History of Information Systems Usage in Japan

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CIGREF Workshop
Summary of the research project

- Two year research project
  - Research Project on History of Development of Information Systems in Japan
    - FY 2007
  - Research Project on Information Systems Which Respond to Industrial and Social Needs: A Historical Perspective
    - FY 2008
- SIG of JASMIN
- Supported by METI, JIPDEC, JUAS
Summary of the research project

• Investigation of
  – History of development of information technology
  – History of development of information systems in manufacturing, distribution and financial industries
  – History of development of companies’ information systems
    • 7 manufacturing companies
    • 5 distribution companies
    • 4 financial companies

• Support from user companies
  – Interviews with key people
  – Provision of data including company history
Overview of sixty years of IS usage in Japan

• 1950’s
  – Punch-card systems had been used for data processing since 1920
    • Cost reduction through laboursaving
  – 1st generation, stored-programme computer Bendix G-15 was imported in 1957
    • The Railway Technical Research Institute used this machine to research on seat reservation systems
  – IBM 650 was introduced at Institute for Nuclear Studies and Onoda Cement Co. Ltd in 1958
    • Technical/scientific calculation
    • Onoda also introduced UNIVAC File Computer for business computing in 1959
  – Domestically made computers started to be developed in the mid 50’s
  – Japan was at least ten years behind the US in information systems development and use
• 1960’s
  – Information systems were used for streamlining business operations and cost reduction during the high-growth period of Japanese economy (1955-73)
  – 2nd generation computers started to be introduced in 1961
    • The number of orders for computers exceeded one for PCS in this year
    • The beginning of the computer age in Japan
  – 3rd generation computer IBM System/360 was introduced at Tokai Bank in 1965
  – Domestically made 3rd generation computers started to increase their market share in 1968
Overview of sixty years of IS usage in Japan

• 1960’s
  – 2nd and 3rd generation computer-based information systems
    • EDPS
    • Magnetic tape/disk units
      → development of business information systems
        – Production management systems
        – Account processing systems …
  – Online real-time systems were developed in 1964
    • The seat-reservation system MARS 101 for Japan National Railways in January
    • Tokyo Olympic Games Online System in October
    • Mitsui Bank set up their online real-time system in 1965
  – MIS Boom in the end of the 60’s
• 1970’s
  – Integrated database systems emerged
  – Special purpose terminals started to be developed and used
    • Manufacturing industry
      – Graphic display terminals
        ➔ CAD/CAM
    • Distribution industry
      – POS systems were put into practical use in the end of the 70’s
        ➔ Consolidated business management systems
    • Financial industry
      – The world first online cash dispensers were set up in 1971 by Bank of Mitsubishi
      – Automatic teller machines in 1977
Overview of sixty years of IS usage in Japan

• 1980’s
  – Office Automation Boom
    • Japanese word processor, facsimile, photo copier
    • Personal computer, PC telecommunication
      ➔ Productivity advance in office work
      ➔ Enhancement of IT literacy
  – Deregulation in telecommunication
    • Telecommunication between companies and provision of value added network services over telephone lines became possible in 1982
    • Liberalisation of telecommunication business in 1985
      ➔ Enhancement of electronic data interchange
  – SIS Boom in the end of the 80’s
  – Japan has caught up the US in information systems development and use
Overview of sixty years of IS usage in Japan

• 1990’s
  – BPR Boom
    ➔ Process innovation methodology
      – Supply Chain Management, Customer Relationship Management …
  – NE/O/DA/MA
    • Network/Open systems/Downsizing/Multi-vender
    • Construction of open systems using personal computers and standardised technology
  – Client-server architecture make it possible for companies to construct the open systems
  – 1995 is the “First Year of the Internet”
    • Network systems = systems using the Internet technology
• 2000’s
  – IT Strategic Headquarters was established in 2000 within Cabinet Office
    • e-Japan Strategy in 2001
      – Defined 2001 as the “First Year of Broadband”
      – Set the goal to make Japan a leading world IT nation within five years
  – Ministry of Internal Affairs and Communication (MIC) announced u-Japan Policy in 2006
    • Attempt to realise the ubiquitous network society by 2010
      – Anyone can access the network anytime, anywhere
History of success or history of failure?

• Failure of MIS
  – Japan Productivity Centre organised an MIS mission sent to the US in 1967
    • The mission report emphasised the necessity of using computer technology to enhance Japan’s international competitiveness
    → MIS Boom

• Failure of SIS
  – The notion of strategic information systems was introduced in the end of the 1980’s
    • It was emphasised that competitive advantage of a company could be gained by development and use of SIS
    → SIS Boom
  – Failure of SIS gave us a good lesson that user companies should ensure their autonomy in development of information systems

• Failure of …
• There exist companies which have successfully developed and used their information systems for long time!
  – They have not been swayed by prevailing technology trends.
    • They’ve constructed their systems centred on making their main businesses efficient and effective.
  – They have had excellent IT staff at their in-house IS department.
  – They have preserved good partnership with IT vendors.

<table>
<thead>
<tr>
<th>Manufacturers</th>
<th>Toshiba, NSK, Nippon Steel, Toyota, Mitsui Chemicals, Kirin Brewery …</th>
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</thead>
<tbody>
<tr>
<td>Distributors</td>
<td>Seven-Eleven Japan, Ryoshoku, Daimaru, Aeon, Planet …</td>
</tr>
<tr>
<td>Financial companies</td>
<td>Nomura Securities, Bank of Tokyo Mitsubishi UFJ, Sumitomo Trust Bank …</td>
</tr>
</tbody>
</table>
• The basis of successful information systems is great philosophy and vision embedded in them
  – Quality of users’ thoughts and values are key success factors
  – Users’ strong will to develop excellent systems is extremely important
The lessons of IS history in Japan

• Superb ability of staff of an in-house information system department is critical to successful development of information systems
  – Behind a great success of information system development should exist a key person who have exerted significant influence over board members
  – Exceeding outsourcing is to sell out the company’s capability of planning and designing information systems
  – Easy introduction of package software should result in an inability of companies to design systems and databases
  – Experience of attending a big IS development project is the best teacher for IS staff to cultivate their ability
Information systems development and use till 1991

Accumulation of knowledge and know-how

Interaction through IS design, development and maintenance

IS user companies

IS Department

IT policies

Administrative guidance

IT policies

Administrative guidance

IT vendors

HITACHI + FUJITSU
NEC + TOSHIBA
MITSUBISHI + OKI

MITSUI + OKI

MITI

MPT

MOF

Ex. Development of “Hinomaru” computers
Recent information systems development and use

User companies

Loss of expertise and experience of IS development

 Outsourcing

IS functions as services

ICT policies

IT vendors
System integrators

Administrative guidance

IT strategic HQ

Cabinet Office

METI

MIC

U-Japan policies

e-Japan strategies

Administrative guidance

ICT policies

Administrative guidance

Outsourcing

ICT policies
Merci pour votre attention!