NFC-based mobile application design restaurant ordering system APP

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Abstract

As smartphones grow rapidly and wireless communication technology develops maturely, mobile applications of all sorts keep emerging. At present, the wireless communication technology that smart phones incorporate most often is Near Field Communication, NFC, which is applied to hand phones with built-in NFC with which users make payment, read messages, and close-range device matching, for example. Restaurants have given away coupons to customers after consumption or accumulate points for exchange of other discounts or gifts using member cards, so as to attract customers to come back again; however, it is not unusual that consumers forget to come to restaurants without their cards or even have lost them. In this regard, this study will design a Restaurant system App, with which the consumers will browse on the mobile devices the discounts, information on meals and other services, and will integrate member bonus and coupons as well as number call service into the App by means of data transmission with NFC technique.

Key words: Mobile device, Mobile application, Near field communication technology, Restaurant mobile application

Introduction

With mobile devices developing and prevailing rapidly, the advent of Apple's App Store in 2008 sparked a fever of worldwide app stores, including Google play, Microsoft Phone Store, APP World and Ovi Store [1]. That gave rise to changes in the existing system of mobile communication industry and to market opportunities of a new form as well. According to the reports by data analysis firm [2], from 2015 to the end of 2016, the use of Apps in world grew by 11% averagely in terms of category, of which the category of chatting and social purposes grew the most, by 44%, followed by that of sports, 43%, while that of shopping grew by 25% from 2015. Apps do not provide just one single function like others did in the past but are developed toward diversity. The diverse Apps allow users to download, install and run App services they need on mobile devices and further to do activities of entertainment, learning, living as well as fulfilling the purpose of commercial activity. As the diverse Apps are developed, there are more corporations beginning to look seriously at the Apps market and to provide services via Apps to maintain old customer connections and scout out new ones as well to boost their own interest [1].

Thanks to the application of wireless communication technology, users now live free of the restrictions by cables. A good number of technologies have been developed in the area of wireless communication, like RFID, Bluetooth, NFC, 4G and Wi-Fi. Among the common applications is Radio Frequency Identification, RFID, which is widely used in electronic toll collection (ETC) as well as in large-scale logistics. It is a technology that couples with other internet technologies and smart cards, and is capable of fast establishing safe connections on various devices and simplifying the complex manual setups in the past, and thus extends to Near Field Communication, NFC. According to the reports by a global market research institute [3], the number of smart phones delivered in 2017 worldwide reached 1.46 billion, about 60 percent of which incorporated NFC chips [4]. This indicates that more and more mobile device manufacturers have become highly aware of devices with NFC functions, including commonly seen applied services like mobile payment, e-tickets, e-business card exchange and near field device coupling. In future applications, the links between objects by NFC will be greatly expected. In summary of the above, the NFC technology is one of the technologies indispensable to IoT or mobile payment in the future.

The above indicates that the fast prevalence of mobile device and internet communications plus the booming of Apps of all kinds enhance the development of mobile commerce toward diversification. And, in online sales of products so far, it is now possible to preview product information and go through the purchase process with certain mobile Apps. The total amount of retail purchases by global e-commerce in 2017 hit US$2.29 trillion, and that amount is estimated to grow to US$4.479 trillion which would be equal to 16.1% of the sales on physical stores [5]. Clearly, more and more customers buy merchandise via mobile devices, owing to which many corporations begin to develop their own mobile Apps with various functions to recruit members, and at the same time disseminate messages via Apps, whereby to perform their marketing, allowing customers to receive up-to-date promotion news via mobile devices, which avoids the need of publicizing service messages through paper or text like they did in the past. That indicates that the market for mobile commerce will be a centerpiece of development for corporations in the future.

Restaurants and cafes used to give away coupons to