

CiViTAS
Cleaner and better transport in cities

MIMOSA

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Measure Evaluation Results

BOL 2.1 Integrated PT Fare System

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Executive Summary

The measure 'Integrated PT Fare System' is aimed at introducing an integrated public transport fare system for trains and buses in Bologna. It seeks to allow passengers to use different modes of public transport including buses, trains, car sharing, public bike, and Park and Ride service with the same electronic ticket. TPER, as Bologna public transport company and Regione Emilia Romagna worked together with the local transport operators of the region to strengthen the intermodal network (railway, bus). They integrated the various services and established an integrated fare system based on a single same electronic ticketing system called "Mi Nuovo". During the preparation phase TPER was the project leader in compiling a unique document with technical specifications for the tender regarding the technology supply (on board equipment, management software, ticketing office devices, etc.). This required strong coordination and merging of the different needs of the transport operators of the region. The MIMOSA measure contributed to the successful launch of the new system in January 2010 and paved the way for a smooth transition process from the old to the new system. The tariff is proportional to the number of public transport zones crossed and it is the same for different transport modes. The objective of the measure was to promote the new integrated system by organizing specific activities and providing information to raise awareness and acceptance among public transport users.

The measure was implemented in the following stages:

Stage 1: Design of the information campaign (May 09 – November 09) To introduce the new fare and ticketing system, a large scale information campaign was designed to provide explanations on the new fare system based on zone crossing and on the use of new magnetic tickets and contactless smart cards to public transport users.

Stage 2: Realization and distribution of the information material (November 09 – April 10) A large range of communication forms were used such as posters and leaflets at strategic locations to reach public transport users, online information as well as a presence during public events.

Stage 3: Marketing campaign concerning new integrated tickets for bus and train (May 10 – December 11) Specific information initiatives were carried out by Regione Emilia Romagna to promote the new annual season tickets (train+bus) "Mi nuovo city più" allowing users to use trains and buses arriving at some railway stations in the Bologna hinterland. The information campaign also promoted the monthly ticket "Mi nuovo mese".

Stage 4: Public transport users survey (April 2012 – July 2012) A users survey was designed with the aim of evaluating the knowledge and acceptance of the new electronic ticketing system and to understand the users' opinion concerning fare and ticketing integration of train and bus. The survey, conducted in May 2012, sampled more than 800 bus and/or train users at strategic locations such as the main bus stations in Bologna city centre and in neighbourhood municipalities connected to the network and at the central railway station.

Based on the results of the users' survey conducted during the fourth stage of the measure and on the analysis of the revenues generated by the new fare system, the impact evaluation revealed the evolution in users' awareness and acceptance. **Key-results** demonstrated the success of the new ticketing system; in particular, users expressed very positive feedback on the integration of services (bus and train): 48% of the people samples indicated that this new fare system facilitates their use of public transport. This is also reflected by the increase of season tickets sold.

The process evaluation enabled the identification of barriers and drivers encountered during the implementation process. The **main barriers** encountered related to the approval process of the new fare structure and ticketing system. This took a long time due to the different local administration and political entities involved in the new network. **Two main drivers** contributed to the successful implementation of the measure. Firstly, political commitments were reached to carry out the fare and ticketing integration of public transport at a local and regional level. Secondly, the high level of challenges of such an innovative project contributed to motivate all actors involved (technicians, workers, ticket office operators, call center operators). This stimulated a very positive working situation.

Two final recommendations came from Bologna's experience. Firstly, the implementation of a new electronic fare and ticketing system implies a major investment in terms of equipment and resources. This investment can be justified only if the introduction of the new technology is parallel with the improvement and increase of the services offered (integration of transport modes, access to other services). Secondly, information campaigns are a fundamental aspect to achieve acceptance of a new ticketing system among users. The information has to be first on regulations and technologies used, but also focused on specific target groups in order to reach each category of the population with relevant information.

The implementation of the integrated fare and ticketing system represented a fundamental step for the integration of train and bus services but also for the creation of a unique card for mobility services in the city. This new service proved to be efficient to encourage citizens to use the entire public transportation services available in the Bologna region.

A Introduction

A1 Objectives

The measure objectives are:

High level objectives:

- Increase use of public transport
- Rationalize mobility in cities

Strategic level objectives:

- Improve the quality of public transport service

Specific measure objectives:

- Develop the supporting activities to improve acceptance and awareness of the new integrated electronic ticketing system allowing the creation of a real intermodal network with bus and train modes.

A2 Description

TPER as Bologna public transport company and Regione Emilia Romagna together with the local transport operators of the region has worked to create a real intermodal network (railway, bus) through the integration of services and the realization of an integrated fare structure and an electronic ticketing system named "Mi Muovo".

Finally, on 1st January 2010 the first application started in Bologna. The objective of the Mimosa measure was to develop all the supporting activities for the launch of the new electronic fare and ticketing system in order to increase awareness and acceptance of the new system.

The launch was supported by a strong information campaign to inform citizens on new rules on fares and new tickets characteristics (smart card for season tickets, paper magnetic pass for other tickets).

Specific information initiatives were realized from Regione Emilia Romagna to promote the new integrated tickets (train+bus) named Mi Muovo and Mi muovo city più (annual season tickets), Mi muovo mese (monthly tickets).

The smart card Mi Muovo is becoming a general mobility card that allows access to public transport, park&ride areas, bike sharing service, car sharing service, etc.

B Measure Implementation

B1 Innovative Aspects

The innovative aspects of the measure are:

Innovative aspect 1 – New organisational opportunity – The integrated electronic fare and ticketing system implemented allows with a unique card (“Mi nuovo”) the interoperability among different public transport providers and modes.

B2 Research and Technology Development

The new electronic ticketing system project developed for the application in the whole Regione Emilia Romagna was realized taking into account an “open and flexible” technological solution that will:

- have a unique smart card for different transport modes
- be open to other services (bike sharing, car sharing, etc..)
- have the possibility to create the clearing system with data concerning the real use of each mode of transport
- have high security levels
- have the possibility to create a clearing system for incomes of different transport companies that uses real data collected on board (validations) and not statistical/historical data.
- have system reliability

The R&D activity identified the Calypso international electronic ticketing standard as the most appropriate technology for the contactless smart cards.

The contact-less smart card has a unique processor with a specific application for transport. The application allows the management of up to 4 different contracts at the same time.

The security of the cards is guaranteed from physical SAM (Security Access Module) with asymmetric keys.

Web site for more information: <http://www.calypsonet-asso.org/>

B3 Situation before CIVITAS

The urban sprawl during last decades has brought a transport network not well interconnected that stimulated the use of private cars. At the moment the motorization rate indicates that the modal split is shifting toward public transport, but this is not enough.

The metropolitan area of Bologna is now working on the Stimer Project: the fare integration of multimodal public transport means. The goal of the project is to improve the use of public transport, implementing the fare payment service of several local services (bus and rail in the regional area) with a unique ticket. This will be available on a microchip card supporting electronic wallet features.

The contact-less card will permit citizens to access different integrated public transport services. The Stimer new fare and ticketing system started in Bologna from 1/1/2010.

B4 Actual Implementation of the Measure

The measure was implemented in the following stages:

Stage 1: Design of the information campaign (May 09 – Nov 09)

The new fare and ticketing system is a big change for public transport users.

For this reason the information campaign is a very important step for a successful start of the new system.

The campaign focused on the explanation of the new fare system based on zone crossing on one side, on the other side it explained the use of new magnetic tickets and contactless smart cards.

Stage 2: Realization and distribution of the information material (Nov 09 – Apr 10)

The new fare and ticketing system started in January 2010. Main activities concerned information to citizens:

- Realization of the material for the information campaign: the campaign was addressed to public transport users and consisted of:
 - Information posters at bus stops, ticket offices and on board buses;
 - Leaflets with general information on the new fare structure and the ticketing system available at ticket offices and municipalities offices of Bologna and the Province;
 - Maps of the whole area involved in the new fare structure and ticketing system with the zone structure. The area was divided into 5 maps with the zone boundaries and characteristics.
 - Leaflets and posters concerning the annual integrated annual season ticket bus+train “Mi Nuovo”
 - Information on web sites of transport company, Regione Emilia Romagna
 - Information desk during city events.
- Distribution of the information material: brochures and leaflets were distributed through TPER offices, Information points of the Municipalities of Bologna and Province.

Fig. B4.1 - The new contact-less smart card for public transport



Fig. B4.2 - Information on the new fare and ticketing system

A gennaio 2010 prende il via la prima fase della bigliettazione elettronica sulla rete di trasporto pubblico Atc di Bologna e Ferrara.

Il nuovo sistema tariffario a Zone

mi nuovo

Le Zone

Il territorio è stato suddiviso in Zone, identificate da un nome, che generalmente richiama la località principale della Zona stessa, e da un numero di tre cifre.

La tariffa viene determinata in relazione al numero di zone attraversate nel viaggio.

Zone Ordinaria
Si tratta della maggior parte delle Zone in cui è suddiviso il territorio servito. L'attraversamento di una Zona Ordinaria dà luogo ad uno scatto tariffario. Quando lo spostamento avviene, anche utilizzando più mezzi, esclusivamente all'interno di una Zona Ordinaria, è necessario un titolo di viaggio da una Zona.

Zone Capoluogo
(Bologna 500 - Ferrara 600 - Imola 510)
Determinate anche Zone Tecniche, sono Zone che offrono una più alta densità e quantità di servizi di trasporto, ognuna di esse possiede, infatti, una propria rete di linee urbane.
Nei percorsi effettuati interamente all'interno delle singole Zone Capoluogo vengono utilizzati specifici titoli per l'Area Urbana.

Zone Neutre
Sono Zone che, in caso di attraversamento, non vengono conteggiate ai fini tariffari. Quando origine e destinazione del viaggio sono comprese entrambe all'interno della stessa Zona Neutra, è necessario un titolo di viaggio da una Zona.

Area Urbana
Le tre Aree Urbane (Bologna, Ferrara e Imola) comprendono ciascuna la Zona Capoluogo e le Zone Neutre confinanti con essa.

I nuovi titoli di viaggio

Non vi saranno sostanziali modifiche nei livelli tariffari: i prezzi dei titoli di viaggio validi per le Aree Urbane non subiranno variazioni; i titoli di viaggio validi per una Zona costeranno come i corrispondenti precedenti titoli di fascia chilometrica 0-8 km, quelli validi per due Zone come i titoli di fascia chilometrica 9-18 km e così via.

Da gennaio 2010 saranno in vendita i nuovi titoli di viaggio: i nuovi abbonamenti annuali saranno caricati su tessere Mi Nuovo a microchip, gli altri titoli di viaggio saranno cartacei e dotati di banda magnetica.

I nuovi titoli di viaggio saranno reperibili presso le biglietterie aziendali e le abitudini rivendite.

Gli abbonamenti annuali emessi fino al 31 dicembre 2009 saranno validi fino alla loro naturale scadenza.

Gli altri titoli precedentemente in uso saranno validi solo fino al 31 marzo 2010; la sostituzione dei titoli non utilizzati potrà essere effettuata entro il 31 dicembre 2010, esclusivamente presso le biglietterie aziendali di Bologna, Ferrara, Imola e Silla.
Scaduto tale termine non sarà più possibile la sostituzione dei titoli di viaggio.

Per poter utilizzare gli abbonamenti mensili extraurbani a Zone, da gennaio 2010 saranno emesse solo tessere di tipo Mi Nuovo a microchip, in vendita al consueto prezzo di 5 euro. Restano valide le tessere di riconoscimento in corso di validità precedentemente emesse.

Il nuovo validatore

Le vecchie obliteratrici verranno via via sostituite da nuovi dispositivi, caratterizzati dall'adesivo Mi Nuovo, che si avvalgono di una doppia tecnologia: magnetica, per la validazione dei biglietti e degli abbonamenti cartacei con banda magnetica; a microchip di prossimità, per la futura validazione delle tessere a microchip.

Fino al 31 marzo vi sarà una parziale coesistenza tra i due tipi di macchine obliteratrici, così come saranno in circolazione titoli cartacei di vecchio tipo e titoli con banda magnetica. Durante questa fase iniziale tutti gli autobus urbani e suburbani saranno dotati di doppio validatore, gli altri della sola vecchia obliteratrice.

Per questo, i biglietti e gli abbonamenti provvisti di banda magnetica avranno una parte rimovibile. In caso di utilizzo con nuovo validatore, il titolo è da inserirne intero.

In caso di utilizzo con obliteratrice di vecchio tipo, rimuovere la parte di titolo lungo la linea tratteggiata.

Sugli autobus delle linee extraurbane la sostituzione dei dispositivi comincerà il 1° aprile 2010, data dalla quale si potranno convalidare solo i titoli di viaggio di nuovo tipo.

La vendita a bordo continuerà ad essere svolta con le modalità precedentemente in vigore sui servizi Atc su cui era già attiva.

Informazioni

Bologna
Call Center 051 290290
ogni giorno dalle 7.30 alle 20.00

Ferrara
Autostazione Ferrara (Via Rampari S. Paolo)
0532 599492 giorni feriali dalle 6.30 alle 18.45
Biglietteria Centrale Ferrara (Piazza Municipale 11)
0532 419474 dal lunedì al venerdì dalle 9.00 alle 13.00
Punto Cas Ferrara (V.le Stazione FS)
0532 599490
giorni feriali dalle 7.15 alle 19.15 e festivi dalle 8.00 alle 14.00

www.atc.bo.it

ATC ATC Call Center

Stage 3: Marketing campaign concerning new integrated tickets for bus and train (May 10 – Dec 11)

A further campaign concerned the launch of new integrated tickets train+bus:

- 1) "Mi Nuovo Mese" monthly ticket to travel by train and circulate in the urban area with buses, with an appropriate fare reduction .
- 2) "Mi Nuovo Citypiù" integrated annual season ticket train+bus allows circulating with trains and buses in the urban area and also in some railways stations of the hinterland (San Lazzaro, Casalecchio)

Fig. B4.3 - Info campaign of the integrated season ticket “Mi nuovo mese”

Regione Emilia-Romagna

DI MESE IN MESE IO MI MUOVO MEGLIO

MI MUOVO MESE È L'ABBONAMENTO UNICO REGIONALE TRENO + BUS PER VIAGGIARE MEGLIO IN EMILIA-ROMAGNA

- COMODO** Non faccio fila e acquisto una volta al mese un unico titolo di viaggio per muovermi, senza limiti di corse, su un percorso prestabilito del treno e sulle reti urbane del trasporto pubblico.
- FLESSIBILE** Posso fare l'abbonamento integrato treno + bus anche di mese in mese o per periodi inferiori ad un anno.
- CONVENIENTE** usufruisco anche di un risparmio economico e deciso, di volta in volta, se fare l'abbonamento: così gestisco meglio le mie spese.

mi nuovo Mese

Mi Nuovo Mese, Mi Nuovo Annuale, Mi Nuovo Studenti e Mi Nuovo TuttoTreno fanno tutti parte del sistema unico integrato dei trasporti pubblici che vuole offrire servizi sempre più efficienti ai cittadini dell'Emilia-Romagna.

L'abbonamento unico regionale treno + bus, **Mi Nuovo Mese**, si può acquistare in tutte le biglietterie Trenitalia dell'Emilia-Romagna. Informarsi e scoprire tutti i vantaggi su www.mobilita.eu

ATC ATC Call Center

800-388988

Stage 4: Public transport users survey (April 2012 – July 2012)

We designed a users survey with the aim of evaluating the knowledge and acceptance of the new electronic ticketing system and to understand the opinion of users concerning the fare and ticketing integration between train and bus. The survey was done in May 2012 sampling more than 800 bus and/or train users. The interviews were done at some of main bus stops in Bologna city centre, at the railway station, at the bus station and at main bus stops of the two main municipalities around Bologna (Casalecchio and San Lazzaro).

Fig. B4.4 - Users survey at bus stops**B5 Inter-Relationships with Other Measures**

The realization of the new fare and ticketing system is the basis for the development of the measure 2.3 and 2.4.

Measure 2.3 concerns the realization of a ticketing system on the bus that uses the on board computer and the validator to “issue” tickets.

Measure 2.4 realized a recharging system for tickets on smart cards using the ATM circuit of banks.

C Impact Evaluation Findings

C1 Measurement Methodology

C1.1 Impacts and Indicators

Table C1.1.1: Indicators.

Evaluation area	Evaluation category	Impact	No.	Indicator	Source of data	Month
Economy	Benefits	Operating Revenues	1	Operating revenues	Sales data	Data of years 2009-2010-2011
	Costs	Capital Costs	2	Investment Costs	TPER costs	Year 2009-2010
		Maintenance Costs	3	Maintenance cost	TPER costs	Estimation after warranty expiring
Society	Acceptance	Awareness	4	Awareness level	Surveys to public transport users by a specialized company	45
		Acceptance	5	Acceptance level	Surveys to public transport users by a specialized company	45

Detailed description of the indicator methodologies:

Indicator 1-3 “Economical evaluation area”:

“Operating revenues”: we considered total sales data of Bologna urban and extraurban service and also data on number of season tickets sold in the years 2009-2010-2011.

“Capital costs”: we consider the total cost for the realization of the new fare and ticketing system.

“Maintenance costs”: we estimate annual maintenance costs (the system is at the moment under warranty).

Indicator 4-5 “Society evaluation area”:

In order to evaluate the society aspects we realized a survey among bus and train users during the last week of May 2012. The survey was mainly addressed to understand the awareness and the acceptance of the new integrated ticketing system as well as the effects on mobility behaviours.

The survey was done:

- at three of the main bus stops of the Bologna city centre : Rizzoli, Marconi and Lama
- at Bologna bus station
- at Bologna railway station
- at the main bus stops in the centre of Casalecchio and San Lazzaro that are the main towns around Bologna.

The sample of the survey was of 856 people.

C1.2 Establishing a Baseline

The new fare and ticketing system started on 1/01/2010 and for that reason we chose 2009 as baseline data. The comparisons between two consecutive year is more significant than the comparisons of two distant years: disturbances may occur and they can influence data and compromise a correct evaluation (for example in 2008 the transport network was quite different from the 2010 one, so we preferred to use 2009 as a baseline as it is more similar to 2010).

C1.3 Building the Business-As-Usual Scenario

The business as usual scenario shows the situation in the future if this measure had not taken place. Mobility needs grow every day and, while availability of collective services increase, users cannot take full advantages of them because of different operators, modes and tickets. The interchange among different modes and/or operators is extremely difficult because for each service the user needs to have a special ticket and learn different travel rules. Services are often overlapped and the possibilities of integration on the same routes is extremely limited from difficulties in calculating and sharing revenues. Users cannot take advantages of possible discount of an integrated use of services with a unique ticket. As concerns the specific indicators we used for the evaluation we would have found:

- Lower revenues due to the lack of integrated season tickets
- Perception of a lower quality of the service from users

C2 Measure Results

The results are presented under sub headings corresponding to the areas used for indicators – economy, energy, environment, society and transport.

C2.1 Economy

Indicator 1-3 “Economical evaluation area”:

Table C2.1.1: Operating revenues, investment costs, maintenance costs in Euro

	2009	2010	2011
Sales data urban and extraurban service Total revenues (in euro)	44.817.866	46.633.038	51.963.627
Total Investment costs (in euro)	8.000.000		
Yearly maintenance costs (estimation since the system is under warranty)	500.000		

Table C2.1.2: Number of season tickets sold

Sales data Number of tickets (season tickets)	2009	2010	2011
Urban Monthly season tickets (including the integrated ticket Mi Muovo mese)	285.017	279.446	290.759
Mi Muovo mese	0	0	7.181
Urban Annual season tickets (including the integrated ticket Mi Muovo e Mi Muovo Studenti)	28.833	30.570	33.884
Mi Muovo e Mi Muovo Studenti		861	1.147
Extraurban monthly season tickets	102.470	111.042	105.186
Extraurban annual season tickets	8.184	8.578	9.236

Table C2.1.1 shows the trend of the total sales. Data are influenced both by the increase in tickets sold and the increase in fares. These data are useful to show the dimension of the measure.

Table C2.1.2 shows the trend of season tickets sold: the increase in season tickets is also due to the interoperability introduced with the “Mi Muovo” card.

C2.2 Energy

Not applicable

C2.3 Environment

Not applicable

C2.4 Transport

Not applicable

C2.5 Society

Indicator 4 Awareness:

We asked citizens if they know the new integrated electronic ticketing system characteristics based on rechargeable smart cards for season tickets and paper magnetic pass for the other tickets.

40% said they know the system characteristics in full while 28% knows only magnetic tickets. About 32% didn't know the new system characteristics (See Tab. 2.5.1). This percentage of "indifference" is confirmed also in the next answers (See Fig. 2.5.2 and 2.5.3) and represents users that are not aware of innovation in public transport. We analysed the composition of this 32%: we found that about 62% of them are occasional users (people that use single tickets) and for this reason it's hard to reach and make them aware of service improvements with information campaigns.

Tab. 2.5.1: results from survey regarding awareness of the new system

Do you know the new ticketing system? (smart card and magnetic tickets) Sample size: 856	%
Yes	40
No	32
Yes, partially only magnetic tickets	28
Total	100

After explaining briefly the system characteristics we asked how they consider the innovation made; about 67% consider it positive or very positive while 32% is indifferent, only 2% negative (see Tab. 2.5.2).

Tab. 2.5.2: results from survey regarding perception of the new system

How do you consider this innovation?	tot.	%
Very positive	79	9,2
Positive	482	56,3
Indifferent	275	32,1
Negative	20	2,3
Total	856	100,0

Indicator 5 Acceptance:

After the first two questions concerning awareness we continued the survey to assess the acceptance of the new system as a whole (new fare structure and new electronic ticketing system).

We asked people if the new system facilitated their personal use of public transport: about 48% gave a positive answer, 36% of those interviewed did not have a definite opinion while 15% gave a negative answer.

It's relevant that about half of the users see the new ticketing system as a facilitation in the use of public transport (see Tab. 2.5.3)

Tab. 2.5.3: results from survey regarding the PERSONAL use of public transport

Do you think that this innovation facilitates YOUR use of public transport? Sample size: 856	%
Yes	48
No	15
Don't know	36
No answer	1
Total	100

We asked people if the new ticketing system could be an incentive for increasing the use of public transport:

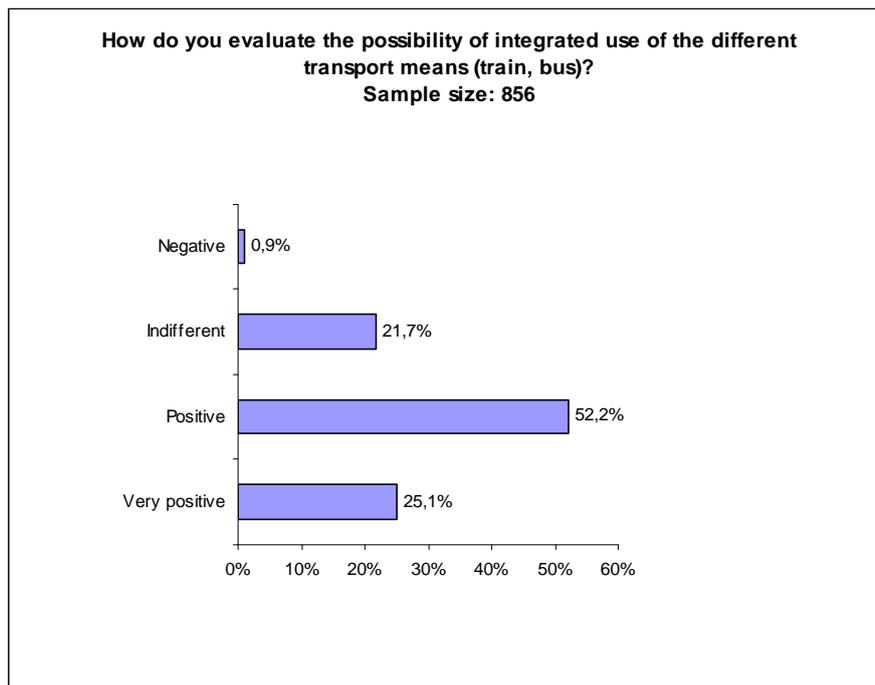
The results are very encouraging: 58% gave a positive answer, while only 12% negative. (see Tab. 2.5.4)

Tab. 2.5.4: results from survey regarding the GENERAL use of public transport

Do you think that this innovation facilitates IN GENERAL the use of public transport and increases it ? Sample size: 856	%
Yes	57,94
No	11,57
Don't know	30,26
No answer	0,23
Total	100,00

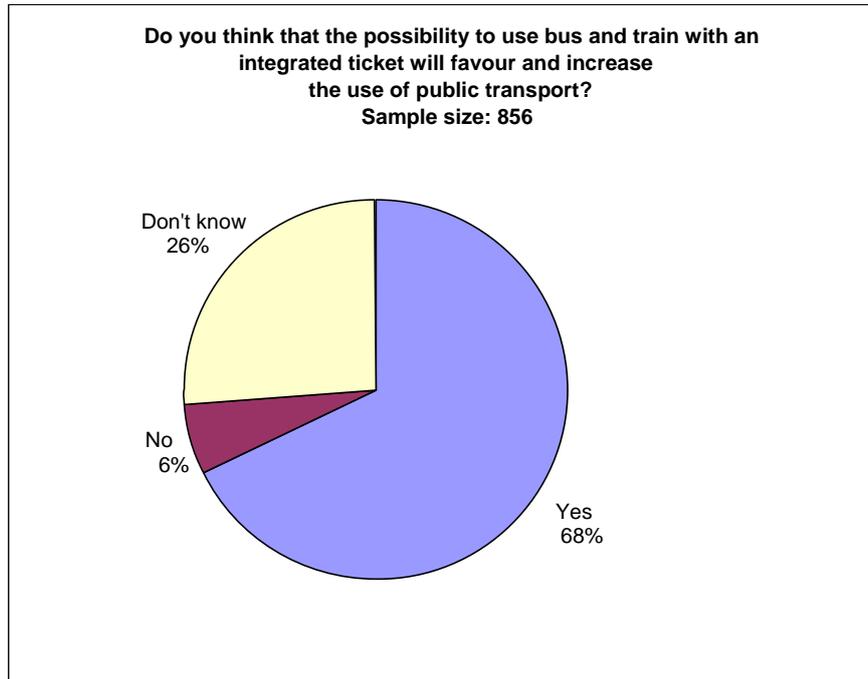
We went on to examine the characteristic of the integration of tickets for different transport modes (train and bus) asking users how do they evaluate this possibility.

The answers confirmed the great value of this option: about 77% give a positive answer while only 1% is negative. This results confirm that the integration of different public transport modes is a requirement of users (see Fig. 2.5.1).

Fig. 2.5.1: results from survey regarding perception of integration train/bus

We asked whether people think that the integration could be an incentive for the use of public transport. They gave again a positive feedback: 68% answered that the integration will favour the increase of public transport use. Each action that goes in the direction of transport integration, in this case ticketing integration, is appreciated by users. (see Fig. 2.5.2)

Fig 2.5.2: results from survey regarding reflections of the bus/train integration on public transport use



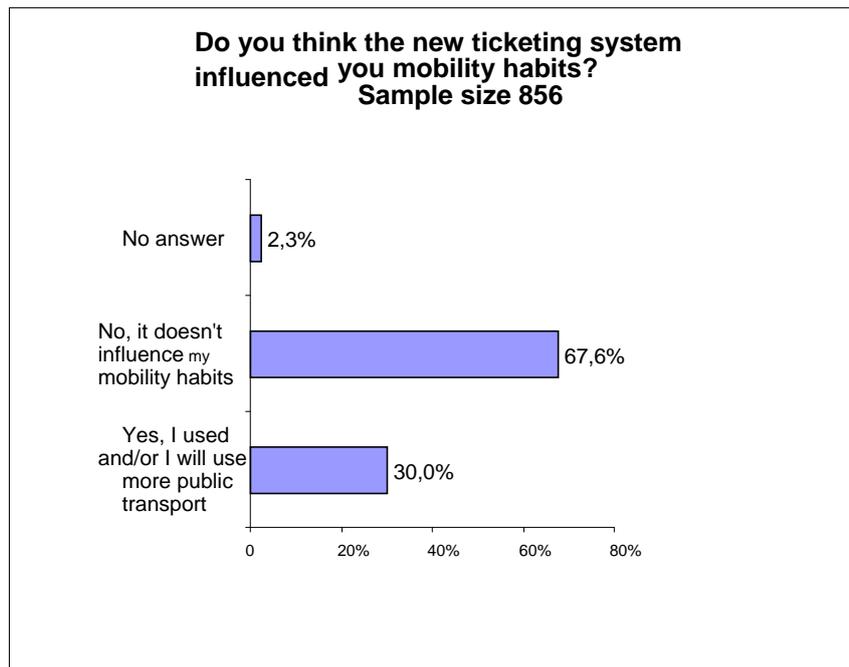
Also the last question on personal mobility habits gave a 30% of users that uses/will use public transport more as a result of the ticketing integration (see Fig. 2.5.3).

We analyzed the characteristics of this 30% of citizens (257 people): we discovered that 28,40% of them are occasional users (73 people).

In our analysis occasional users are people that use single tickets, multi journeys and daily tickets. Regular customers are all season tickets holders.

With this assumptions if we compare 73 occasional users with the total number of occasional users (383 people on the total sample of 856) we can calculate that 19,84% of the total sample of occasional users will use the public transport more that means a relevant modal shift from private modes to public transport.

Fig. 2.5.3: results from survey regarding change in mobility habits



C3 Achievement of Quantifiable Targets and Objectives

No.	Target	Rating
1	Develop the supporting activities to improve acceptance and awareness of the new integrated electronic ticketing system that allowed to create a real intermodal network with bus and train modes.	**
NA = Not Assessed O = Not Achieved * = Substantially achieved (at least 50%) ** = Achieved in full *** = Exceeded		

The target was achieved because, as we can see from the survey, the system is in general well known by users and they evaluate it as a positive innovation that facilitates the access to public transport services and as a consequence increases their use of it.

C4 Up-Scaling of Results

The new fare and ticketing system is going to be expanded in the whole Regione Emilia Romagna to urban and extraurban bus transport and regional railways involving all the public companies of the Region.

During 2013 also private transport companies will be involved in the extension of the electronic ticketing system in order to achieve, by the end of 2014, a unique ticket for all transport services of the Region.

For the implementation of the system we selected market standards (ex: Calypso) that guarantee the replication in other contexts.

C5 Appraisal of Evaluation Approach

The evaluation would have been more complete if we had the possibility to collect data before/after concerning the modal split of the transport modes use.

These data are not available at the moment and they are only measurable through the population census. With this information we could have measured change in mobility behaviours.

C6 Summary of Evaluation Results

- **System acceptance** – the results of the user survey demonstrated the success of the new ticketing system in particular with regard to the integration of services (bus and train)
- **Transport use** – the results of the user survey demonstrated that the integrated ticket for bus and train encourages use of public transport. This is also reflected by the increase of season tickets sold.

C7 Future Activities Relating to the Measure

After the end of the Mimosa project the activity concerning integrated PT fare system will continue with the realization of a clearing centre to allow the integration of data from the different companies and the sharing of revenues. The activities will be of commercial, contractual and administrative nature and will represent a big challenge for the different companies of the Regione Emilia Romagna.

The realization of the electronic ticketing and the acceptance from users of the new fare system developed within Mimosa were the fundamental steps for the development of the regional integration that foresees the realization of the clearing system as an ambitious final objective.

D Process Evaluation Findings

D0 Focused Measure

X	0	No focussed measure
	1	Most important reason
	2	Second most important reason
	3	Third most important reason

D1 Deviations from the Original Plan

No sensible deviations from the original plan

D2 Barriers and Drivers

D2.1 Barriers

Preparation phase

- **Long approval process** – The approval process of the new fare structure and ticketing system required long time because it implied a political work to merge needs of different local authorities concerning the fare zones definition and characteristics.
- **Complexity of the project** – The fare and ticketing system developed is a regional system: during the preparation phase TPER worked together with all the public transport companies of Regione Emilia Romagna. TPER was the project leader for the realization of a unique documents with the technical specification for the call for tender for the technology supply (on board equipment, management software, ticketing office devices, etc.). This implied strong coordination and merging of the different needs of the transport operators of the region.

Implementation phase

- **Involvement of the company departments** – The realization of the new ticketing system required the involvement of all company departments. This means hard work of coordination of people and activities.

Operation phase

- **Transition from the old to the new system** – In the first operation period both old and new validators as well as old and new tickets were valid. This caused some practical problems for PT users (new tickets stuck in old validators, old tickets in new validators, etc.)

D2.2 Drivers

Preparation phase

- **Political commitments** – There was a strong local and regional commitment to realize the fare and ticketing integration of public transport

Implementation phase

- **High system potential** – this extremely innovative system was a big challenge for all the people working in the realization: technicians, workers, ticket office operators, call center operators. The expectations were very high and created a very positive working situation.

Operation phase

- **Users acceptance** Although the system had a big impact on users habits, the citizens acceptance was very high because they perceived the benefits of the system. Also the information activities were simplified by this good perception.
- **Company acceptance** The substitution of old electromechanical validators with new electronic devices gives great advantages in terms of efficiency, maintenance and reliability.

D2.3 Activities

Preparation phase

- **Creation of a working group** – A specific working group composed of one representative from each of the different transport companies and the Regional authority was created to design the new system. This activity was taken to overcome the barrier “complexity of the project”.

Implementation phase

- **Use of project management tools** - The project was realized using all technical and management tools of a project of high technical, organisational and management complexity:
 - periodic meetings with the Directors,
 - scheduling of activities;
 - meetings for checks on progress;
 - identification of relevant people for subprojects;
 - monitoring of costs and progress of works
 - on-line reports

This activity was taken to overcome the barrier “complexity of the project”.

Operation phase

- **Information campaign** – strong awareness campaign to inform citizens of the new fare rules, the ticketing system, the new tickets.

This activity was taken to overcome the barrier “Transition from the old to the new system”.

D3 Participation

D3.1 Measure Partners

- **Measure partner 1** –TPER spa as public transport company has a principal role in the realization of the new fare and ticketing system in the Bologna urban, suburban and extra urban service
- **Measure partner 2** – Regione Emilia has a coordination role in the realization of the regional system and also in the planning and design of information campaigns

D3.2 Stakeholders

- **Stakeholder 1** – Citizens in general and in particular public transport users that are the final users of the new ticketing system and can take advantage of the integration of the transport modes integration
- **Stakeholder 2** – Municipality of Bologna
- **Stakeholder 3** – Regione Emilia Romagna
- **Stakeholder 4** – Province of Bologna
The Municipality, Regione Emilia Romagna and the Province are the shareholders of TPER (the transport company) so they influenced the strategic choices of innovative projects. In particular Regione Emilia Romagna had a fundamental role for the realization of the integration at regional level
- **Stakeholder 5** – SRM (Mobility Agency supervisor of the public transport in Bologna. TPER and SRM sign each year a service agreement)

D4 Recommendations

D4.1 Recommendations: Measure Replication

- **Sustainability of Technological innovation investments**– The realization of a new electronic fare and ticketing system implies a big investment in terms of equipment and resources. This investment can be justified and sustainable only if the introduction of the new technology goes in parallel with the improvement and increase of the services offered (transport modes integration, access to other services).

D4.2 Recommendations: Process (Related to Barrier-, Driver- and Action Fields)

- **Information campaign** – For complete success in the introduction of a new ticketing system a fundamental aspect is providing information to citizens: the information has to be first of all general on rules and technologies used but attention has also to be paid to specific segments of people in order to reach each category with the relevant information.