

Adapting to Recent Changes in IT Environment in Communicating Statistics

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1. Introduction

With the rapid and continual advance of information technology (IT), the Internet has become an integral part of our everyday lives, and so has the website become a more and more effective and common means used by official agencies for strengthening their communication with their stakeholders. Furthermore, the proper and timely provision of statistical information has become crucial given the current economic uncertainties facing these agencies and the public at large. The central bank, in particular, can make its monetary policy transparent and trustworthy and help the public to better understand the economic situation, so as to alleviate uncertainty and thus avoid wrong decision-making.

2. Development of Website for Communicating Statistics

Since early 2004, the Bank of Korea has operated an additional website as the main method of delivering to stakeholders economic statistics covering the major sectors of the Korean economy. The system has been constructed with several strategic values and functional aspects in mind, throughout a few system upgrades since its inception. First, it is to be a repository of economic statistics to provide a comprehensive and timely picture of the Korean economy, and further to create synergy effects to facilitate the economic research and decision-making needs of users. Second, it is to support our stakeholders in such a way as to fulfill diverse needs at varying levels of sophistication, by allowing easy and quick access, convenient manipulation, and better data presentation using handy and/or sophisticated functions. Finally, it can reflect state-of-the-art technology to the extent possible in the course of efforts made for its development and improvement.

To accomplish the aforementioned goals, the system has been established not only by covering an appropriate and diverse range of economic statistics but also by equipping it with various user-friendly features that are available and realizable via state-of-the-art technology. Some of the aspects considered are as follows. First, vast sorts and amounts of economic statistics available in both the bank and other domestic institutions are compiled in such a way as to consolidate the system's role as an informative and reliable repository for analysis of economic statistics. Further, relevant information is synchronized together, to be

displayed or linked to whenever proper and necessary. Second, the latest figures of stakeholders' major interest are offered in a well-arranged screen layout under the heading "100 principal statistics," that are believed useful for policy making and analysis of economic trends in Korea. Third, dual search interfaces have been built to facilitate better use of data by various spectrums of users' analytical needs. Simple search functionality enables users to retrieve data in a few clicks. Multiple (or complex) search functionality, on the other hand, permits data search for multiple data items at once with various additional functions such as holiday removal, unit unification and a pivot function that can switch rows into columns and vice versa. Fourth, a personal statistics inventory called "My-Stat" is provided to a user registering on the system, which allows him/her instant linkage upon logging-in to the latest statistics searched (as previously requested by him/her for later use). This function allows users to reduce their data-loading time by not having to search for the same statistics repeatedly. Fifth, metadata and related publications in conventional PDF and/or e-book formats are all included, as supplementary information related to proper economic statistics to facilitate better use and understanding of the data compilation in the system. Sixth, Internet services have been expanded to embrace mobile users, in an effort to adapt to the diversity of Internet access devices chosen by users.

3. Status Quo and Changes in IT Environment

All features built into the system were originally implemented based upon access to Internet Explorer (IE) coupled with installation to the user's web browser of a number of mobile codes – so-called "ActiveX" plug-in reusable software components. Once these components are installed in a user's PC, they can be invoked with no need for downloading again during subsequent visits to the website. Any necessary process can be run on the user's machine without much involvement of the system server, which can significantly enhance the speed of both access to the site and data manipulation, thus possibly making the system's features more dynamic and interactive.

The adoption of these technologies was rather spontaneous, due to the *de facto* and *de jure* monopoly of IE in the Korean web browser market at around the time when our system was launched. In the early days of Internet banking deployment in 1999, Korean government officials mandated that all encrypted e-commerce be based on electronic signatures enabled via so-called public-key infrastructures (PKI) [1]. Started in 1998 by one major Korean bank, Internet banking had been adopted by around 20 banks by the end of 2000. Its adoption by customers was extremely fast as well. Furthermore, IE became the sole plug-in tool used to download public-key certificates onto computers, since Netscape had fallen from the browser market by the early 2000s, leading to excessive reliance on IE and its technology in Korea. According to recent figures, the web browser market share of IE in Korea is still much greater (more than 90%) than that worldwide (below 50%) [2].

However, the recent surge in smartphone use in particular has provided tangible pressure to support cross-browser compatible Internet services for both e-commerce and general use, and to eliminate such restrictions from the current regulations associated with e-commerce that inevitably led to the market being locked in to IE. Internet services based on ActiveX technologies will not operate either when accessed via non-IE browsers such as Firefox and Chrome or when non-Windows operating systems (OS) are used, including mobile OS/browsers such as iOS/iPhone and Android. In fact, ActiveX technologies are not included in the web standards that have been developed and maintained by the International World-Wide Web Consortium (W3C). In addition, unlike Adobe Flash that is apparently a well-accepted mobile code, due to their local devotion the ActiveX components are blocked at the firewalls before download to users' PCs when security constraints do not allow downloading of such executable software components. Thus, a

growing number of non-IE and/or mobile users domestically and worldwide have been unintentionally prevented from accessing all of our dedicated efforts built for Internet communication.

4. Toward Virtual Cross-platform Accessibility

To eliminate inadvertent accessibility obstacles arisen due to the adoption of market predominant IT technologies, the bank started investigation in early 2008 into how our system could be effectively migrated to one of virtual diversity, i.e., with multi-browser's accessibility and web standard compliant along the lines of the government's initiative taken at around that time as well. These full-fledged efforts of ours were in fact preceded by an earlier step taken in the 2007 revision, where partial cross-browser services were supported by provision of plug-in components for two non-IE browsers, Firefox and Netscape, which run under the Windows OS. As of March 2010, our system can be accessed also by three other main non-IE browsers — Safari, Chrome and Opera, although still only by downloading the associated plug-in components using the Windows OS like for the other two non-IE browsers. A manual download option is added, to alleviate problems users might be confronted with by automatic downloading of these components due to security constraints set on their Internet access. This solution is certainly only an intermediate step in our migration process, however.

There are two major challenges in replacing ActiveX-based functionalities by the web standard ones. Web standard technology with JavaScript and AJAX for example would increase the data-traffic necessary between the server and the user's PC, as compared to ActiveX technology, since its process requires much more involvement of the server. This would add an extra burden to the server and thus lead to a decrease in Internet speed. Moreover, the web standard technology may not be able to make functionalities dynamic and interactive to the same extent as the ActiveX-based ones do. Currently, we anticipate that multi-browser and multi-OS accessible services will be available by the end of 2011.

5. Emerging Needs for Mobile Internet Access

Furthermore, as the number of smartphone users increases, so does the demand for mobile Internet access from those users and the need for mobile presences of official statistical agencies. We started our mobile Internet service from 2007, suited only for PDA (personal digital assistant) and delivering merely a core set of economic indicators called "Korean Statistics 100 (Prompt)." Later an appendix was made to the system, suited for smartphones and covering 400 statistics along with providing a statistics release schedule and a glossary for economic statistics. In our system development, a mobile web approach has been adopted, to build a cross-platform browser-based mobile website under the spirit of multi-browser accessibility. With its usage, users do not need to download an application or any maintenance updates, but their mobile browsers can instead instantly deliver the most up-to-date applications to their devices. A mobile app approach has not been adopted, however, since that requires creating and maintaining customized versions of the apps for each of the mobile platforms on which the system operates, such as Android, iPhone, etc. To provide easy linkage to our mobile website, we also proactively began from early 2011 to include a QR code for smartphone users at some selected publications such as "Principal Statistical Indicators" and the "Monthly Statistical Bulletin." Mobile users can be connected to the mobile website by simply scanning the QR code with dedicated readers equipped in their smartphones.

6. Concluding Remarks

Statistical agencies have been able to communicate statistics with their stakeholders effectively by operating their own dedicated websites. Continual advancement and diversification in IT technology, however, may lead to expenses being incurred to some extent if proper approaches are not adopted in building their systems – as seen from the experience of the Bank of Korea as an early adopter of the market dominant technology. Ideally, the best-chronicled standards should be predicted and implemented, but they cannot be known well in advance at the time of adoption. Under the changing IT technology environment, the best strategy of official statistical agencies would be to adopt web technology that may fit along the lines of equal access to information, as much as possible.

REFERENCES

[1] Kim, H., Huh, J.H., and Anderson, R. (2010, Feb.) “On the Security of Internet Banking in South Korea”, Technical Report RR-10-01, University of Oxford Computing Laboratory.

[2] <http://gs.statcounter.com>

ABSTRACT

The Bank of Korea has operated its Economic Statistics System (ECOS for short) in an additional website for delivering economic statistics on the main sectors of the Korean Economy. The system covers financial economic statistics, national account statistics and various business and consumer survey statistics. It was designed to provide statistics to policymakers and the public in a timely and convenient manner by strengthening many useful functions such as statistic search, fluctuation rate calculation, chart drawing and data retrieval. These conveniences are mainly implemented based on access to Internet Explorer (IE), coupled with installation into the user's browser of so-called “ActiveX” plug-in reusable software components. However, due to the recent growth of non-IE browser markets and of security issues associated with the “ActiveX” components, the Bank of Korea is currently migrating into a new system that will allow access via any browser and be more in compliance with web standards. In this presentation, we discuss our efforts for migration to state-of-the-art multi-browser access with additional capability for mobile data access, for example by “smart-phone” users.