

Report No. 49 of the Director of Audit — Chapter 2

ADMINISTRATION OF THE HONGKONG POST CERTIFICATION AUTHORITY

Summary

1. In the 1998 Policy Address, the Government stated the importance of using information technology to help Hong Kong retain its competitive edge and drive its economic expansion. As part of the strategy to make Hong Kong a leading digital city, the Government undertook to establish a legal framework to provide certainty in the conduct of electronic transactions and to spearhead the development of a public key infrastructure (PKI) in Hong Kong.
2. In January 2000, the Hongkong Post (HKP) established the Hongkong Post Certification Authority (HKPCA) to offer public certification authority (CA) service. Since then, the HKPCA has been issuing digital certificates, under the brand name “e-Cert”, to individuals and organisations. These e-Certs are accepted for electronic government services (e.g. electronic filing of tax returns) and electronic commerce (e-commerce) services (e.g. online banking).
3. In mid-2005, the then Commerce, Industry and Technology Bureau (CITB) completed a business review of the e-Cert scheme and the HKPCA operation. The review concluded that the e-Cert operation was not sustainable in the longer term. In October 2006, the Government awarded a contract for outsourcing the e-Cert operation to a company in the private sector. From its launch in January 2000 to March 2007, the e-Cert operation had incurred a cumulative operating deficit of \$195.2 million.

Planning for the establishment of the Hongkong Post Certification Authority

4. *Scoping study by the Efficiency Unit.* In November 1997, the Efficiency Unit (EU) conducted a scoping study to formulate a strategy on the provision of CA service. The study found that the local market was still limited and the business viability might not be there yet. While the study of the EU was in progress, the HKP indicated its strong interest in becoming a CA. The EU considered that the business case was comparatively weak if the HKP took up at the same time both the registration authority and issuing authority functions.

5. ***HKP invited to assume registration responsibility.*** In June 1998, the then Information Technology and Broadcasting Bureau (ITBB) invited the HKP to set up a public CA. The ITBB stated that, having regard to the financial investment, technical expertise and security requirements involved, a feasible option would be for the HKP to assume the registration responsibility only.

6. ***Market survey completed by a local university.*** The HKP then commissioned a local university to conduct a market survey on the demand and acceptability of CA service in Hong Kong. The survey found that: (a) the use of Internet for e-commerce in Hong Kong was low; and (b) 46% of the companies surveyed said that they would not pay anything for server digital certificates and 32% said that they would pay nothing for client digital certificates. The survey concluded that digital certificates should ideally be free and the CA service should not be aimed at breaking even in a short time or making money.

7. ***Business study completed by the HKP.*** In May 1999, the HKP completed its own business study on the CA service. The study found that most overseas PKIs were not making money. PKIs were still more a hype than reality and there were more failures than success stories. Nevertheless, there were rising aspirations from individual markets, including financial, banking, retail, trading and public services, to rely on the electronic means as an improved and efficient channel of service deliveries.

8. ***Projections of the HKP.*** Despite the study findings mentioned in paragraphs 4, 6 and 7, the HKP projected that: (a) the number of digital certificates to be issued would grow from about 550,000 in 2000-01 to 3,172,000 in 2004-05 (representing an average annual growth rate of about 55%); and (b) the CA business would break even in 2000-01 and accumulate profits of about \$321 million by 2004-05. The HKP concluded that the CA business would be profitable and that it should assume both the responsibilities for registration and issuing of digital certificates. Audit could not find any records showing the basis used by the HKP in projecting the high demand for digital certificates. Audit was therefore unable to assess the reasonableness of the HKP's projections, which appeared to be optimistic. *Audit has recommended that, for future projects, the Administration should ensure that the basis for making financial projections is properly documented.*

Review of the financial sustainability of the e-Cert operation

9. ***Consultancy study conducted in 2001.*** In May 2001, the HKP commissioned a consultant to conduct a strategic review of the e-Cert operation. In February 2002, the consultant reported that the need for a general purpose CA was questionable and that the business model of the e-Cert operation was unlikely to be financially sustainable. The consultant recommended that the HKP should review the appropriateness of the business model of the e-Cert operation and consider other revenue models.

10. ***Review of funding strategy by the CITB on e-Cert operation.*** In July 2003, the CITB reported the findings of its review of the funding strategy for the e-Cert operation to the Legislative Council (LegCo) Panel on Information Technology and Broadcasting (ITB Panel). While the operation results and the studies carried out before July 2003 indicated that the actual and projected demand for e-Certs would be low, the CITB was optimistic and reported to the ITB Panel that the e-Cert business would break even in 2006-07 and should be “financially self-sufficient in the longer term”.

11. ***Actions taken to re-examine the e-Cert project.*** Following the launch of the free e-Cert embedding exercise (see para.12) in June 2003, the HKP revised the target opt-in rate for free e-Certs from 60% to 30% in October 2003 based on the actual opt-in figures. In May 2004, the HKP also revised downward significantly the financial projections of the e-Cert operation in its medium range corporate plan for the period 2004-05 to 2008-09. A task force was set up by the CITB and the HKP in November 2004 to promote the adoption of e-Certs in the community. In 2005, the CITB conducted a business case review study on e-Cert operation. The ITB Panel was informed of the results of the review in December 2005 that the e-Cert operation was not sustainable in the longer term (see para. 3). In Audit’s view, the CITB and the HKP should have taken earlier action to re-examine the e-Cert project and the Government’s funding strategy when the low opt-in rate for the free e-Certs was known in October 2003. *Audit has recommended that, for future projects, the Administration should take earlier action to review the financial projections and viability of a project if the actual out-turn deviates significantly from the original estimate.*

Issuing of free e-Certs to the general public

12. In December 2001, the ITBB informed the LegCo ITB Panel and the LegCo Panel on Security that the HKP would offer the public an option to embed an e-Cert, with one year’s free use, in their new smart ID cards. The estimated one-off non-recurrent cost for upgrading the HKP’s computer system would be less than \$10 million.

13. ***Estimated cost for the e-Cert embedding exercise.*** Audit noted that two projects (i.e. one for upgrading the back-end computer system and one for providing the computer system for a one-stop interface) were required for making necessary improvements to the HKP’s computer system, each amounting to around \$10 million. Audit also noted that, apart from the system improvement cost, the marketing and other miscellaneous cost for the free e-Cert exercise amounted to \$29 million. However, the two Panels were only informed in December 2001 of the project for upgrading the back-end system. *Audit has recommended that, for future projects, the Administration should apprise relevant LegCo Panels of the full financial implications involved in the projects.*

14. ***Target and actual demand for free e-Certs embedded in smart identity cards.***

In October 2001, the ITBB and the HKP projected that 60% (or about 4 million) of the ID card holders would opt to have an e-Cert embedded in their smart ID cards. This was based on a study of the Office of the Telecommunications Authority which found that the percentage of Hong Kong's population aged 11 or above who were Internet users would increase from 56% in 2003 to 73% in 2008. Moreover, under a pilot programme of the HKP to distribute free e-Certs to tertiary students, about 60% to 80% of the respondents registered for the free e-Certs. Audit considers that the assumptions used for making the estimates were questionable because not all Internet users would need an e-Cert and, in general, the opt-in rate for the population would be lower than that for tertiary students. *Audit has recommended that, for future projects, the Administration should take into account all relevant information and use reasonable assumptions in estimating the demand for the services provided by the projects.*

Monitoring of the e-Cert operation

15. ***Requirements of the framework agreements.*** According to the framework agreement signed in 1995 between the then Economic Service Bureau and the HKP, the HKP is required to prepare each year a medium range corporate plan and an annual business plan. Under the e-commerce framework agreement signed in 2000 between the ITBB and the HKP, the HKP is required to maintain a separate part in its annual business plans and medium range corporate plans to account for its e-Cert operation. Audit noted that: (a) the plans were often submitted late; (b) details of the projections made about the e-Cert operation in the plans submitted were limited; (c) significant variances between the actual and expected revenue/expenditure projected by the HKP were found in the plans submitted; and (d) there was limited information for those business arrangements with adverse impact on the e-Cert operation. *Audit has recommended that, for future projects, the Administration should take action to ensure that the project plans prepared should: (a) be submitted in a timely manner; and (b) contain sufficient information, including detailed financial forecast and major events that might affect the projects, to facilitate review by interested parties and stakeholders.*

16. ***Utilisation of the computer system for e-Cert operation.*** When the e-Cert operation was launched in January 2000, the computer system installed by the HKP had a capacity of handling 500,000 e-Certs. In order to cater for the additional workload due to the free e-Cert embedding exercise, the HKP considered that although the old e-Cert computer system was still underutilised, there was a need to upgrade the e-Cert computer system. According to the HKP's records, the average utilisation of the central processing unit of the e-Cert computer system in 2004 and 2006 was below 5%. Audit also noted that the HKP had taken no action to dispose of the old computer system

which had been left idle since March 2005. *Audit has recommended that the Administration should, in future upgrading of a computer system, ensure that: (a) the expected usage of the new computer system is estimated based on prudent assumptions; and (b) follow-up actions are taken in a timely manner to dispose of old computer systems that are no longer needed.*

Outsourcing of the e-Cert operation

17. ***Private sector participation.*** The business review completed by the CITB in mid-2005 concluded that the e-Cert operation was not sustainable in the longer term and possible synergy with the private sector should be explored by inviting the private sector to participate in running the e-Cert operation. In October 2006, the Government Logistics Department Tender Board approved the acceptance of the tender proposal by a company in the private sector (Contractor A) to run the e-Cert operation at a nominal contractual sum of \$1 (payable to Contractor A) for a contractual period from April 2007 to March 2011.

18. ***Late payments by Contractor A.*** According to the contract, Contractor A should pay the H KP about \$330,000 monthly for the use of the H KP's CA centre, disaster recovery site and storage facilities for the initial 12-month period from April 2007 to March 2008. Audit noted that payment made by Contractor A for the use of the H KP's facilities for May to July 2007 was late. *Audit has recommended that the Postmaster General should ensure that Contractor A would make payments to the H KP for the use of the CA facilities on time.*

19. ***Risk assessment and contingency plan.*** According to the EU, a government department considering outsourcing its services must undertake an objective assessment of the risks involved. A contingency plan needs to be put in place to ensure continuous delivery of quality services at all times. Audit noted that, up to July 2007, the H KP had not drawn up any contingency plan. *Audit has recommended that the Postmaster General should consider drawing up a contingency plan for the outsourced CA operation.*

Response from the Administration

20. The Administration agrees with the audit recommendations.

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