:*

$$r = w + c*S \bmod q$$

This information is sent to the verifier

$$Se\text{----->}Ve : [M,c,r]$$

2. The verifier calculates "final witness" to 'a'

$$a' = g^r P^{-c} \bmod n$$

and the final challenge

$$c' = H(M, a')$$

based on the reply of r, the initial challenge c and public key of Se. Se's signature is accepted if c = c mode n.

6. The electronic payment system CAFE

Given the importance of the field, 1994 was declared as the "International Year of the Electronic Wallet".

The project, called CAFE (Conditional Access for Europe) has been developed within ESPRIT European research project, launched under the European Community funding. In it are geared strong industrial companies in computers (DigiCash, Gemplus, Ingenico, Siemens), research institutes in the field of cryptography (CWI Amsterdam, PTT Research in the Netherlands) and universities in many European countries (Arhus, Denmark, Leuven, Belgium Hildesheim and Karlsruhe, Germany). Work on CAFE started in December 1992 and is the renown David Chaum cryptography researcher at CWI of Amsterdam. The overall project goal is to develop new CAFE conditional access systems, such as access to buildings, access to confidential data or electronic payment systems.

CAFE basic device is a so-called ***electronic wallet***. It is a small pocket computer, battery powered, keyboard, display and infrared communications (Figure "electronic wallet"). Each user has his own computer, managing his rights and guarantee the security of transactions.

From a functional perspective, CAFE is a payment system offline:

- user must load electronic wallet with money from the issuing institution (eg a bank);
- during a payment is not necessary contact with a central database of a bank.

- The system was designed to make payments in POS terminals from electronic wallet. This means that the deposit paid to perform subsequent electronic money issuing institution, to get real money. CAFE wallet system can store electronic money in different currencies, that to change during payments. CAFE system uses two ways of payment:
- by electronic money - which, however, may have different values and can be divided, allowing multiple payments until your deposit is empty (for example, there is a wallet deposit of 8 euros which can be spent in several tranches, multiple 1 Euro);
- by check - to be completed and signed by the buyer device, within a meter of money saved by it and is regularly uploaded to the bank.

CAFE system based on the following initial requirements imposed on security:

- it is absolutely impossible to spend electronic money several times since the devices used are resistant to opening;
- if a device resistant to opening was "broken" electronic money users spending more than once are identified and fraud can be proved.

The main difference between CAFE other EPS systems is the very high safety standards involved in this system. Security objectives envisaged in the project CAFE we here underline the following:

Security of all stakeholders in the system - All other EPS systems that are designed based its security on only one side - the broadcaster of electronic money (the bank); all participants in the system confidence in the bank, whose security measures must guarantee security of the entire EPS. CAFE has incorporated security measures that each party has guaranteed security requirements without having to have total confidence in the other. In particular, it is necessary mutual trust between two parties whose interests may conflict (eg bank and customers). Each party must have confidence in the devices you use (or wallet POS); even if you can not verify the correctness of their operation in detail, this can be done by independent authorities (eg consumer organizations). Also, each device hardware and software should be free for inspection by the authorities designated by the other party. System security is based on assumptions cryptographic protocols used and not on these algorithms secret.

Data protection - CAFE payment system is designed for daily payments, of little value, such as shopping, mobile, transportation. Had they used credit card company that issued the card could result in extensor profile of all user movement, which is not desirable, affecting the privacy of information about individuals. Therefore, was required to CAFÉ the need of anonym payments, which led to a system of identification cryptographic protocols. For example, it has been determined that - for all lower payments that Euro 2500 - not be necessary to identify the customer, but for higher expenses. In contrast to payments, the withdrawal of electronic money from the bank and deposit requires the identification of users via cryptographic protocols, by the bank.

Tolerance to loss and failure - From the users' point of view, if they lose a electronic wallet or can't be used due to defects tolerance is that they get money back from the institution that issued the wallet (the bank). It takes the necessary measures wallet that can no longer be used by anyone, even if he knew identification code (PIN).

Let us now consider the technical solutions that are used in CAFE system to ensure implementation of these security objectives.

Digital signature scheme - This technique is used to ensure the safety of all parts involved in the system. In this case, each message must be signed by the legal significance that it has created. For example, wallet sends requests to withdraw the protocol signed by the bank. As a result, the information present in memory devices for signature must be kept secret and should not be accessible in reading. Signature scheme used is based on the algorithm of Schnorr. Payment systems where the payer can not be identified (remain anonymous) use so-called blind signature scheme. It is a protocol between two parties signatory and receiver. As a result of protocol, the receiver get a message signed by the other party. The message is unknown for signatory, but it guarantees its original form; therefore signature is called "blind". The typical use of blind signatures in payments is as follows: electronic money are represented by a message of some form signed by the bank. During protocol withdrawing electronic money, bank device makes a blind signature on the message that represents electronic money without them knowing but content. Therefore, later, after the money was spent and executed protocol for submitting them by the seller, the bank recognizes only valid signature can not determine who the buyer who made such payments.

Ensemble wallet-opening observer resistant devices - Each wallet has an observatory that is placed inside the wallet, where it can eventually be changed. The Observatory is a crypto-processor Siemens, which can not communicate directly with other devices (POS or the charging wallet with money); All communications are done through computer-wallet, the user trusts. The wallet protects the interests of the user who checks all the messages it emits or receives observer. The Observatory represents the interests of the bank, because you can not make any transaction without cooperation. No payment is accepted without the signature of the observer. The electronic wallet pocket computer with a keyboard and small display. Observatory and is mounted on a smartcard is inserted in your wallet. Centre may communicate directly only with his wallet when he communicates with the outside world via infrared.

Cryptographic protocols to detect fraud - As mentioned, CAFE is a payment system offline. Buyer's identity is encoded in the message containing electronic money. When they are used in a payment process, the purchaser must disclose parts of coded identity to the buyer. If the same money is used in two payments, the buyer will disclose two different parts coded identity. The code is constructed in such a way that, starting from the two sides disclosed, one can determine the identity of the buyer, which can be achieved using a single hand. For example, I believe that identity is encrypted with a cipher coating (one-time pad - Charge modulo 2) using key P. Money contain two parts: the identity encrypted, IL key P and P. Both are, however, hidden by -a encryption scheme C, so that the money actually contain two chips C (H W P) C (P). At first payment transaction opens a single chip, IL P or P. None of them says nothing about the identity of the payer. Only if the offense is committed paid twice - by opening and the second chip - it can determine the user's identity. To detect such actions paid twice the Bank must retain for a certain time deposits all electronic money. If there is double deposits, based on the two chips is open immediately the identity of committing fraud.

Loss tolerance is very important to users. This means that if they lose the electronic wallet, they get their money back. The basic idea is to retain somewhere outside the wallet, the user save money encrypted form. If he loses his wallet, money is valued cooperation copy the user's bank. Money is thus rebuilt, less the amount already spent and credits the user's account. The values can be determined by comparing spent rebuild deposits money deposited in the bank.

To prevent the use of electronic wallets lost by unauthorized persons, there are two values PIN (Personal Identification Number) protections. One is required to use the wallet, another should be known for accepting payments.

CAFE project was designed in two phases: the first, which ended in mid-1994, were done market studies and sociological studies were completed cryptographic protocols and technical solutions. In the second, after 1994, it began implementing hardware components: Gemplus company and wallets made of smartcards with cryptographic processors produced by Siemens. In parallel, work on studies on user reactions to these payment systems and the development of other access control systems based on wallets and observers.

7. An example of an electronic payment system

Electronic payment system to be introduced is built on the scheme Identification / Schnorr's signature, public key cryptographic method that uses discrete logarithms complexity of calculation. Detailing, as some mathematical principles underlying the system was already protocols will present the cryptographic functions in a symbolic manner, apart from mathematical calculations that are behind them.

We note with $\mathbf{E_{ent}}$ public key of an entity (buyer - C, V or bank seller - B) and $\mathbf{D_{ent}}$ secret key pair. As a result, undertaken by an entity's signature on a message M, the secret key whose sole owner is, is as follows:

$$\mathbf{S = D_{ent}\ (M)}$$

Signature verification requires them to do any entity using public key of the signer:

$$\mathbf{M =? E_{ent}\ (S) =? E_{ent}\ (\ D_{ent}\ (M)\ )}$$

Understanding of specific protocols for EPS's presented, will specify some notations used:

- meter - is the current balance of the buyer, as embodied in the wallet;
- sum_r - is the amount required during the transaction the bank withdrawal;
- max-meter - is the value of a single limit on bank withdrawals (to reduce damage when losing smartcard and PIN guess finder);
- sum_p - the amount that is payable in the transaction payment (and it is limited for reasons of reducing the damage in case of loss or theft smartcards);
- date - is the date of the transaction;
- C, V, B - identifiers purchaser (a smartcard his site), the seller and, respectively, of the bank.

Once the buyer loads his "wallet" of smartcard (1.A) and withdraw a number of blank checks from the bank (1b) can make purchases of goods or services that will be paid through the card's (2). The seller, after obtaining a completed electronic check from the buyer (2), shall deposit in the bank (3) to be credit your account. Bank between seller and buyer then carries out a transaction clearing, resulting in debiting the buyer.

7.1. Protocol withdrawal of electronic money

In this protocol, withdraw electronic money from the bank to charge a particular smartcard. The process is in two stages: the withdrawal of an amount of money and of checks from the bank account withdrawal.

1. a. Withdrawal of money from the account - At this stage the bank and the buyer executes a mutual authentication process, after which the meter's smartcard (the buyer) is transfixed corresponding amount withdrawn. Exchange protocol consists of 3 signatures (using Schnorr's scheme):

❖ The first signature is executed by the bank to persuade smartcard that dialogues with the bank, whose client is and who is only allowed to "see" the contents of electronic wallet. To prevent an attack by replay old messages and recorded, every new Protocol smartcard choose a *random value*, which is included in the signature.

❖ A second signature is executed by the smartcard, for identification to the front of the bank and to provide the correct information (genuine) on the value meter. In this case, the replay attack is avoided by including the message signed earlier part of the bank's signature. Together with signature smartcard specifies the number of checks (no) that wants to draw in what was the second phase of the protocol of withdrawal. It also will identify C, information that will allow the bank to draw from its database to the public key of the smartcard.

❖ The third signature is executed also by the bank. Thereby authorizing the smartcard operating system's meter to alter the amount requested. To avoid a replay attack, the bank signed message includes a signature component of the previous smartcard community. The entities involved are:

The buyer (through its smart card), denoted C

holding:

- Secret key – public key pair (D_C , E_C) used by the smartcard;
- BC bank ‘s public key (banca lui C), E_{BC}*;*

knows:

- counter - current counter value of the wallet;
- nr - the number of checks that are extracted;
- sum_r - amount requested (typed) by the buyer.

Buyer’s bank, notedBC

*behold*s:

- public key of the smartcard's buyer, E_C*;*
- secret key – public key pair (D_{BC} , E_{BC}) used by the bank;

knows:

- max_contor - the maximum allowable for the counter wallet;
- count_value (C) – every buyer’s card (smardcard).

Next, this protocol is detailed.

Step 1. Buyer’s smartcard-ul identifies the bank

Smartcard buyer chooses every transaction, a whole different random value m, which transmits to the bank:

$$\mathbf{C \text{ ---> } BC: [} m \mathbf{]}$$

The bank also choose, for each transaction, a whole w and calculates message's signature consists of two random values concatenated:

$$\mathbf{S=D_{BC}\,(m,w)}$$

That sends to the buyer's card:

$$\mathbf{BC \text{ ---> } C : [w,S]}$$

Buyer's smartcard identifies the bank signature with its public key by checking the value of m generated and received w:

$$\mathbf{m,w =? E_{BC}\,(S) =? E_{BC}\,(\,D_{BC}\,(m,w))}$$

Step 2. Authentication buyer to the bank

Smartcard buyer randomize every w transaction and calculates its own signature to the value on the card counter:

$$\mathbf{S= D_C\,(counter,nr,\ sum\_r,\ m,w)}$$

sends that to the bank:

$$\mathbf{C \text{ ---> } BC: [\ C,\ counter,\ nr,\ \ sum\_r,S]}$$

Bank seeks its database value public key of C, E-commerce, and authenticates with the buyer's signature:

$$\mathbf{counter,nr,\ sum\_r\ ,m,w =?\ E\text{-}commerce\ (S)}$$

then checking the legality of the withdrawal amount from the account:

$$\mathbf{counter + sum\_r\ ?<=\ max\_counter}$$

$$\mathbf{value\_account\ (C)\ ?>=\ sum\_r}$$

$$\mathbf{value\_account\ (C)\ -=\ value\_account\ (C)\ -\ sum\_r}$$

Step 3. Bank signs the amount requested for withdrawal

Bank randomize every w transaction and validates payment calculating signature to

$$\mathbf{S= D_{BC}\,(sum\_r,w)}$$

sends that card:

$$\mathbf{BC \text{ ---> } C : [\ sum\_r,\ S\ ]}$$

Smartcard buyer checks the payment:

$$\mathbf{sum\_r\ ,\ w =?\ E_{BC}\,(S)}$$

If the test is OK, it will increase the meter card:

$$\mathbf{counter=counter\ +\ sum\_r}$$

1.b Withdrawal blank checks from the bank - At this stage, after incrementing counter made of smartcard purchaser withdraw from the bank a number of blank checks (blanks). It's like a smartcard would withdraw "receipt book" containing several checks. In fact many checks retire until you've regained the maximum number smartcard, replacing checks

consumed in previous payments. The idea of the protocol is to obtain a signature from the bank, with the key to the secret DBC, the public key of each ECEC each blank check:

$$\textbf{Blank\_check = [} D_{BC} \textbf{ (E-commerce } _{ec}\textbf{, C)]}$$

It should be noted that the public and secret key pair (ECEC DCec) are different for each check. Also, each signature using DBC, the secret key of the buyer's bank. It details the withdrawal phase of the protocol, which is repeated for each blank check to banks

- **Buyer** (Smartcard), noted C *holds* **bank's public key** E_{BC}
- **Buyer's bank,** noted BC *holds* **secret key – public key used by the bank: (**D_{BC} **,** E_{BC}**)**

Step 1. Buyer's smartcard ECEC calculated public key of the check - Choose a random value to each transaction and calculated according to this public key ECEC of the check, the bank and then sends that DCec secret key, which it conceals. The public key, together with the identity card is sent to the bank:

$$\textbf{C ---> BC : [C , } E_{Check} \textbf{]}$$

Pasul 2. Bank signs the check's public key

$$D_{BC} \textbf{ (} E_{Check} \textbf{ , C)}$$

Pasul 3. The bank sends the check blank, signed, back to smartcard

$$\textbf{BC ---> S : [Blank\_check = [} D_{BC} \textbf{ (} E_{Check} \textbf{ , C)]]}$$

Pasul 4. Smartcard buyer checks the validity of the check with the public key of the bank EBC

$$E_{Check} \textbf{ , C =? } E_{BC} \textbf{ (Blank\_check)}$$

and then stores the blank check.

7.2. Protocol for electronic money payment

In this protocol services or goods are paid with electronic money. It was seen that a check Blank_check is a public key certified by the bank, different for each check, the key may be associated with the buyer's identity secret key C. correspondent DChek is used for smartcards (on behalf of the buyer) for signature message that is payment transaction. The seller, the buyer has purchased a good or a service, in this transaction receives two signatures:

- ❖ public key certificate of the check, representing the bank's public key signature E_{Check} ;
- ❖ smartcard's signature on the message payment using a secret key D_{Check}.

These two signatures make up what we call a Complete Cheque, subsequently forwarded the seller's bank for payment with cash. Bank seller will check the validity of the two signatures determined whether or not the check has coverage.

The buyer (SmartCard), has stored*:*

denoted C

the blank Blank_check = [D_{BC} **(** E_{Check} **, C)]**

and *calculates:*

Public Key of E_{Check} **on the DCec secret key, stored in the card**

Seller, noted V

beholds:

sum_p - amount requested for payment

E_{BC} - public key of the buyer's bank.

Step 1. Buyer's smartcard calculates E_{Check} public key

Step 2. Smartcard buyer sends the seller, for authentication, a blank check

C ---> V : blank_check = [D_{BC} (E-commerce $_{ec}$, C)]

Step 3. The seller shall verify the authenticity of the check to his bank using public key and calculating public key of the E_{Check}

E_{Check} , C =? E_{BC} (Blank_check)

Step 4. The seller calculates and sends the transaction payment specification

Vendor's computer builds payment specification by linking the following information:

specification = sum_p II data II C II V

and sends it back to the buyer:

V --->C : [specification]

Step 5. Buyer's smartcard checks the possibility of payment:

sum_p ?<= counter

iar apoi, dacă inegalitatea este satisfăcută, decrementează contorul de bani:

counter = counter - sum_p

Step 6. Buyer's smartcard specification complete and sign the check payment using a secret key D_{Cec}. Then, the check is sent back to the seller:

C ---> V : [Completed_check = [D_{BC} (E_{Check} , C) , D_{Check} (E_{Check} , a, specification)]]

As shown, the check completed contains the bank's authentication of the public key and the signature on the card's payment specification.

Step 7. The seller verifies the signature of payment, obtaining specification in clear

a, specification = E_{Check} (D_{Check} (E_{Check} ,a, specification))

To prevent a person to deposit and cash checks that do not belong to himself, in the payment transaction also includes identity of the seller, C. To prevent attacks by replay old messages, the message signed by smartcard include a random number a.

In conclusion, a payment is as follows. Smartcard is inserted into the POS terminal vendor (actually a computer) that types sum payment sum_p. If the buyer agrees to this amount, it will generate an acknowledgment, then the message sent by POS announces smartcard that can trigger the payment transaction. Smartcard read from memory to a blank check, obtained by protocol and reconstructs the public key E_{Check} withdrawal of the check. Next, send your check smartcard C (blank) to the seller, because it would show authenticity. In the event that the verification is passed, the seller sends specification of payment transaction, including payment amount (sum-p), date, identity of the buyer and seller C V. All of this message is signed with the secret key of the check D_{Check}

3. Protocol for submission of completed checks

Under this protocol, the seller gets into account the amount for which the check was completed by the card purchaser. The seller starts the protocol by sending its identity to the bank and what is called V Invoice_payment (transcript). It contains the identity of the buyer, completed the check received from the buyer and concatenated clear message:

Invoice_payment= a , sum_p , data , C , V , [Check_filled]

Bank seller out the same checks on the authenticity of filling and check that the seller. The bank also checks if the check has not been submitted previously, ie if there is no database in a transcript with the same values, specification. If all these checks are successful, the seller's account is credited with the amount written on the check-p. Detailing this protocol to do next.

The seller, noted V

Holds memorised:

- filled check:

$$D_B (E_{Check}) ,(D_{Check} (E_{Check} , a, specification))$$

- invoice:

a , sum_p , date , C , V , [filled_check]

Bank seller, denoted BV

holds:

- public key - secret key pair used by the bank (E_{BV} , D_{BV})

Public Key EBC buyer's bank

Step 1. The seller send bank bill payment and check containing completed

V ---> BV : [a , sum_p , date , C , V , [filled_check]

Step 2. If the bank of the seller and buyer is the same:

The check's authenticity:

Public Key check is calculated in two ways: using the public key of the buyer's bank and then decrypted key:

$$E_{Check1} = E_{BC} (D_{BC} (E_{Check1} , C)) \text{ şi } E_{Cec2} = E_{Check} (D_{Check} (E_{Check} , a, specification))$$

- check whether the two are identical calculated

$$E_{Cec1} =? E_{Cec2}$$

Fairness check, comparing the data transmitted in the clear with the buyer signed:

$$sum\_p , date , C , V =? E_{Check} (D_{Check} (E_{Check} , a, specification))$$

Double deposit:

- searching the database if there is another transcript with the same value, specification.

- Otherwise, the seller's account is credited with sum_p.

Double spending: - searching if the database at the client C, there is another check with the same public key ECEC. If there is, the buyer made two payments with the same check. As a result the buyer's account is debited by the amount sum_p.

If the buyer and seller's banks are different, not through step 2 of the protocol and transaction clearing pass.

4. Clearing protocol

This protocol takes place between the buyer and the seller's bank, if they are different. It is transmitted by the buyer's bank for payment transcript, for it to debit the account of the buyer. The protocol is similar to the deposit previously.

Bank seller, denoted BV, has saved:

- Public key pair secret key used by the bank (EBV DBV)

- Public Key EBC buyer's bank

- Check completed:- transcriptul (factura) de plată ce se va transmite:

a , sum_p , date , C , V , [Check_completed]

Buyer's bank, noted BC holds:

- Public key - secret key pair used by the bank (CBC, DBC)

- Public Key Bank EBV seller

Step 1. Banca vânzătorului trimite băncii cumpărătorului factura plăţii, care conţine şi cecul completat Seller's bank sends the buyer's bank the bill payment, which also contains complete check

BV ---> BC : [a , sum_p , date , C , V , BV, [Check_completed]

Step 2. Buyer's banck checks

The authenticity of the check:

- Calculate the check public key using the public key of the bank seller and then decrypted key

$$E_{Check1} = E_{BC} (D_{BC} (E_{Check} , C)) \text{ şi } E_{Check2} = E_{Check1} (D_{Check} (E_{Check} , a, \text{specification}))$$

Check if the two identical keys are calculated

$$E_{Check1} =? E_{Check2}$$

Fairness check, comparing the data transmitted in the clear with the buyer signed:

$$\text{sum\_p , date , C , V} =? E_{Check} (D_{Check} (E_{Check} , a, \text{specification}))$$

Double submission:

- Searching the database if there is another transcript with the same value, specification.

- The seller's account is credited with sum_p.

Double Spending: if searching the database, the client C, there is another check for the same public key E_{Cec}. If there is, the buyer made two payments with the same check. As a result, the buyer's account is debited by the amount sum_p.

Of course the protocols that underlie the functioning of an electronic payment system based on electronic wallet, implemented in a smart card (smartcard) seem complicated their goal simply transfer money from one person to another, payments for goods or services. But we wanted to make this presentation in order to underline the complexity of cryptographic methods used, which only provides much needed security of such protocols. Where more and

more commercial transactions begin to be carried out through Internet, electronic payment systems are a vital component of the paradigm called generic e-commerce.

Bibliography

[1] ISO 7498-2: *"*Open Systems Interconnection - Security Architecture*"* (CCITT X.800);
[2] ITSEC (1991): Information TechnologySecurity Evaluation Criteria; Provisional Harmonized Criteria. June, version 1.2*",* Office for Official Publications of the European Communities, Luxembourg;
[3] Pîrcălab Alin Titus – Revista Informatica Economica nr.31/2007 – "Criptografie Clasică Precomputaţională"*;*
[4] Kotler, PH., (1999) – „Principiile Marketingului", Editura Teora, Bucuresti;
[5] Manole, V., Stoian, M., (2004) – „Marketing", Editura ASE, Bucuresti;
[6] Manolescu Gheorghe (1997) – „Moneda si ipostazele ei", Editura Economică, Bucuresti;
[7] Patriciu V.V., Ene-Pietrosanu, M., (2001) – „Securitatea Comertului Electronic", Ed.All, Bucuresti;
[8] Popescu Radu, Tudorancea Cristian, Berbec Florin (1998) – „Cardul instrument modern de plată", Editura Tribuna Economica;
[9] Pircalab Alin Titus, (2015) – „Sisteme de Gestiune a Bazelor de Date – Aplicatii Microsoft Acces", Editura „Vasile Goldis" University Press, Arad, ISBN 978-973-664-758-1.
[10] Pircalab Alin Titus (2008) – „Protectia bazelor de date" – Teza de doctorat – Academia de Studii Economice, Bucuresti;
[11] Sabau Gh., Nicolescu Ovidiu (coordonator) ş.a. (2001) – „Sistemul informational managerial al organizatiei", Ed.Economica, Bucuresti, ISBN 973 - 973 – 590 – 524 – 8, pag.488;
[12] Sabau Gh., Ionita C., Avram V., Carstea C. (1998) – „Baze de date relaţionale. Aplicatii in turism". Ed.CISON, Bucuresti, 338 pagini, ISBN 973-96370-2-7;
[13] Sabau Gh., Avram V. (1994) – „Sisteme informatice în management". Ed. Metropol, Bucuresti, 275 de pagini, ISBN 973-562-024-3;
[14] Sabau Gh., Avram V., Sotir Al., s.a. (1989) – „Practica bazelor de date", vol.1, Editura tehnica, Bucuresti, pag.496, ISBN 973-31-0020-X şi ISBN 973-31-0021-8;
[15] Sabau Gh., Avram V., Sotir Al., ş.a.(1989) – „Practica bazelor de date", volumul 2, Editura tehnica, Bucureşti, pag.272 ISBN 973-31-0020-X şi ISBN 973-31-0022-6;
[16] Sabau Gh., Avram V., (1998) – „Sisteme informatice si baze de date". Ed. OSCAR-PRINT, Bucuresti, ISBN 973-9264-29-8, 371 de pagini;
[17] Sabau Gh., Lungu I., Surcel Tr., Sofronie Gh., ş.a.(1993) – „Sisteme informatice si baze de date". Litografia A.S.E., Bucuresti.

IMPLEMENTING TARGET COSTS METHOD IN ROMANIAN HIGHER EDUCATION INSTITUTIONS

Liliana PASCHIA, PhD Student
"1 Decembrie 1918" University from Alba Iulia and Hyperion University from Bucharest
paschialiliana@gmail.com

Abstract: *Target Cost Method (TC) is using price and profit concepts. That is the reason it may be wrong consider as a technique for product or service price calculation. Actually, it is a cost management method which differentiates product technologies or processes that generate an acceptable profit to a certain activity level. Target Cost Method could be considering as an aggressive one. It makes possible to identify unprofitable operational activities of the economic entities as well as inefficient processes that are otherwise hidden within the use of traditional methods of managerial accounting. As a result of TC application there is a significant difference between initial costs and the target costs. This is natural situation considering the target costs are established in the design phase of product or service. We are going to prove this issue in the context of the Romanian higher education system.*

Keywords: Target Cost Method, higher education, value engineering, life cycle of a product or a service, cost management, managerial accounting, competitive environment, value chain.

JEL Classification: I23, M41

1. GENERAL CONSIDERATIONS REGARDING TARGET COSTS METHOD

Formed in the 1960s in Japan, target cost method has its origins in American value engineering concept created by General Electric Company during the Second World War. This company was faced with a crisis in terms of production components purchase and tried to reconfigure their products with fewer component parts, but more competitive. Japanese companies had exploited this idea and expanded concepts of value engineering method to a new method named target costs (Tani T., Okano H., Shimizu N., 1994, p.67-81). In the 1990s more than 80 percent of Japanese industry was using CT method with remarkable results in terms of profitability (Kato J., 1993, p.347).

The basic idea of the TC method refers to quality goods or services provision having a competitive price and lower costs that allow a reasonable investment return. This can be achieved by reducing production factors costs along the life cycle of a product or service, especially in planning, design and development stage.

The best definition of TC method is provided by Consortium for Advanced Management – International. According to this institution, TC method represents a profit planning and cost management system based on price, customer oriented and it has an advanced functionality (CAM-I, 1999).

The accounting literature offers many other definitions of TC method. I will make a short brief in the next paragraphs:

- A market-oriented managerial accounting technique that aims to increase profitability and productivity (Al-Thahabi J., Al-Ghabban, 2007, p.13);
- A strategic approach of managerial accounting used in products or services cost management (Ewert E., Emst C., 1999, p.23-49);
- Accounting method used for profits forecasting through the target costs inclusion in the products or services development phase (Cooper R., Slagmuder S., 2002, p.58);
- One of the most important managerial accounting tools that can be used in a competitive environment due to the main elements of competitiveness included, namely the price, quality, cost and creativity (Al-Suboo Sanad Sabe, 2000, p.25).

The fundamental equation of TC method is given by the following relation:

$$Target\ Cost = Target\ Price - Target\ Profit$$

At the first glance things may seem simple; but the TC method application is complex and involves many dimensions. This can be proved by analysing the previous equation and the factors with a significant impact on its terms.

Target price of a product or service offered on the market is influenced by the market's features but also of the buyers and competitors characteristics.

Target profit is a very sensitive value which must be determined in relation with economic entity overall strategy, its medium and long term objectives and shareholders expectations.

The difference between target price and target profit is the value which seeks to be reached by giving special attention to the product or service design as well as to production processes materials and continuous activities development in the product or service life stages.

Functionally, target price is depending on competition and clients.

$$Target\ price = f\ (competition, clients)$$

The price for old existing products, but which are intended to be improved is calculated through an adjustment of the current price in relation with the product or service new features, the price witch buyers are willing to pay for the new attributes and the value of similar products. For the new products or services the process is more complex. There are no old market prices. It became necessary to initiate advanced studies and marketing research.

Target profit must be determined according to various financial rates whose values are set to assure entity medium term profitability.

TC method approach is different from traditional method of price calculation. It takes care of total costs amount and desired profit. Traditional method tries to reduce costs if the market doesn't absorb the products and services on their offered price. So the two methods are totally opposite. A comparison of these methods is presented in table 1.

Table 1

TC method vs. traditional Cost-plus method

TC Method	Traditional Method
- Costs planning is based on a competitive market's features; - Price determines costs; - Product or service design stage is the base for costs decreasing; - Customers constrain cost reduction; - Cost management is made by an interdisciplinary team; - Suppliers are involved in the initial design stage; - Client ownership cost is minimized; - Costs planning use value chain.	- Costs planning is not based on market's features; - Costs determine prices; - Costs decreasing is based on minimize of losses and inefficiencies; - Costs decreasing is not depending on customers; - Accountants have the responsibility to reduce costs; - Suppliers are involved after the design stage; - The initial price is minimized; - Costs planning don't use value chain.

Source: Ansari S., Bell J., Swenson D. (2006), p. 20-50

2. PRINCIPLES OF TARGET COSTS METHOD

TC method is based on some key principles established by CAM-I. We make a short brief in the following paragraphs.

a) The target or affordable costs are calculated starting from the product or service market price. This value depends on competition intensity, supply and demand dimension or some other factors which influence product or service market. It must be identify an equilibrium price between economic entity needs and specific industry features.

b) Focus on the customer is the second principle. The product or service quality and performance are required by clients. All production process decisions must incorporate them.

c) TC method is applied in the design phase of product or service. Costs' changes or adjustments are made before manufacturing phase which leads to lower costs and reduce the time to launch the product on the market.

d) TC method implies mixt and interdisciplinary teams which are responsible for all life circle stages of a product or a service.

e) TC method uses the whole chain value. It implies suppliers, distributors and customers.

f) The method is focused on costs implied by all product or service life circle stages. It tries to diminish costs in benefit of whole entity but also in benefit of the customers.

3. PRIMARY OBJECTIVES OF TARGET COSTS METHOD

The TC method primary objectives are the following:

- To achieve a satisfactory marginal profit for economic entity by offering a product or service to a competitive price; this ensures achievement of the entity strategic goals;

- To offer competitive products or services in terms of quality, price, time, customers satisfaction degree and clients' acquisition potential (Robinson F., 1999, p. 92);

- To monitor life circles stages and after – sale service (Lee J.Y., 1994, p.69);
- To reduce production factors' costs;
- To record the target profit;
- To achieve the economic entities long-term goals.

TC method implies a cost management system from the first stages of product or service design. This system is then applied to the whole life circle of the product and actively implies all the value chain cells.

4. STEPS TO IMPLEMENT TARGET COSTS METHOD

To implement TC method one should start from a clear pursued aim. Also it must delimitate the intensity of track changes. The method is not applied only to goods or services; it may be applied for a function or a process, also for multiple simultaneously processes. In this way, it is clarified the area for changes to be applied, such as processes redefining, re-engineering, business organizational transformation etc.

A very important element is changing acceptance degree by entity members because of the known difficulties created by human resistance to change.

Developing a deployment plan is another important step in the design of the TC method. Such plan should contain method implementation specific objectives as well as a communication plan in order to inform all involved members about the project results.

Teams are another essential element in the success of TC method. These teams require including of marketing, accounting, production and quality control experts.

Implementing members' team must have specific trainings. They must understand the method features in order to successfully implement it.

5. SPECIFIC TOOLS OF TARGET COSTS METHOD

The specific TC tools should be used to archive the most of production process activities (Ansari S., Bell J., Swenson D., 2006, p.20-50).

First of all, it is very important to analyse the customer's needs. It is necessary to identify the value which customers give to the product or service in order to establish the monetary value they are going to pay for these products or services acquisitions.

Target cost decomposition is another important instrument aimed to break down the cost categories on relevant based of product or service features and which could serve as a base for cost allocation target.

Product circle life costs forecasting is another activity which implies some specific tools. It is necessary to make a costs distribution on different life circle stages of product or service.

Exchange costs value analyses is make by using product or service features value and their functionality.

Another important activity is represented by costs control and monitoring. It is used to make costs forecasting in the design stage of product or service. This activity's absence would not permit to assess the target costs archive progress.

The most important tools used to realize the activities mentioned above are shown in the table 2.

Table 2

TC tools

Steps	Methods
The analyse of customer's needs	Quality function Deployment
Target cost decomposition	Value Index
Costs forecasting	Cost tables, analogies, prototypes, costs' parametric estimates
Exchange costs value analyses	Value engineering
Costs control and monitoring	Tracking target costs for performance estimate and forecast, migration costs

Sourse: own vision

6. HOW TO IMPLEMENT TARGET COSTS METHOD IN ROMANIAN UNIVERSITIES

The main activities of higher education institutions are relating to teaching carried out within the study programs and to conduct research projects. The both activities imply project management which is the main instrument for planning and control improvement as for the efficiency and effectiveness evaluation. The main purpose of project management is to achieve the performance criteria laid down in the context of the default costs and time constraints.

TC method should be applied for strong and growing competition sectors, or for goods or services which have a short life cycle. Using TC method should help the entity to consolidate its market position and adapt to market changes following the demand and supply dynamic.

First step refers to service design, in our case a study program. This stage of TC method focuses on study program design, its main features and the way it is aimed to achieve the specific market or customer's needs.

In the second stage it defines and optimises the target costs.

Target costs definition implies many approaches.

Target costs defining can be approached from several perspectives: focus on the University's existing costs, costs approach competitors or potential based on market accepted price. Regardless of the chosen approach, the costs must be set out in such a way that to sustain an optimum definition of the program of study that satisfies the market requirements in terms of quality of service, and to ensure a competitive cost.

The approach we use is based on the price that can be obtained on the market (Market into Company). We consider this approach within the relevant sector education because the method presents a high degree of relevance in relation to the competitive market for the specific sector.

Target costing is done within this method by reporting the actual requirements of the target market, the costs are defined as the difference between the market fixed price and targeted to be profit obtained by the University. The result of this difference is the market accepted or permitted cost, which can be interpreted as the cost of a service which has been designed according to the existing capabilities of the entity or process defined above.

In order to optimize costs, the target cost of the study program has a value between costs affordable and standard costs. One of the disadvantages of this approach to target costs is that it ensures consistency and transparency, because the way in which the difference between the target costs and the costs to be acceptable is treated is at the discretion of the Manager-the expected profit margin may diminish or price may be increased. When acceptable costs cannot be achieved, it is necessary to amend the cost target.

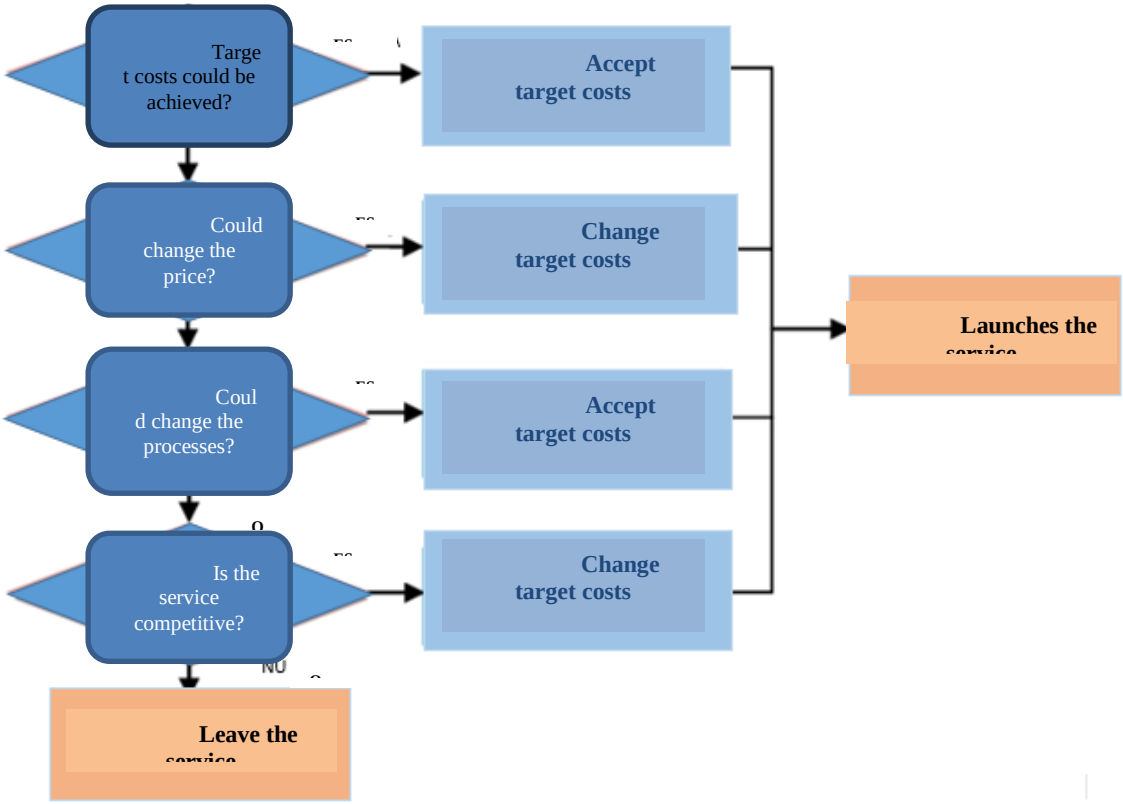


Figure 1. – Target costs flow optimization processes
Source: Bernal, L. et al. (2009) Target costing for services, Small Enterprise promotion and traning, Univ. Leipzig, p. 7

Classification of target costs involves differentiating their functions of your product/service and/or its components. Most of the time components are based on the classification of costs because they can generate potential benefits for clients. Within the services components are associated with the process. The consequence of this classification is the Division of service elements that generate costs, their allocation and thus simplified and more relevant. The amount of the fixed costs depends on the relevance of each process in light of its usefulness or value for customers. To be able to calculate these costs is needed to define the activities that comprise the service based on the analysis of the market and target customers. In the end, it is necessary to establish and evaluate the usefulness of the service based on customer satisfaction questionnaires. The better defined the value of benefits for customers the better

will be the maximum estimate of costs of processes or activities of the components of the service.

This step is necessary to determine current and future costs for comparing target costs with standard costs. To this end, an important analysis tool is the array functions-identifying how processes contribute to defining the specific activities of the service.

Making comparisons between the target costs and the standard costs can be done using the target costs index:

TC index = percentage target costs/ percentage standard costs

A value greater than 1 to this index signifies the target cost higher than the standard costs, which may be a warning signal in terms of improving the quality of service. The index value is less than 1 means the value of the target costs less than the standard costs which may be interpreted by the fact that the estimate for the clients is less than the amount of the costs being required to reduce those costs.

The last phase of implementation of the method consists in uniting the efforts of TC to achieve the original objectives set out, in order to design and market launch of service and balance in relation to the cost of quality.

In the framework of the development of the service, the target must satisfy the requirements and needs of customers, and reaching the target costs takes place within an iterative process in which revise the processes of service components to achieve the desired target cost values. Once achieved, these costs become new target standard costs, which should be monitored in the course of providing the service, the ultimate goal being their mitigation potential.

Another important element is the continued monitoring of the quality of services offered, as well as costs associated with quality.

7. CONCLUSIONS

TC method implies a cost management system from the first stages of product or service design. This system is then applied to the whole life circle of the product and actively implies all the value chain cells.

The main activities of higher education institutions are relating to teaching carried out within the study programs and to conduct research projects. The both activities imply project management which is the main instrument for planning and control improvement as for the efficiency and effectiveness evaluation. The main purpose of project management is to achieve the performance criteria laid down in the context of the default costs and time constraints. TC method should be applied for strong and growing competition sectors, or for goods or services which have a short life cycle. Using TC method should help the entity to consolidate its market position and adapt to market changes following the demand and supply dynamic.

REFERENCES

[1] Al-Thahabi J., Al-Ghabban, (2007), Target price as the basis for achieving target cost technique for economic units operating in the modern business environment, Journal of Economic and Administrative Sciences, 48(13)

[2] Al-Suboo, Sanad Sabe, (2000), Use of the ABC system and ABM methods for decision-making and evaluation the organization's performance, theoretical and practical study in the Middle East Complex for heavy Engineering and Electronics. Doctoral thesis in Accounting, Management and Economics Faculty, University of Baghdad

[3] Ansari S., Bell J., Swenson D. (2006), A template for implementing Target Costing,Cost Management, Sept/Oct, no. 20

[4] Bernal L. et al., (2009), Target costing for services, Small Enterprise promotion and traning, Leipzig

[5] Cooper R., Slagmuder S., (2002), Target costing from New Product Development: Product level Target costing, Journal of Cost Management

[6] Ewert E., Emst C., (1999), Target costing, co-ordination and strategic cost management, European Accounting Review, 8(1), http://dx.doi.org/10.1080/096381899336131

[7] Kato J. (1993), Taget Costing Support Systems: Lessons from Leading Japanese Companies, Management Accounting Research 4

[8] Lee J. Y. (1994), Use Target costing to improve your bottom-line, The CPA Journal, 64(1), 68-71

[9] Robinson F. (1999), Practical Guide to Target costing - Processes & Techniques, London, UK: Kogan Page Limited

[10] Tani T., Okano H., Shimizu N. et al. (1994), Target Cost Management in Japanese Companies, Management Accounting Research 5

[11] *** CAM-I (1999), Target Costing Best Practices, Bedford, Texas: Consortium for Advanced Management International

CIRCUMVENTION OF DUTIES AND TAXES BY RESORTING TO NON-RESIDENT COMPANIES AS WAY OF DISGUISING AN ACT OF FRAUD

Av. Geraldina Terezia VAJDA, PhD Student
"1 Decembrie 1918" University from Alba Iulia
geraldinavajda@yahoo.com

Abstract: *For a full and proper comprehension of the phenomenon of tax evasion at community or international level, it is necessary that the theoretical elements broached and detailed at large by the specialized literature by illustrious theoreticians, - to be practically applied to specific situation which could finally lead to the improvement of the practitioners in order to prevent and to fight this phenomenon harming the global economic environment. The studies performed to this end include, first of all, the analysis of the fraud method and mechanism by tax havens, by disguising an act of fraud under the umbrella of an apparent legalism, by combining the actions of tax evasion with other offences out of which the most frequent is smuggling, or by tactful avoidance of law concerning the public procurement from structural funds coming from the budget of the European Union.*

1. INTRODUCTION

This case study *meets in one single paper several methods to fraud the tax legislation, being a real case*, met by the author in her professional practice, when upon the request of a litigant (client) in order to ensure his defense, I did some deep research in order to establish, first of all, the legal regime applicable to the documents concluded by the opposing party and then, in order to choose the most proper defense of my client's interest.

It has to be mentioned the fact that on the date when taking the case and implicitly on the date when the author started to study the topic, she did not realize that she had to deal with a complex mechanism of tax evasion, a situation which became clearer as the study proposed advanced.

The cause resides in the conclusion of a service contract, hereinafter referred to as Contract of mobile data subscription, concluded between the client and Orange România SA, for a certain price and for a certain minimum contractual period of time.

As due to different reasons, the client did not pay the price agreed for a longer period of time, the services provided were ceased and subsequently, the client was sued for the payment of the outstanding amounts owed, as well as for the damages settled by the criminal clause inserted in the content of the contract, that being the moment when he requested specialized assistance in order to formulate a proper defense.

However, the action lodged to the court was not formulated on his name by the service provider – Orange România SA, but by another foreign legal entity, called SveaEkonomiCyprus Limited, a company established and organized in compliance with the legislation of Cyprus, which formulates the action on its own behalf (so not as representative of Orange România SA), being represented as manager of assets (a name used by action) by

SC Creditexpress Financial Services SRL, a Romanian legal entity and which is also represented by the company's manager, Janos Lepedus.

This fact is justifed by the fact that a **contract of claims assignment** was signed by Orange România SA and SveaEkonomiCyprus Limited, a contract by which there were transferred the rights and obligations resulted from several contracts of mobile data subscription, among which the contract concluded with the client.

Furthermore, it is noted that an agency contract was signed between SveaEkonomiCyprus Limited and SC Creditexpress Financial Services SRL, by means of which the latter *was authorized to collect the claims,* and that for this purpose it is entitled to carry out all the legal necessary formalities.

As evidence, there were submitted to the case file the contract of mobile data subscription concluded between the client and Orange România SA, the framework contract of claims assignment between Orange România SA and SveaEkonomiCyprus Limited, an authentic power of attorney by which SveaEkonomiCyprus Limited authorizes SC Creditexpress Financial Services SRL for representation in the procedure of debt recovery, as well as Certificate of good standing issued by the Trade Register Office attached to Bucharest County Court concerning SC Creditexpress Financial Services SRL.

From the content of the Certificate of good standing issued by the Trade Register Office attached to Bucharest County Court concerning SC Creditexpress Financial Services SRL, it appears that Ceiadriatic Limited, with a rate of 99.07% (a company of Cypriot nationality, registered office situated in Cyprus) and Credit Express Group BV, with a rate of 0.93% (a company of a Dutch nationality, registered office located in Netherlands) are associates. The main activity of SC Creditexpress Financial Services SRL consists of – Activities of collection agencies and credit bureaus (offices) (NACE code 8291), at the same time other secondary activities are registered.

2) FACTORING

Studying the specialized doctrine and practice concerning the sale of claims, it is obvious that it is unanimously accepted the definition according to which the factoring operation represents the sale of credits to a company, at a reduced price, to a factor assuming then the credit risk of the debtors disposed.

Another definition given is the one according to which **Factoring** is the contract concluded between a party, named *adherent* and a bank company or a specialized financial institution, named *factor*, by which the latter ensures the financing, the pursuit of claims and the preservation against the credit risks, while the adherent gives up to the factor, as a sale, the claims arisen from the sale of goods or supply of services for third parties.

Generally, the ***factoring operation is perceived as a sale of claims***, where the risk related to the payment of the claims to the debtors is entirely transferred to the factor, while the factor has no right of recourse in relation to the transferor if the payments are not made by the debtors.

In compliance with the provisions set out by art. 18 (1) letter b) of the Government Emergency Ordinance no. 99/2006 concerning the credit institutions and capital adequacy, with its subsequent amendments and completions – ***the factoring activity with or without recourse, is qualified as being a lending activity and thus, it is subject to the approval of the National Bank of Romania, under the conditions of the law.***

Analyzing the official Internet page of the National Bank of Romania, one notices there is a special section for the companies authorized to carry out factoring-type lending activities, but neither SC Creditexpress Financial Services SRL, nor SveaEkonomiCyprus were registered on this list.

Under these conditions, it became more than clear that even though SveaEkonomiCyprus Limited represented by SC Creditexpress Financial Services SRL ***carries out factoring-type lending activities, none of these entities is authorized to this end.***

If we assumed that SveaEkonomiCyprus Limited was also authorized to carry out lending/factoring activities in Cyprus, the country where its main registered office is recorded, ***it also had the obligation to notify the National Bank of Romania concerning the development of the lending activity on the Romanian territory***, pursuant to the provisions stipulated by article 18 letter b) – 1) of the Government Emergency Ordinance no. 99/2006 concerning the credit institutions and the capital adequacy, but according to the checks performed by the author, this notice was never submitted.

There has to be mentioned that the analysis of the official Internet page of the National Bank of Romania provides fair, complete and permanently updated information, based on the principle of transparency and prudential surveillance that was highlighted both by the Committee of Basel for the banking supervision and by the provisions of the European specific legislation (*Directive 2013/36/EU on acces to the activity of credit institutions and the prudential supervision of credit institutions and investment firms amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC*). Article 143 (1) of Directive 2013/36/EU stipulates the explicit publication requirements for thesupervisory authorities from the Member States in order to ensure the uniform character and the comparability of the information published between the countries of the European Union.

For this purpose, the ***European Banking Authority (EBA) developed a standard web structure of the publication requirements*** addressed to the supervisory authorities from the Member States and elaborated the technical standards for the implementation of the publication requirements provided by article 143 (1), establishing the *format, the structure, the content and the date of the annual publication*. The mock-ups with information that are found in this section need to be identically implemented on the web page of each supervisory authority. The Internet page of EBA is an electronic register of the centralized data allowing to quickly compare all relevant pieces of information, while the Internet pages of the supervisory authorities shall supply exhaustive and detailed data, according to the requirements provided by Directive 2013/36/EU.

As the provisions of the special law (Government Emergency Ordinance no. 99/2006 on the credit institutions and capital adequacy) are restrictive, namely the development of the factoring-type activity impose the fulfillment of certain rigorous conditions and which are checked when accredited by the National Bank of Romania, - SveaEkonomiCyprus Limited represented by SC Creditexpress Financial Services SRL preferred to choose in favour of the general provisions of law in the matter of the contract of claim assignment (art. 1566 – 1592 of Law no. 287/2009 on Civil Code), provisions which are more permissive and do not imply that a special permit be obtained in order to conclude such documents.

But, ***it is not allowed to opt in favor of a general law if there is a special law***, being construed not only as an abusive practice, but fundamentally an illegal one, therefore in the specific given care, SveaEkonomiCyprus Limited represented by SC Creditexpress Financial Services SRL cannot defend on the grounds that according to the parties' agreement, the contract of claims assignment was concluded under the conditions set out by the Civil Code.

The High Court of Cassation and Justice also pronounced in this respect, declaring that the removal from the application of the general law whenever there exists a special provision in a given matter, does not have to be explicit, being understood, as it is a direct consequence of the ***specialiageneralibusderogant*** principle. As a result of this principle, it is not allowed the parties' agreement which imposes the application of the general law, removing from application the special and more restrictive provision, considering the limits instituted by the provisions set out by art. 5 of the Civil Code, where the freedom to contract parties may be exerted. In this case, the parties of a sale-purchase agreement concluded during the privatiosation procedure specified that the liability for eviction of the seller shall be entailed under the conditions of the common law – art. 1336 and the following of the Civil Code, and, in this case, the High Court decided that it is grounded the exception of action inadmissibility in establishing the liability for the eviction of the seller, due to the fact that, in this field, art. 32^4 of the Government Emergency Ordinance no. 88/1997 comprises a special regulation of this guarantee obligation. (Decision no. 962 of 12th March 2014 pronounced on appeal by Civil Section II of the High Court of Cassation and Justice, as the object consisted of claims).

Hence, we notice a first contravention of the law committed by SveaEkonomiCyprus Limited, which by concealing (hiding) the factoring activity actually performed, by the conclusion of a contract of claims assignment founded on the provisions of the Civil Code, avoided the rigors of the provisions laid down under the Government Emergency Ordinance no. 99/2006 regarding the credit institutions and capital adequacy, while by articles 10 and 11 it is specified that in order to carry out the activity in Romania, each credit institution has to hold a permit according to the present emergency ordinance, that the National Bank of Romania settles by regulations and notifies the European Commisssion upon the conditions when it may grant the permit and the documentation that need to accompany the request for the permit, but also the fact that the National Bank of Romania cannot grant the permit to a credit institution, if it does not possess distinct own funds or a level of the initial capital at least equal to the minimum level established by regulations, which cannot be lower than the equivalent in lei of Euro 5 million.

Under these conditions, a first aspect necessary to take into account in this study, is that SveaEkonomiCyprus Limited represented by SC Creditexpress Financial Services SRL, ***by frauding the law, carries out an illegal activity on the territory of Romania***, and which pursuant to the provisions of article 410 of the Government Emergency Ordinance no. 99/2006 on credit institutions and capital adequacy – ***represents an offence and it is punished with a prison sentence from 2 to 7 years***.

3) NON-RESIDENT COMPANY – ISSUE OF THE CORPORATE TAX OWED

In compliance with the provisions of the Fiscal Code – (Law no. 571/2003 regarding the Fiscal Code, in force on the date when it was analyzed, respectively the date when it was demanded that the client be compelled to pay the amounts specified by the action in 2015), article 115 (1) letter k) and article 116 (2) letter d) state that if a non-resident obtains income from services supplied in Romania, irrespective of their nature, the application of a tax rate of 16% is imposed (corporate tax), by withholding at source when the income payment and then transfer to the budget are made up to the 25th of the following month.

If the non-resident company submits a ***certificate of tax residence, there shall be applied the provisions of the Convention for the avoidance of double taxation signed between Romania and Cyprus*** (ratified by the Decree no. 261/1982, published in the Official Gazette of Romania no. 66/182, effective date 1st January 1983), a fact which shall make the income earned be subject of the regime provided by art.7 point 1 of this legal act. – The benefits of a

state enterprise of a contracting state are taxable only in that state, apart from the case when the enterprise performs activities in the other contracting state by a permanent establishment found in that state. If the enterprise carries out activities in this way, the benefits of the enterprise may be imposed in the other state, but only as long as they may be assigned to that permanent establishment.

With other words, if the non-resident company without a registered establishment in Romania, shall submit a certificate of tax residence issued by the authorities of Cyprus, then the *income earned in Roamania shall be taxed only in the state of residence*, i.e. Cyprus, while the income payer has no obligation.

Pursuant to the contract of claims assignment concluded between Orange România SA as assignor, on one hand, and SveaEkonomiCyprus Limited as assignor, on the other hand, it is shown that the object of the contract is represented by the assignment of claims represented by the amounts of money to be collected, respectively the payment obligations due and unfulfilled by the clients of the assignor together with their accessory liabilities, as they are pointed out by the service contracts concluded (point 1.1. of the contract).

Likewise, by the same contract it is underlined that the assignee engages himself to open a bank account for the collection of payments from debtors and to pass it on to them (point 8.4 of the contract), thus being able to collect directly the equivalent amount of the debits from the author's client.

As SveaEkonomiCyprus Limited shall cash in directly the debit owed by the client (resident physical person in Romania), without submitting a certificate of tax residence issued in the country of residence (Cyprus), it is crystal clear that this company shall cash in payments made in Romanai by circumventing the legal provisions stipulated by article 115 (1) letter k) and article 116 (2) letter d) of the Fiscal Code (old), his fact being a circumvention of the payment obligations of the corporate tax, being considered by the legislator an offence of ***tax evasion***.

Thus, the company SveaEkonomiCyprus Limited not residing in Romania, carries out activities of tax evasion under the umbrella of a contract of claims assignment concluded apparently observin the legal provisions, but under the conditions when the debit would not have been assigned but collected by Orange România SA, then the latter would have been obliged to pay in Romania the corporate tax.

4) COLLECTION OF CLAIMS WITH VAT INCLUDED

By the contract of claims assignment, the assignor Orange România SA assigns its rights to collect the claims represented by the amounts of money to cash in, respectively the payment obligations due and not fulfilled by the assignor's clients together with their accessory obligations, as they are specified by the service contracts concluded (point 1.1 of the contract).

To this end, the assignor Orange România SA shall communicate to the assignee SveaEkonomiCyprus Limited all supporting documents for the claims assigned (point 7.1 of the contract), stating further that the amounts paid in order to settle the claims assigned, after the moment of assignment, dire*ctly to the assignor's bank accounts, shall be transferred in the assignee's account* (point 7.5 of the contract), i.e. in other words, if the author's client shall pay the debit directly in the account of Orange România SA after the date when the claim assignment took place, then Orange România SA shall transfer the amount paid in the account of SveaEkonomiCyprus Limited.

By the action formulated and lodged to the court, SveaEkonomiCyprus Limited. demands that the author's client be compelled to pay the amounts owed by him based on the modile data supply service contract, respectively the invoices issued monthly and unpaid, the delay penalties and damages for the early termination of the contract (before the expiry date of the contract provided by the contract of 24 months).

For this purpose, it is necessary to take into consideration that ***the invoices issued monthly by the assignor Orange România SA include VAT,*** while by the contract of claims assignment, the whole claim is passed to SveaEkonomiCyprus Limited, i.e. even the amounts of money representing the VAT, a fact that results without doubt even from the action formulated, namely, it is demanded that the author's client be compelled to pay the entire amount, so even the amounts representing the VAT.

We also mention that in accordance with the provisions of art. 137 of the Fiscal Code (old) – the penalties and damages owed for the total or partial non-fulfilment of the contractual obligations, if they are perceived over the prices or fees negotiated, as well as the interest perceived after the delivery or supply date, for delayed payments, - do not pertain to the tax base for VAT, so in the given specific case, the amounts of money consisting in VAT are only those calculated for the amounts owed each month for the services provided.

In compliance with the provisions of art. 153 (4) of the Fiscal Code (old) – *a taxable person who is not established in Romania, nor registered for VAT purposes, shall apply for the registration for VAT purposes to the competent tax authorities for operations carried out on Romanian territory* which entitle the tax deduction, while according to the provisions of art. 153(6) of the Fiscal Code, a taxable person established in Community, but not in Romania, but who has the obligation to register for VAT purposes in Romania, may fulfil this obligation by appointing a ***tax representative***.

Still, the assignee company, SveaEkonomiCyprus Limited although carries out taxable operations on Romanian territory, being a taxable person pursuant to the provisions stipulated by art. 125 index 1 of the Fiscal Code, did not register for VAT purposes and did not appoint a tax representative in Romania.

By the fact that by the action lodged to the court it demands that the author's client be forced to pay the amounts of money representing the VAT, but also by the fact it assigned a claim containing VAT, - SveaEkonomiCyprus Limited is compelled to pay VAT in Romania (of course, after making the deductions permitted by the law), but instead of it, the ***amounts that will be recovered are directly wired in the account of this company without paying VAT in Romania***, consequently SveaEkonomiCyprus Limited avoids the payment of VAT by breaking a legal obligation, being thus met the conditions of committing the act of tax evasion.

5) CONCLUSIONS

After the author's client did not observe the contractual obligations concluded with Orange România SA, concerning the payment of the monthly invoices for the services provided, the contract was terminated earlier, being applied to him including delay penalties and damages.

Subsequently, a contract of claims assignment was concluded by Orange România SA and SveaEkonomiCyprus Limited, a contract by which there were transferred the rights and obligations arisen from several mobile data subscription contracts, among which the contract concluded with the client, the latter being sued for the whole amount owed.

The ***claim assignment is illegal*** under the aspect of not observing art. 18 (1) letter b) by the Government Emergency Ordinance no. 99/2006 concerning the credit institutions and capital adequacy, related to the fact that SveaEkonomiCyprus Limited is not authorized by the National Bank of Romania, nor by the national bank from the country of residence, in order to carry out factoring activities, and which according to the provisions of article 410 of the same legal act – represents an offence and which is punished with prison sentence from 2 to 7 years.

Under the conditions when SveaEkonomiCyprus Limited cashes in directly from the debit owed by the client (a resident physical person in Romania), but without paying the tax on the income gained in Romania, or without submitting a certificate of tax residence issued by the country of residence (Cyprus), it means that this company perpetrates the ***offence of tax evasion.***

Although the assignee company SveaEkonomiCyprus Limited carries out taxable operations in Romania, being a taxable person, *it did not register for VAT purposes and did not appoint a tax representative in Romania, still it collects Vat but it does not pay to the Romanian state the positive difference left after deduction.*

Of course, both the corporate tax and the VAT are calculated in case of the company SveaEkonomiCyprus Limited on the difference resulted from the price of assignment (price paid by Orange România SA) and the claim recovered.

The operations made by some companies registered in countries of the European Union with a reduced taxation, represents an option more and more used even by the resident persons in Romania, being called in the grey area of the economy as being an operation of ***tax optimization.***

Situated in the north-east part of the Mediterranean Sea and south of Turkey, Cyprus is the largest island from the east of Mediterranean and, at the same time, the country occupying the third position in the top of the smallest EU countries, following Malta and Luxembourg. Cyprus adhered to EU as an island divided de facto, but its surface is totally a territory of the European Union.

The attractiveness of establishing a company registered in Cyprus *represents an optimal variant related to the fact that in this country the corporate tax is of only 12.5%,* the dividends are not taxed, *VAT is of 0% in case of the service deliveries to the Member States of the European Union,* (actually, most of the international transactions are exempted from VAT), no rules are set concerning the level of debt, the expenses are wholly deductible, the alienation of the securities are not taxed, etc.

But under the conditions when an activity is carried out in Romania by a non-resident company, by avoiding the imperative legal provisions and implicitly by evading the payment of the tax liabilities, ***it does not represent a tax optimization, but an act of tax evasion***, committed under the umbrella of some apparently legal acts and contracts.

BIBLIOGRAPHY

[1] Cesare Beccaria, Despre infracțiuni și pedepse, Capitolul XXVII, Blândețea pedepselor.

[2] Constantin Tulai, Finanțele publice și fiscalitatea, Ed.Casa Cărții de Știință, Cluj-Napoca, 2003, pag. 287.

[3] D.D.Șaguna, Drept financiar și fiscal, Ed.AllBeck, București 2003, pag.468.

[4] David Levy, The liberatingeffects of interpersonal influence: An empiricalinvestigation of disinhibitorycontagion, - The Journal of Social Psichology n.132, (1992), pg.469-473.

[5] ed. Edward J. Nell, A Radical Critique of WelfareEconomics in "Growth, Profits, andProperty: Essays in theRevival of Political Economy", pp. 245-246.

[6] European Court of Human Rights, Judgment of 4th May 2000, pronounced in the case Rotaru vs. Romania, paragraph 52; Judgment of 25th January 2007, pronounced in the case Sisanis vs. Romania, paragraph 66.

[7] Gary Becker, Comportamentul uman, Ed.All, București, 1997

[8] John Rawls, *A Theory of Justice* (O Teorie a Justiţiei), published in 1971 and succesively revised in 1975 and 1999, http://www.enotes.com/topics/theory-justice

[9] Lewis E. Hill , The MetaphysicalPreconceptions Of The Economic Science, Review of Social Economy, Vol. 37, No. 2 (October, 1979), pp. 189-197, published by Taylor & Francis, Ltd.

[10] M. AbbeBaudeau, Explicationtableaueconomique, Paris 1967

[11] Nicolae Hoanță, în Economie și Finanțele publice, Ed.Polirom, Iași, 2000, pag.154.

[12] Petre Florescu/ Paul Coman/ Gabriel Bălașa, Fiscalitatea în România – Reglementare, doctrină, jurisprudență, Editura AllBeck, București 2005, pag.21.

[13] Vacarel Iulian, Finanțe publice, Ediția a VI-a, Editura Didactică și pedagogică, București 2007, pag.465

[14] *** Decision of the Romanian Constitutional Court no. 363/2015, published in the Official Gazette of Romania, Part I, no. 495/6th July 2015.

[15] *** Law no.227/2015 on Fiscal Code, published in the Official Gazette of Romania, Part I, no.688 of 10th September 2015

[16] *** Law no.571/2003 on Fiscal Code, published in Official Gazette of Romania, Part I, no.927 of 23rd December 2003

SOCIAL CAPITAL FORMATION AND IMPLICATION FOR THE ACHIEVEMENT OF FADAMA III PROJECT DEVELOPMENT IN KANO STATE, NIGERIA

Ahmad Muhammad TSAUNI
Department of Economics, Faculty of Social and Management Sciences,
Bayero University Kano, Nigeria
ahmadutsauni@gmail.com

Abubakar Hamid DANLAMI
Department of Economics, Faculty of Social and Management Sciences,
Bayero University Kano, Nigeria
Sadiqdanlami2@gmail.com

Abstract: *This study was carried out with the major aims of assessing Social Capital Formation and implications for the achievement of Fadama III project development objectives and to examine the success of Fadama III project in creating social capital within the context of participation. The data were collected during October, 2011 through the use of both structured and unstructured questionnaires. A total of 430 Kano State household Fadama Users from 34 Local Government Areas, the sample was divided equally in to 2, comprising of 215 Fadama III beneficiaries and 215 non-Fadama III beneficiaries. Data was analysed using descriptive statistics consisting percentages, averages and standard deviations. Empirical findings from the survey revealed that the level of social capital created by the Fadama III project among the beneficiary farmers in Kano State has been appreciable. Fadama user households have high level of involvement and participation by (67%) of the respondents.*

1. Introduction

Since independence agriculture has been one of the most important sector in terms of its contribution to the GDP. The sector on average contributes about 40% of the country's GDP, employs about more than 65% of the total population and provides employment to about 80% of the rural population (FDP, 2003). However agricultural production techniques remained rudimentary which makes productivity to be low hence rural population remain poor (Simonyan & Omohelin, 2012). Over the years governments at all levels have been putting effort to raise rural income, improve social welfare and ensure food security via the adoption and implementation of various agricultural development policies. One of such agricultural development schemes is Fadama Development project which has been implemented in three different stages, Fadama I, Fadama II and Fadama III respectively.

Fadama phase I was implemented during the period 1993 to 1999. It focused mainly on crop production and largely neglected support of post production activities such as commodity processing, storage and marketing. The emphasis was on providing boreholes and pump to crop farmers through simple credit arrangements aimed at boosting aggregate crop output (Muhammad, 2013).

Phase two (Fadama II) of the project was launched in 2004 as a means of improving on the positive effect of the first phase (i.e Fadama I) of the project and also to correct some of the short comings of the Fadama I project (Simonyan and Omohelin, 2012). The main aims are to

raise agricultural productivity of the rural farmers, eliminate their poverty and through them attain food security (Balogun et al, 2011).

The third phase of the project (which is the main concern of this paper) known as Fadama III was designed to last for four years from 2009 to 2013. The main objective of the project is to sustainably increase the incomes of Fadama land and water resource users, to reduce rural poverty, increases food security and to contribute to the achievement of the Millennium Development Goals, MDGS (Lortim, 2012). These objectives would be achieved through the financing and implementation of four main components which include (i) Institutional and social capital development (ii) Physical infrastructure for productive use (iii) Income generation and livelihood improvements and (iv) Transfer and adoption of technological knowhow.

Fadama is a local word (Hausa) for low lying flood plains usually with easily accessible shallow ground water (FDP, 2003). Fadama III project is expected to have positive impact on lives of rural farmers and to contribute to the realisation of social capital formation. Putnam (1993) cited in Field (2003) defines social capital as "features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions." It is the social channels and mutual understandings that expedite or hamper social, political and economic action (Jones et al., 2004). Fadama III from the year 2009 uses various forms of capacity building techniques that constitutes a combination of workshops, training, technical exchanges on farm training as well as more traditional technical assistance drawing upon local expertise within the state, national and international technical assistance agencies as well. Due to the fact that social capital constitute social structure that act as resource which assist in achieving the overall objective by facilitating coordinated actions. It may exact some influence in the implementation of Fadama III project and in the realisation of its goal as well.

It is argued that assessing impact of a project refers to the broad, long-term economic, social and environmental effect resulting from such project. Such assessment is seen as a critical component of agricultural project that helps to determine priorities of project and facilitate resource allocation among programmes, guide researchers and those involved in technology transfer to have a better understanding of the way new technologies are assimilated and diffused in to farming communities and show evidence that clients benefit from the project products.

Given the above arguments this study was carried out to:

Assess social capital formation and implications for the achievement of Fadama III project development objectives. Examine the success of Fadama III project in creating social capital, within the context of participation. Assess the context of adherence of group formation and operations to the principles of social inclusion, transparency and accountability.

2. Literature review and empirical framework

Oladaja and Adeokun (2009) perceive the word Fadama as low laying lands subject to seasonal flooding or water logging along the banks of streams or depressions. The enormous potentials for irrigated agriculture in the Fadama and flood plain is unquestioned as Baba and Sigh (1998) argued as cited in Oladoja and Adeokun (2009) that Fadama lands have high potentials and agricultural values several times more than the adjacent upland. Akinbile et al. (2006) argued that Fadama development is a typical form of small scale irrigation practice characterised by flexibility of farming operations, low inputs requirement, high economic

values, minimal social and environmental impact and hence conform with the general criteria for sustainable development Oladaja and Adeokun (2009).

Various studies were conducted to empirically assess and evaluate the impact of Fadama Development Project especially the first and the second phase of the project. According to Fadama Development Project Appraisal Report, following the widespread adoption of simple and low – cost improved irrigation technologies, farmers realised incomes increases from various crops of up to 65% for vegetables, 334% for wheat and 497% for paddy rice and that the economic rate of return at completion was 40% compared to an estimated 24% at appraisal which signifies a great improvement (FPD, 2003).

Simonyan and Omohelin (2012) found that during Fadama II project, the income of the beneficiary farmers increased significantly more than before the project and also more than the non – beneficiaries' income. Adeniyi (2011) argued that Fadama has become a popular programme among many practicing farmers in different parts of the country. It has helped many farmers both to increase their production capacity and also meet the objectives of food security programme. However most of these literatures based their study on evaluating the impact of Fadama I and II mostly on farmers' income. Their analysis failed to focus directly on social capital formation and its implication for the achievement of the desired objectives of Fadama project. Therefore this study is an addition and improvement to the existing literature to assess the success of Fadama III development project in creating social capital within the context of participation and as well to evaluate the implication for social capital formation in the achievement of Fadama III development project.

3. Methodology

Data Collection Techniques Used

The following methods were followed to generate the data used in the study.

Template was used to generate data to assess the achievements made in realizing the Fadama III Project Development Objectives the state. The template was designed to contain questions covering each of the three major components of the study. This component include: (a) Capacity building support for community organizations; (b) Capacity building support to local governments; and (c) Communications and information support. The questionnaire equally covered the objectives of each component of the study thereby making the analysis as thorough as possible.

Sample selection for the survey:

Fadama III is implemented in all states of the federation, including the 12 states that benefited from Fadama II including Kano state. The LGAs participating in Fadama II were purposely selected. The study uses four clusters/groups consisting of two treatment groups and two control groups, as follows:

The two treatment groups:

(i) Fadama III in Fadama II LGAs;

(ii) Fadama III LGAs in LGAs that did not receive Fadama II support;

The two control groups:

(i) Non-Fadama III in Fadama II LGAs that received only capacity building support from Fadama III.

(ii) Non-Fadama III LGAs in non-Fadama II LGAs. This group also received only capacity building support from Fadama III.

Sample size:

Seventeen (17) beneficiary Local government Areas (LGAs) were taken as 'Treatment Group' while another 17 non-beneficiary LGAs were selected as 'Control Group'. The Fadama III beneficiary LGAs include: Albasu; Bagwai; Bebeji; Bunkure; D/Kudu; Garko; Gezawa; Karaye; Kunchi; Kura; Makoda; Minjibir; Rogo; Sumaila; Tofa; Takai and Warawa. While the non-Fadama III beneficiary LGAs are: Ajingi; Bichi; Dambatta; Gabasawa; G/Malam; Gaya; Gwale; Gwarzo; Kabo; Kibiya; Kiru; Rano; R/Gado; Tarauni; Tsanyawa; Ungogo; and Wudil. Samples of 215 Fadama households were drawn from the treatment and 215 non-Fadama households from control groups were used in this survey. In all, the sample size stood at 430. Relevant agencies and projects like the ADPs in all the sampled LGAs were identified to assist in having access to the beneficiaries or non-beneficiaries of the project. Each template was completed by the respondents which were administered by twenty (20) Enumerators. The Enumerators served two purposes: as questionnaire administrators and as interpreters of the questions as majority of the rural people could read and write. Four supervisors oversee the affairs of the Enumerators and ascertain the validity of the returned instrument.

Data analysis:

The data collected were estimated with the aid of a statistical package – SPSS after coding and data entry. The validated data was then analyzed using descriptive statistics. Basically, percentages, averages, standard deviation and standard errors were used. The data were finally interpreted in line with the objectives, baseline and target values of the study.

4. Results and discussion

Results are presented and discussed in the following sub-sections and with emphasis on those outcome indicators that go a long way in addressing the key objectives of the study.

Table: 1 Socio-Demographic Characteristics

VARIABLE	**Max**	**Mean**
Age	70	42.7
House hold size	30	11.9
Years of experience	45	19.1
Gender	**Frequency**	**Percentage %**
Male	165	76.7
Female	50	23.3
Marital status	**Frequency**	**Percentage %**
Married	200	93.0
Single	7	3.2
Divorce	3	1.4

Widow	5	2.3
Educational status	**Frequency**	**Percentage %**
Non-formal	94	43.6
Primary	31	14.5
Secondary	44	20.5
Tertiary	42	19.5
None	4	1.9
Household head	**Frequency**	**Percentage %**
Yes	152	70.7
No	63	29.3
Status of respondent	**Frequency**	**Percentage %**
Member FCA	31	14.4
Member FUG	161	74.9
LG Executive	16	7.4
LG staff	7	3.3
Position in the FCA/FUG	**Frequency**	**Percentage %**
Executive member	133	69.3
Members	59	30.7
Occupation	**Frequency**	**Percentage %**
Crop production	143	66.5
Livestock production	19	8.8
Fish production	2	0.9
Agro-forestry	5	2.3
Others	46	21.4
Level of involvement in Fadama III	**Frequency**	**Percentage %**
High	144	67
Medium	62	28.8
Low	9	4.2

The mean age of respondents was 42.7, whereas 70 years was reported to be the maximum in table 1. Household size was as higher as 30, while the mean number of households that participated in the study is roughly 12. The household size is a relevant determinant in promoting agricultural productivity. The maximum years respondents spent in farming profession was 45 as against the minimum of 1 year. However, the average year of experience was 19.1 which portrayed the potential of the respondents in Fadama farming.

Almost seventy-seven percent (77%) of the respondents were male while barely twenty-three percent (23%) were female, implying that more than two-third (2/3) of the respondents were male. Married people among the respondents were up to 90% leaving single, divorced and widow respondents with 3.2%, 1.4% and 2.3% respectively. Bulk of the respondents (43.6%) have their educational background from non-formal institutions mainly Quranic and Islamiyya schools. Others had primary (14.5%), secondary (20.5%) and tertiary (19.5%) education. Yet 1.9% had none.

Over 70% of the respondents were households and members of Fadama User Groups (74.9%). But almost fifteen percent (15%) belong to Fadama Community Association and others are local government executives (7.4%) and local government staff (3.3%). The farmers were basically engaged in crop production (66.5%), livestock production (8.8%), fish production (9%), agro-forestry (2.3%), while 21.4% of the respondents engaged in other economic activities. The level of involvement of the Fadama III beneficiaries in the project varies.

While 67% were highly involved, others (28.8%) were moderately and (4.2%) minimally involved.

Table 2: Success of Fadama III in Creating Social Capital

Subproject ownership	**Frequency**	**Percentage %**
Yes	140	73
No	52	27
Value	**Max**	**Mean**
No of household members owning subprojects	500	21
No of subprojects	4.0	0.7
Success of Fadama III in raising capacity	**Frequency**	**Percentage %**
Yes	187	87.0
No	28	13.0
Areas capacity built	**Frequency**	**Percentage %**
Access to inputs	94	49
Increase in productivity	38	20
Increase in income	52	27
Others	8	4

It has been established earlier that over 60% of the respondents highly participated in the project and less than 5% had minimal participation. Table 2 shows that 73% of the respondents own one sub-project or another from the physical and non-physical proceeds of the Fadama intervention. On average, 21 household members owned various sub-projects and a maximum number owner of such was 500. The study found that the maximum number of sub-projects owned by household was 4 and roughly 1 on the average. Precisely (87%) of the respondents conceded that Fadama III has impacted significantly on their skills and capabilities in the farming practice. The project has indeed, generated some benefits to the farmers as (49%) of them got input support and become empowered on the relevance of improved seeds and their applications. Twenty percent (20%) of the farmers realized substantial increase in their output, reduction in their costs and improved efficiency. As in the broad objective of the Fadama project, twenty-seven percent (27%) of the beneficiaries got a sustained increase in their income. Social and other benefits were derived also. The significant benefits were realized from the capacity of the farmers to harness and manage natural resources, while others got benefits from participation in other economic activities.

Table 3: Adherence to Group Formation and Operation

Variable	**Max**	**Mean**
Years group formed	25	2.4
Motivations for group/association formation	**Frequency**	**Percentage %**
Need for technical and financial support	103	53.5
Need to join Fadama beneficiaries	47	25.6
Transparency	13	6.5
Accountability	12	6.0
Social inclusion	9	4.7
Others	8	3.7
Level of social inclusion	**Frequency**	**Percentage %**
High	105	54.7
Moderate	60	31.25
Low	27	14.05

Level of transparency and accountability	**Frequency**	**Percentage %**
High	110	57.3
Moderate	70	36.5
Low	12	6.2
Collaborations and collective efforts	**Frequency**	**Percentage %**
Yes	164	85.4
No	28	14.6
Satisfaction by forming group	**Frequency**	**Percentage %**
Yes	155	73
No	60	27
Dissatisfaction with group	**Frequency**	**Percentage %**
In prefer to maintain farm with my family	20	33.3
I prefer to produce alone	15	25
Most farmers prefer working individually	25	41.7

The right impetus has been created as farmers groups were formed spanning a maximum of 25 years and barely 2.4 years on the average. The farmers confess to have been motivated by the need for financial and technical support (53.5%); need to be a beneficiary of Fadama project (25.6%); for transparency (6.5%); accountability (6%) and for social inclusion (4.7%). Only 3.7% formed groups for some obvious reasons. It is apparent that awareness on the existence and activities Fadama project was adequately created and contributions appreciated thereby leading to strict adherence to group formations.

Harmonious social relationship among Fadama users is of veritable importance in the attainment of the Fadama III PDOs. Findings of the study show that there exists a high level of social inclusion (54.7%) among the Fadama users. The social inclusion is moderate among some users (31.25%) and low (14.05%) in others. The high level of transparency reported (57.3%) is not unconnected with the equally high level of social inclusion. That buttressed the success recorded in building the capacities of the Fadama users. More so, they work collectively in addressing their problems and hence 73% of the respondents were satisfied.

Table 4: Extent of Participation of Fadama Users

Variable	**Frequency**	**Percentage %**
Involvement in managing Fadama resource		
Yes	131	68.4
No	61	31.6
Level of your participation	**Frequency**	**Percentage %**
High	124	64.6
Moderate	65	34
Low	3	1.4
Have any local plan	**Frequency**	**Percentage %**
Yes	172	89.8
No	20	10.2
Participation in LDPs preparation	**Frequency**	**Percentage %**
Yes	163	85
No	29	15
LDPs created and supported by Fadama III project	**Frequency**	**Percentage %**
Yes	184	95.8

No	8	4.18
LDPS developed through participatory process	**Frequency**	**Percentage %**
Yes	184	96
No	8	4
Level of contribution in the participatory plan	**Frequency**	**Percentage %**
High	115	60
Moderate	63	33
Low	14	7
Relevance of the LDPs	**Frequency**	**Percentage %**
Relevant	154	80
Fairly relevant	23	12
Irrelevant	15	8

Table 4 shows that Fadama users in Kano state were involved in the management of Fadama resources as attested to by 68.4% of the respondents. And the level of their participation is as high as 64.6%, while other users averagely participate (34%). Their participation gave them the opportunity to be part of preparation and execution of the project. Almost ninety percent (90%) of the respondents declare having Local Development Plans (LDPs) in their areas and they have indeed, participated in the preparation of those plans as made known by 85% of the respondents. Ninety five percent (95%) of the respondents reported that the LDPs were developed and supported by Fadama project in the period under study through a participatory process. Exactly 60% rendered high contribution in the participatory plan, while 33% and 7% contributed moderately and low respectively. Base on that, 80% of the respondents considered the LDPs as highly relevant to the improvement of their standard of living. The mean number of benefitting communities was 5.6 and the proportion of the benefitting communities that have LDPs developed through participatory process was 2/3.

Table 5: Capacity of Participating LGAs in Fadama III Project

Variable	**Frequency**	**Percentage %**
LGAs participation in Fadama III project		
Yes	19	84
No	4	16
Consideration of LDPs in policy formulation	**Frequency**	**Percentage %**
Yes	18	80
No	5	20
Capability of LGAs in participatory planning	**Frequency**	**Percentage %**
Capable	16	69
Moderately capable	6	27
Incapable	1	4
Integration of LDPs in the LGAs' annual plan	**Frequency**	**Percentage %**
Yes	17	74
No	6	36
Variable	**Max**	**Mean**
Benefits derivable from participatory planning and by integrating the LDPs	7	1.6

Evidence from the study has shown that the benefiting Local Government Areas (LGAs) have actively participated in the Fadama III project (84%) and 80% of the LGAs as attested to by the respondents have been considering the Local Development Plans (LDPs) in their policy formulations. But the remaining 20% have not been considering the LDPs possibly because they have not participated in the trainings provided by the Fadama project. Sixty-nine of the respondents believed that the LGAs are capable in participating in the planning of the LDPs, and majority of the LGAs (74%) integrated the LDPs into their annual plans.

A maximum of seven identified benefits were reported to have been derived by the LGAs from the Fadama project by participating in the planning of the LDPs and by integrating the LDPs in their plans. These benefits include: community mobilization; investment planning; land-use planning; financial management; budgeting; public administration and project development. The study found a mean of 1.6 of the derivable benefits over time.

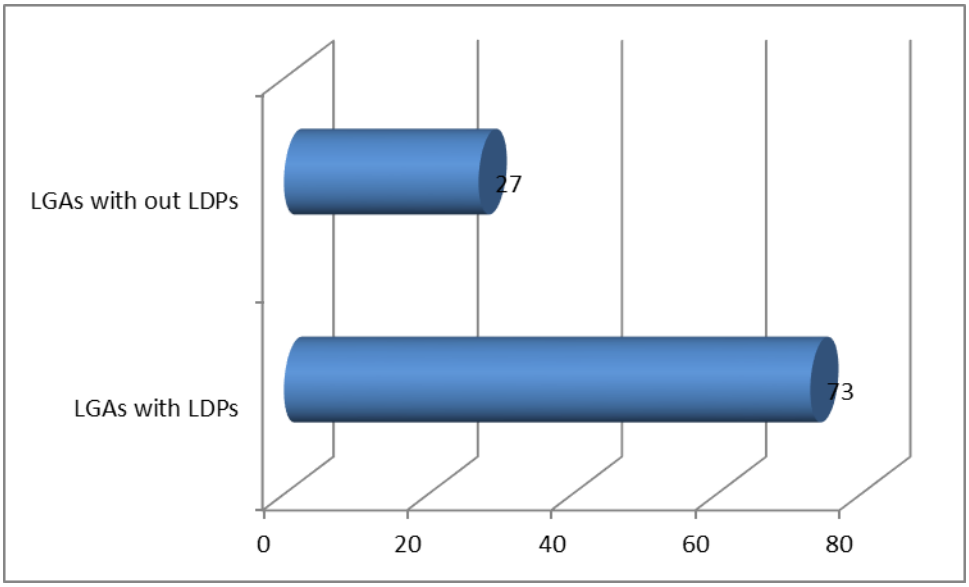


Fig 1: Percentage of LGAs with LDPs in annual work plan

Assessing the impact of the Fadama III project on the capacity of LGAs could be done by gauging the LGAs' level of participatory planning and integration of LDPs in their annual plans. Figure 1 depicted that 73% of the local governments have been integrating the LDPs in their annual plans while 27% were not.

Table 6: Level and Progress of Group or Association Registration

Variable	**Frequency**	**Percentage %**
Extent of group registration		
Very often	171	89
Often	15	8
Not at all	6	3
Level of mobilization	**Frequency**	**Percentage %**
Yes	190	99
No	2	1
Level of persuasion	**Frequency**	**Percentage %**
Significant	159	83
Fairly significant	29	15

Insignificant	4	2
Progress level recorded in the registration	**Frequency**	**Percentage %**
Significant	171	89
Fairly significant	15	8
Insignificant	6	3

Table 6 reported that the extent of groups'/associations' registration was very high as they often come forward to register (90%) knowing fully the physical and non-physical derivable benefits they could get, which could go a long way in improving their living standards. Because of that the level of mobilizing groups and associations to register was equally very high acknowledged by 99% of the respondents. The mobilization level was successfully attained over the years in view of the significant efforts made geared toward convincing groups and associations to register, by disclosing lot of the benefits. Groups were encouraged and information circulated all over the existing media on the merits of group registration. Hence, the progress recorded in the registration of groups and associations was indeed, significant (89%).

Content and Progress of Training to the FCAs, FUGs and LGA staff

About 85% of the FCAs, 97% of the FUGs and 93% of the LGAs have participated in the training. The training was offered in order to support and empower the communities on how to identify, design, share investment costs, implement and maintain productive assets and carry out productive activities in a sustainable manner. Seventy-eight percent (78%) respondents from FUGs, 56% from FCAs and 70% from LGAs found the training very effective as it aids their farm practices. Indeed, the FCAs, FUGs and LGAs attributed 81%, 80% and 83% of their performance to the training signifying the giant stride made in the Fadama project.

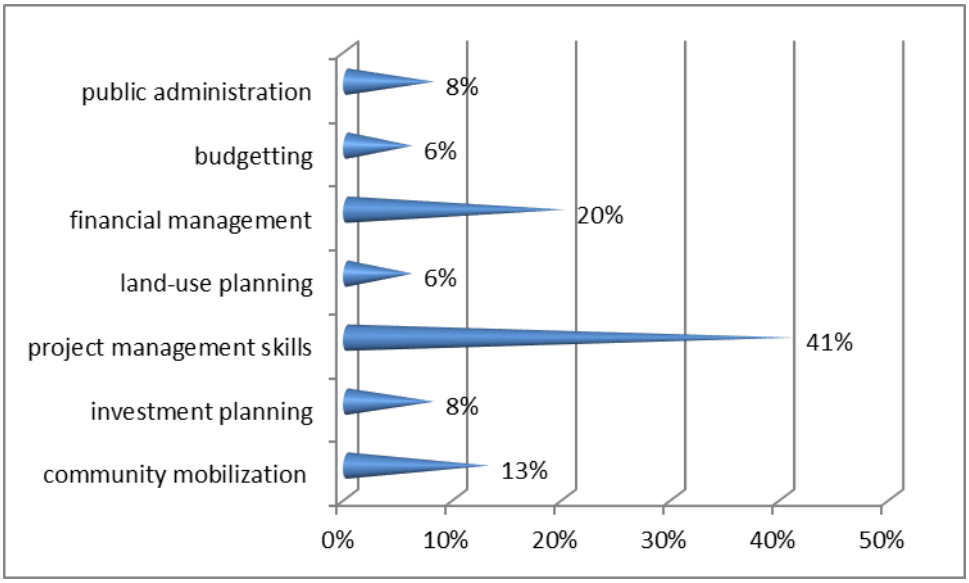


Fig 2: **Number of LGA staff trained in project management skills**

A look at figure 2 shows that LGA staff were trained on a number of important skills needed in augmenting their productivity and capacity to manage the available resources before them. The respondents indicated the various areas they were trained: public administration (8%); budgeting (6%); financial management (20%); land-use planning (6%); project management skills (41%); investment planning (8%); and community mobilization (13%). From the foregoing findings, it could be seen that majority of the respondents were trained on project

management skills giving its merit in improving the local government staff capacity in managing resources.

5. Conclusion

Substantive evidence from the study shows that the project has appreciably improved the community's stock of social capital, as revealed by large number of functioning FCAs and FUGs; high level of adherence to group formation; high level of social inclusion; transparency and accountability; and ownership of sub-projects. The study also found that capacity of Fadama users and LGAs was improved leading to better management of Fadama resources and LDPs. The capacity of LGA staff has equally been successfully improved as indicated by participating in preparing local development plans and by integrating the plans in their annual plans.

References

[1] Adeniyi S (2011). Despite all Odds, Fadama has become a huge success in Nigeria. Daily news Paper Tuesday 2nd August, 2011

[2] Balogun O.L, Adeoye A., Yusuf S.A, Akinlade R.J & Carim – Sanni. (2011). Production Efficiency of farmers Under National Fadama II Project in Oyo State, Nigeria. International Journal of Agricultural Management & Development PP 11 – 24, www.ijamad.com

[3] Fadama Development Report (2003). Appraisal Report; Federal Republic of Nigeria

[4] Field J. (2003). Social Capital Rout Ledge Publications, New Fetter Lane, London

[5] Lortim H.T. (2012). Fadama III Spurs World Bank to invest More in Agriculture

[6] Muhammad k. (2012). Impact of Fadama II Project on Poverty Reduction in Kagarko Local Government Area Kaduna State, Nigeria. Unpublished M.Sc. Dissertation

[7] Oladoja M.A & Adeokun O.A. (2009). An Appraisal of the National Fadama Development Project (NFDP) in Ogun State, Nigeria. Agricultural journal *4*(3), 124 – 129.

[8] Simonyan, J.B & Omohelin, R.A. (2012). Analysis of Impact of Fadama II Project on Beneficiary Farmers Income in Kaduna State. *International Journal of Economics and Management Sciences, 1*(11) , 01-08.

[9] World Bank. (2012). Third National Fadama Development Project in Nigeria: Implementation Status and Results. Report No. ISR7816, September 19th, 2012.