A Strategic Study on Smartphone-based Automotive Service Platform

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Track: Collaborative Commerce

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Abstract

As the mobile devices are widely adopted in various applications, wireless communication has transformed many industries by developing innovative services. For the automotive industry, it is possible to integrate smart-phone technology in several existing devices. The main goal of this paper is to provide a strategic perspective on the innovative service platform based on smart-phone, currently organizing by AISICA (Automotive Integrated Services & Intelligent Card Alliance). The strategic perspectives are developed by the summarized comments from the executives in several ISPs/OSPs and backbone operators in order to justify the strategic value of the automotive service platform. Sample questionnaire is also designed which will be distributed in the next phase as the basis for the AISICA to elaborate the proposed strategy into detailed action plan with consumers' inputs.

Keywords: Mobile Commerce, Smart-phone, Innovative Service, Automotive Alliance

1. Introduction

As the mobile devices are widely adopted in various applications, wireless communication has transformed many industries by developing innovative services. Recently, the impact of the wireless telecommunication networks and mobile devices has taken a new turn. The wireless not only breaks away from space limits but also enhances the mobility in work, life and m-commerce. Consequently, it integrates smart-phone technology in several existing devices for the automotive industry.

M-commerce contained the characteristics of ubiquity, personalization, flexibility, and dissemination　Siau et al.,2001　.According to Varshny and Vetter(2002), m-commerce is defined as the integration of wireless telecommunication networks and the application of e-commerce. In the study of Wang and Liao, (2007), many e-commerce transactions are conducted through mobile devices (e.g., cellular phones, hand-held or palm-sized computers, and even vehicle-mounted interfaces) using wireless telecommunications networks and other wired e-commerce technologies.

Despite the convenience deriving from the m-commerce, the constraints of mobile hardware limit the application of m-commerce　Lam et al., 2003　. The smart-phone is highly expected by the market because it has combined the portability of multi-functional cell-phone with the calculating and networking power of PCs. Therefore, the smart-phone contributes to the applications of information management and programs by developing additional functions.

The main goal of this paper is to provide a strategic perspective on the innovative service platform based on smart-phone, currently organizing by AISICA (Automotive Integrated Services & Intelligent Card Alliance).This paper is organized as follows. The smart-phone-based automotive service platform development program is firstly

described. A value chain of the m-commerce is presented in the third section. In Section 4, the future development is presented, and is evaluated by a designed questionnaire. The paper ends with conclusions and related opportunities for further research.

2. On Smartphone-based Automotive Service Platform

A strategic alliance is formed to utilize AISICA initiated by Automotive Research & Testing Center (ARTC) to provide strategic new services for the consumers in 2005. Automotive Integrated Services integrate the transport information platform, the mobile trade platform, and the vehicle management platform to be applied in a new market. The consumers can use one IC card to get multiple services provided by the strategic alliance members in the AISICA as shown in Fig.1.
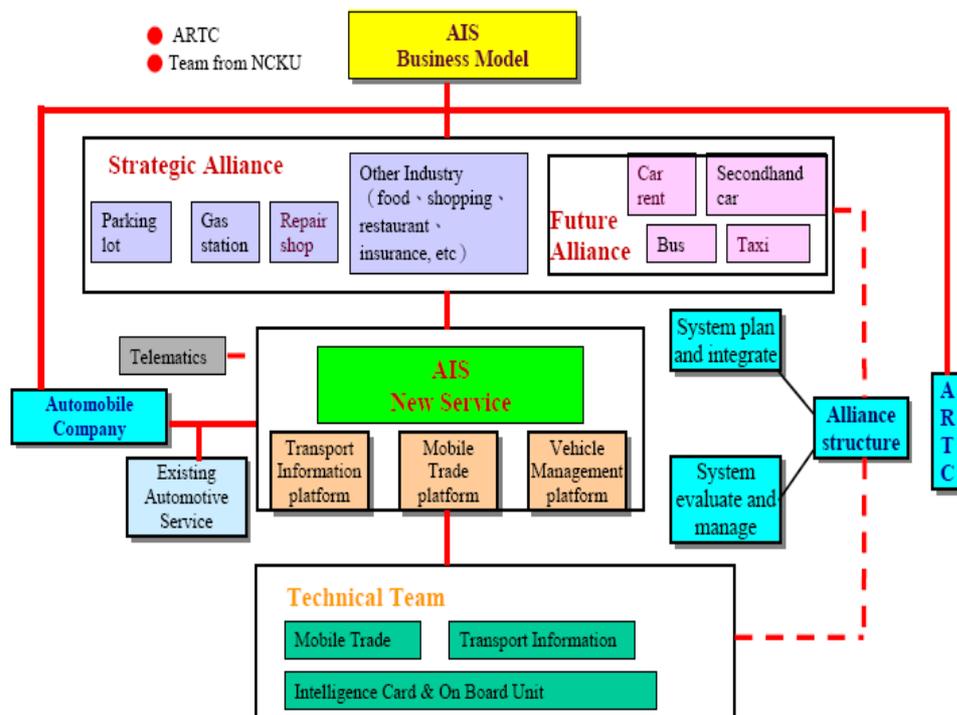

Fig.1. Business Model for AISICA Project.

ARTC develops the Smartphone-based Automotive Service based on AISICA in 2007, as shown in Fig.2. The services is formed by Smartphone-based Automative Service Platform combining mobile content providers, internet services providers, and application services providers ASP .Compared to the traditional services provided by automotive manufacturing, the Smartphone-based Automotive Service is developed based on the response of consumer. Therefore, the consumer can obtain the real-time services comprehensively by using the smart-phone.
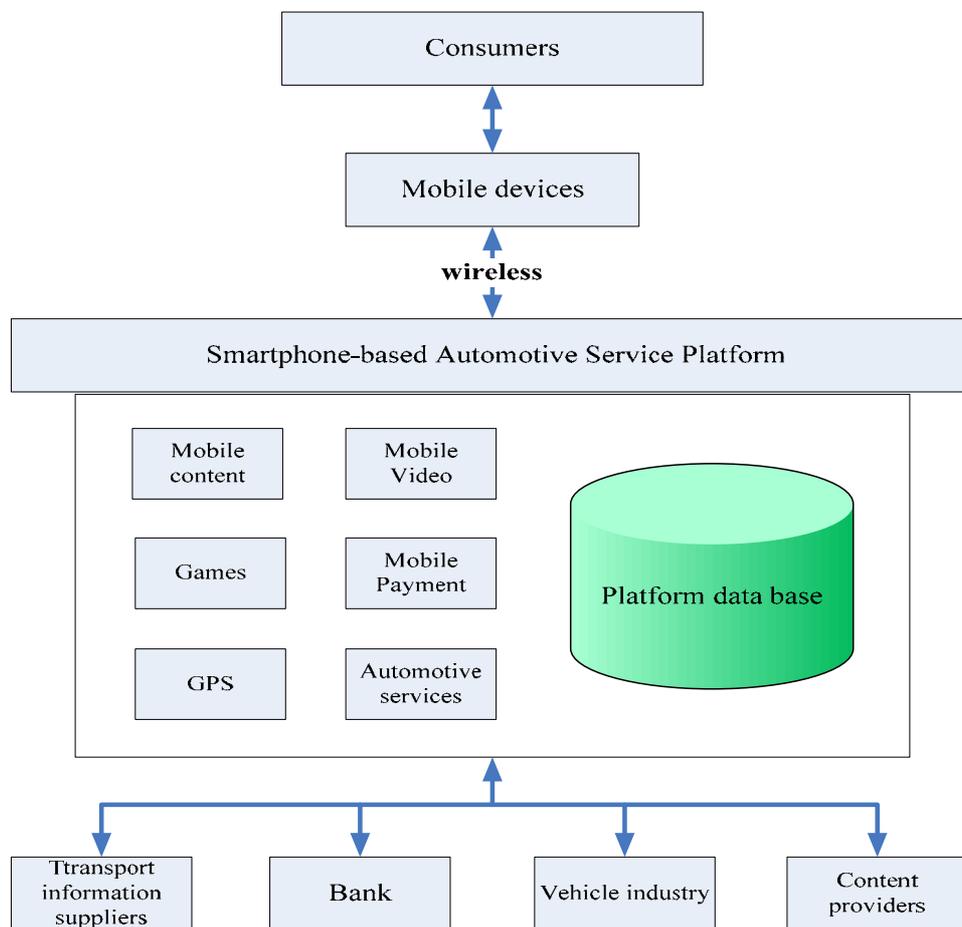

Fig.2. Smartphone-based Automative Service Platform

The consumer demand and services are integrated in the Smartphone-based Automative Service Platform. Consumers can obtain the service from this platform across the mobile devices. In this platform, there are three categories of wireless,

technology and application services, as shown in Fig.3.

1. Communication

The network and system transfer information from content providers to consumers. For example, 3G (Third Generation), GSM(Global System for Mobile communications), PHS(Personal Handy-Phone System), HSDPA(High-Speed Downlink Packet Access)

2. Technology

The primary players are access device manufacturers and network equipment vendors such as devices retailers, component makers, micro-browsers producers, and development platform providers.

3. Application Services

These services are applications of digital content, such as SMS (Short Message Service), GPS (Global Positioning System), Mobile Games, and Mobile Payment.
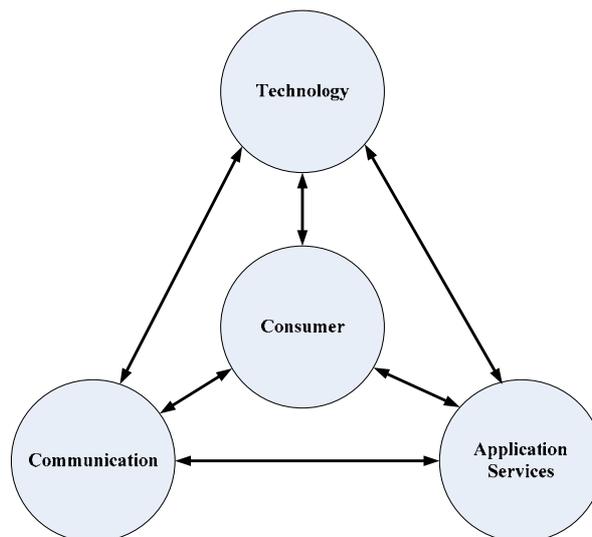

Fig.3. the components of Smartphone-based Automative Service Platform

3. Value chain analysis

The main features of m-commerce include flexibility, convenience and ubiquity. Since this study is based on the application of smart-phone on automotive service, we will apply the value chain of m-commerce to the automotive service. To develop our study, a further understanding of value chain model is needed and its value for automotive service will also be investigated.

As discussed in the previous session, this paper describes an innovation value chain in automotive industry, as shown in Fig.4. The basic value chain is divided into two sections　a　Smartphone-Based Automotive Service Platform　b　vehicle management and services.
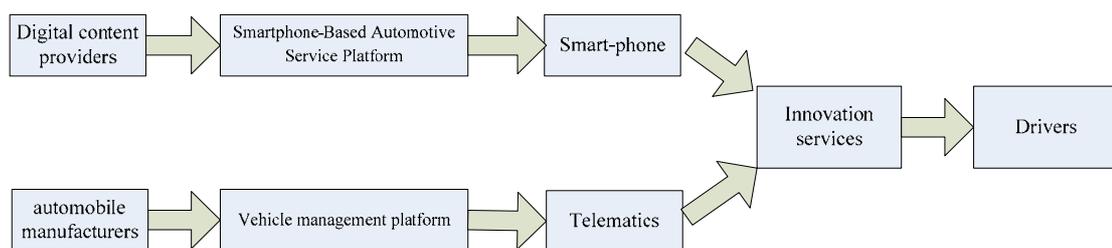

Fig.4. the value chain in automotive industry

a　Smartphone-Based Automotive Service Platform

The content creation provides digital material created by themselves such as textual information, audio, video, and graphics for consumers. Hence, the driver can download digital contents such as games, music, and video via the Smartphone-Based Automotive Service Platform to obtain entertainments and utilities by using smart-phones. However, digital content must be edited, customized, combined and provided to the drivers. Content providers not only aggregate and transform digital content but also distribute them to smart-phones by wireless. For example, the platform which this paper presents can combine

the real-time information of traffic scene and GPS to provide add-value services for consumers. Marketing and selling digital content is the primary aim for this platform. Therefore, value is added by the reconfiguration into the most appropriate information for drivers.

The connection between the Internet, security, and the service platform is an imperative aspect for delivering digital content. The network standards will enhance the security of the automotive service platform. Because of the standard for security, automotive services will be applied in various applications and create the performance in automotive industry.

b   Vehicle management Platform

Vehicle management Platform which integrates the AISICA and telematics is especially provided to drivers. This platform includes the members of automobile manufacturers, gas stations and auto repair shops (service providers), and technology service providers, such as IC card and information systems. The functions of this platform include vehicle management, driver management, oil cost calculation, vehicle maintenance cost analysis, and vehicle event management. The purpose of vehicle management platform is to reduce the total cost of vehicle management.

The value chain integrates the full range of activities which are required to create a product or service to final consumers. In this innovation services, the consumers' demand for automotive services will be met by the value chain combined two platforms. The success of innovation services can not be achieved without the inputs from two platforms. This paper will develops a feasible business model based on this value chain for the solution of future development in the Smartphone-Based Automotive Service Platform.

4. Future development

The Smartphone-Based Automotive Service Platform includes the members of content creation, content packaging, market making, infrastructure, and equipment vendors. The integrated service combines different industrial technologies to satisfy the needs of consumers. Some services such as payment system, entertainment, and real-time information service are included in the integrated platform for the drivers. A driver can use his smart-phone to obtain multiple services provided by the platform members. The Smartphone-Based Automotive Service Platform is the first model which provides automotive integrated services solution. This system uses mature technology and applies in a new market. Innovative application is the strategy in this category.

This paper aims to explore the consumers' preference about the automotive services on smart-phone. The Technology Adoption Model (TAM) is used to analysis the adoption and the usage of consumers. A survey using a self-administrated questionnaire was conducted to collect primary data from a sample of smart-phone users. Based on literature review and consultations with experts, 5 dimensions will be developed to measure the consumers' preferences of smart-phone. The 5 dimensions of m-commerce will be classified as the following: (1) Security: Consumers' concerns over the security and privacy of their mobile transactions; (2) Convenience　The ability to store data and ease of use for consumers; (3) Ubiquity: The users can receive and transit desired information at any location on real-time by mobile devices. The services include news, stocks, and weather; (4) Localization: The user can be offered the geographic position information by GPS (global positioning system); (5) Personalization: The service of m-commerce can be personalized. Hence, the user can update the program to personalize their mobile devices. Principal component factor analysis will be used to identify the push and full factor dimensions. Finally, analysis of variance will be employed to explore the significant differences between the push and pull factors and socio-demographic characteristics of the smart-phone users.

5. Conclusion

While the implementation experiences are still very limited so far, it is believed the summary findings from this article can provide a sound foundation for further study in the innovative automotive service. For consumers, the best value of m-commerce provides personalized information and services and increase the consumer satisfaction on automotive service. However, before providing Smartphone-based Automotive Service, enterprises should understand the demand and characteristics of consumers such as ease of use and their intention of adoption.

This paper presents the Smartphone-Based Automotive Service Platform from different dimensions. Sample questionnaire will be also designed and distributed in the next phase as the basis for the AISICA to elaborate the proposed strategy into detailed action plan with consumers' inputs.A successful integration of existing mature technologies may result in a new service development to automotive industry. The Smartphone-Based Automotive Service Platform is illustrated in the paper and its feasibility is verified by a survey and several expert discussions. The platform presented in this paper is a pilot experiment and should be able to attract more consumers to better utilize automotive integrated services on smart-phone.

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