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USER'S ABILITY TO USE INTERNET TECHNOLOGIES IN TRANSPORT

Key Words

User;
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Transportation

Abstract

The paper shows the willingness of service users to apply innovative models based on advanced Internet technologies in transportation. Research on the development of an innovative e-business model based on advanced Internet technologies will be presented in the form of problem analysis, methodology used and solutions, followed by different presentation of comparative results and conclusions. A survey questionnaire will be used to determine the attitude of service users as a research instrument. The main purpose of the research is to improve the quality of service in comparison with existing traditional models, customer satisfaction with the use of mobile advanced Internet technologies. The application of new models and technologies has led to a reduction in operating costs. The application of mobile technologies has made it possible for business anywhere and anytime.

1. INTRODUCTION

Every business transaction that is realized through mobile devices and mobile telecommunication network is a mobile commerce. The following technologies are used to conduct business transactions in mobile commerce:

- SMS (Short message system) means sending short messages via mobile communication systems;
- Unstructured Extra Services Data System (USSD) is a protocol used to communicate with services hosted on mobile carriers' servers;
- Mobile Internet, which refers to the ability of a service user to access mobile search;

- NFC (Near Field Communication) technology is a communication and set of standards for mobile devices where radio communication and two-way communication between them are established.

Many specific business needs in an enterprise context cannot be effectively met by using current business process technology. Furthermore, end users are allowed to interact with the process they created on their smartphones. Finally, the usability of the approach was evaluated on a small set of users in the actual business scenario. The results show that end users can effectively build their personalized business processes [1].

Researchers pay particular attention to the relationship between customer satisfaction and loyalty, which has attracted the attention of the international community, as transport agencies aim to identify ways to increase the number of outsiders. In the paper, the authors [2] examine how users' perceptions of transportation services and customer satisfaction affect loyalty. Using the satisfaction questionnaire information collected by two Canadian transit providers, an attempt was made to better understand the complexity of several factors affecting passenger satisfaction and behavioral intentions. The findings from this study are used to define areas where transit agencies can develop specific strategies to determine customer satisfaction with the goal of increasing quality. Insights into passenger perception provides useful information that can help transportation organizations understand what inspires customers' perceptions of satisfaction and loyalty in general.

An example of behavioral analysis and stakeholder engagement in urban transport planning creates an integrated modeling framework that allows for the assessment of policy acceptability, taking into account their heterogeneous preferences and their interactive behavior. The proposed stakeholder behavior analysis, together with technical and economic analyzes, contributes to the assessment required to support decision makers [3].

2. MATERIALS AND METHODS

Critical business activity is the purchase of tickets at the cash registers of the service provider and the possible modalities of monetary transactions (payments) are by cash or bank payment card [4]. The interaction interplay of messaging and transaction roles can be analyzed across six semantic context dimensions (who? What? Where? When? How? Why?) Paired with six situational factors of communication dynamics (space, relationships, time, interactions, roles, contexts). POVIUK [5] [6]. A tabular overview of the semantic dimensions of context and communication dynamics factors for users and service providers is given in Table 1.

Table 1. Semantic dimensions of the context coupled with the situational factor of the dynamics of business communication

Semantic dimension of context/Factors of communication dynamics	Service user	Service provider
Who? (ROLES)	Urban transport service users integrated from the rail and road transport modules	transport service providers from the rail and road transport modules
What? (RELATIONS/ FUNCTIONS)	Customers' personal needs for the transport service realized through the activities of ticketing and transportation	Provision of reliable urban transport service to customers with satisfaction of quality standards in all activities
Where? (SPACE- LOCATION)	Space-real physical locations to meet the needs of transport service users	Operational area of the transport service provider
When? (TIME-MOMENT OR PERIOD)	Checkout time - fixed daily ticket purchase time	During the seven days of the week and according to the operational plan from the winter / summer timetable
How? (INTERACTION/ TECHNOLOGY)	Performing User Roles in Process Technology Transportation Activities and Business Transactions with Multimodal Interactions	Implementation of the programmed process structure of the transport service with operational certainty, functional suitability and reliability of the transport system and technical infrastructure
Why? (QUALITY/ PLEASURE)	Satisfaction of personal wishes, needs, demands and expectations of users	Maintaining the parameters of a reliable transport service

The primary objective of the research is to develop a new model of ICT transactional business in a transport organization based on internet technologies. Internet technologies are not only used to search for information and conduct transactions in e-commerce, but also as a platform for providing customer service. For the integration of a web service in a transport organization, the interaction process related to the service, its flow and interdependent calls is defined. Business process implemented with Internet technologies is an e-process.

Comparative view of transaction models was generated based on the situation parameters that include: *space, time, roles, relations, interactions and environment* (Table 2).

Table 2. Comparative view of the factors of the communication dynamics of the Conventional, and ICT transaction model of transport service (Adapted according to [7])

Model Situation parameter	Conventional transaction model	ICT Transaction Model
Space	Passenger cashier at TO offices authorized to sell tickets	A virtual cash register for choosing, paying and getting a service
Time	Limited daily travel cashier hours	24 hours over seven days
Roles	Service user with need, request and expected card service / service provider direct distribution implementer	Ordering, selling and delivering the requested service through the service
Relations	Service user in f-f communication with cashier	communication between users of the service and the service in the transaction activities of ordering, paying and obtaining a ticket
Interactions	Customer Service Employee	Service user with server u to select, order, pay and obtain the requested service
Environment	Physical access of the user to the cashier / work space for the employee	Development of a virtual platform for transactional business between service and service users

For the purposes of the research, a comparative overview of the factors of communication dynamics between traditional and innovative transactional ICT models is presented based on the following indicators: space, time, roles, relationships, interactions and environment. At the heart of the innovative ICT transactional model is the service user as the most important resource for initiating the entire process. The service user needs to meet their travel needs in the easiest and most affordable way.

Technological innovations in the process structures of urban transport service imply not only the extension but overall the replacement of traditional contacts in the real physical space of the service provider into contactless transactional models of provider and user communication. The goal in designing and implementing the model is not only to increase the operational readiness, functional suitability and reliability of the transport organization's resources, including technical infrastructure, business efficiency, but above all to increase the level of quality that is an indicator of a "customer satisfaction measure" [8]. Based on the presented parameters, the model has the option of reviewing all cash transactions for the

purchase of tickets as well as the service user and the opportunity to cancel the trip [9] [10].

3. RESULTS AND DISCUSSION

The analysis of available literature in the field of Internet technologies, electronic business, models currently represented in traffic, showed the possibility for business improvement and overall satisfaction of users of services, found space for the development of a new business model. The new model should encompass the service user as a customer and the integrated transport organization as a service provider.

As part of the empirical research, a survey will be conducted for users of services and a survey for employees. The survey covers user issues, where new possibilities for integrating transport organizations' Internet services are covered, with the special reference that the service user can start a journey in one place, end in another, use an alternative mode of transport and arrive at a specific planned location. Shopping related activities are carried out through a mobile application and the service user can make online cash transactions using a payment card. After the cashless payment, the user receives a digital bar code card as a confirmation. The bar code contains all the necessary information related to the date of travel, route, vehicle and destination. The service user is obliged to validate the e-ticket, store and show the bar code on the smartphone to the authorized person for control before commencing the journey in the transport vehicle.

The sample of the service provider operator consists of employees who are in direct business communication with customers. and they answered 15 questions with five offered answers in the survey questionnaire. The input data in some of the questions that represent the research variables include: years of service, education level, IT education level, IT certifications, participation in IT projects, analysis of IT competences, readiness for new ways of doing business, ... Assessment was used Likert scale where each answer is represented by a number (1- no, 2-I'm not sure, 3-maybe, 4-very likely and 5-yes). Based on the data collected through the survey and processed by statistical analysis using IBM SPSS software, information was obtained on the profile of the surveyed operators through the distribution of frequency of response values. Based on the obtained profile data in the study, the attitude of the employees towards the development and implementation of the new model of IT transactional business is partly positive. Special attention should also be paid to the attitude of employees exploring the possibilities of developing and improving the business of the transport organization in relation to the traditional business to date (purchase of a ticket at the counter of a passenger ticket) [11].

A sample of service users is made up of surveyed students and citizen travelers who travel daily, use mobile phones and the Internet. The main research variables are: satisfaction with the current service, quality of service, objections to the service provided, objections to the work of employees in TO, willingness to apply new ways of doing business, confidence in TO ...

Empirical research has shown a positive attitude of service users (employees and students) who travel and use transport vehicles on a daily basis, as well as employees of the transport organization who are in direct communication with the service user. The primary objective of the research is to look at the indicators for the development of an innovative model based on the models and services currently in use based on the attitude of the service users, their wishes, and the needs and requirements. In addition to service users and employees, they also contribute to the development and implementation of a technologically innovative contactless transaction business model.

4. CONCLUSION

The innovative ICT transactional model of transport service is conceptualized as a unique whole of technological, behavioral, process and contextual components of functioning and business in transport organizations for transport of passengers and complexity of interactions with service users. The initial hypothetical research set-up is oriented to the observation of parameters with the aim of improving the performance of functional and transactional business processes and raising customer satisfaction to a competitive level of service quality. The results of a field survey of the profile views of users of representative sample services confirm the hypothetical assumption of a willingness to accept the ICT transactional model of transport service in the electronic business of transport organizations. The user readiness indicator for adopting advanced Internet technologies is higher than the readiness of railway transport employees for the carriage of passengers who express a certain indecision and distrust of new business models.

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