

# **Adoption and Implementation of IT: An Evaluation of the Applicability of Western Strategic Models to Chinese Firms**

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## **Abstract**

Much IS research has focused on the experiences of Western organisations, particularly those in the UK and USA. Unfortunately, little emphasis has been given to the international applicability of the models and frameworks ensuing from this research. There appears to be little necessity for firms in other countries to 're-invent the wheel' when considering the adoption and implementation of IT if they can learn from the experiences of Western firms. There is some uncertainty, however, as to how applicable Western strategic models would be in non-Western environments.

Case study research has been conducted to consider the strategic IT adoption decision-making practices of Chinese firms. Chinese organisations were selected for investigation due to their importance in global markets and to their widespread influence in many countries and regions. The research outcomes have been compared with Western models of decision-making for IT adoption and implementation. The organisations investigated displayed strong alignment of both factors and processes in their strategic decision-making. Further, there are strong indications of alignment between the strategic IT decision-making practices of Chinese and Western firms. Marked differences to Western firms have also been identified: there appears to be less diversity of practices both within and between the firms than would be expected from Western research. Implications of both alignments and differences are discussed.

## **Keywords**

IS strategic planning, IS technology transfer, cultural differences, Chinese firms

## 1 INTRODUCTION

IS research has traditionally focused its attention predominantly on USA and UK organisations without concern for how applicable the models and frameworks developed from this research would be in an international context. Firms in other countries can learn from the experiences, and mistakes, of Western firms in the adoption and implementation of IT. There is, however, uncertainty as to the level of applicability of Western strategic models in non-Western environments. The numbers and commercial significance of Chinese firms, (not only in China, Taiwan, Hong Kong and Singapore but in many other countries in the Asia Pacific region), identify them as being of particular interest for research into the applicability of strategic Western models of IT adoption and diffusion.

In this paper, Strategic Information Systems Planning (SISP) models are those concerned with the processes of determining a portfolio of applications which can assist an organisation to realise its business goals as well as the search for such applications with the potential to create advantage over its competitors. (Lederer and Sethi, 1988). Strategic level decision-making differs from that at operational and tactical levels as its primary focus is on IT solutions to problems confronting the business as a whole. This paper reviews the range of strategic models of IT adoption and implementation; identifies differences between Chinese and Western management practices; describes the research design, case studies and outcomes; and assesses implications arising from the research.

## 2 A REVIEW OF WESTERN STRATEGIC MODELS

Only a limited number of models and frameworks are available to provide assistance to organisations seeking to plan strategically for the adoption and implementation of IT, see Table 1. Most strategic information systems planning models, rightly, focus on the alignment of business objectives and IT planning and the management of an applications portfolio. These models, however, provide little assistance to firms taking the next logical step: adoption of strategic IT solutions. The significant processes in adoption decision-making have received scant attention: only one model focussing on decision-making factors.

Bacon (1992) surveyed the major factors on which IT decision-making practices were based in 80 large companies in USA, UK, Australia and New Zealand. The author reviews previous work in the area and finds that,

"little empirical work has been done on the financial and other criteria actually used in practice in deciding on project selection and capital investments in Information Systems / Technology."

Bacon categorises decision criteria (or factors) into primary - the decision to or not to invest, and secondary - the decision to purchase a specific product. The results of this survey of primary decision criteria can be seen in Table 2.

**Table 1** Factor and Process Models for Strategic Adoption of IT

<i>Author(s)</i>	<i>Name of Model</i>	<i>Focus</i>	<i>Objectives</i>		
			<i>Integrate Corporate Planning, SISP and IS Development</i>	<i>Identify, categorise and prioritise strategic applications of IS/IT</i>	<i>IT Adoption</i>
Bacon, 1992	Decision Criteria	Factors			X
Huff and Munro, 1985	IT Assessment and Process Models	Processes	X	X	X
Rockart and Crescenzi, 1984	Top Management Engagement Model	Processes	X	X	X
Parker, Trainor with Benson, 1989	Information Economics	Processes	X	X	X

Bacon (1992) finds common decision-making factors, by size of organisation, across several industry sectors. Nine out of ten companies surveyed in the USA, UK, Australia and New Zealand use the top ranking criterion - support of explicit business objectives. 75% of companies use a form of Discounted Cash Flow (DCF), 67% apply budgetary constraints, and 61% respond to competitive systems.

There are several models in the area of strategic IT decision-making processes. Rockart and Crescenzi (1984) provide an overview of the critical processes in decisions to adopt and implement a Management Support System. They identify three main areas of processes: the link between IS and the management needs of the business; prioritisation; and prototyping / trialing.

**Table 2** Value ranking of IS/IT Investment / Project Selection criteria  
(Adapted from Bacon, 1992)

<i>Category</i>	<i>Criteria</i>	<i>Ranking</i>
Management	Support explicit business objectives	1
Financial	Discounted Cash Flow - Internal Rate of Return	2
Management	Support implicit business objectives	3
Financial	DCF - Net Present Value	4
Financial	Payback method	5
Management	Response to competitive systems	6
Management	Support management decision-making	7
Financial	Budgetary constraint	8
Management	Probability of achieving results	9
Financial	Average / Accounting Rate of Return	10
Development	Probability of project completion	11
Development	Technical / system requirements	12
Management	Legal / governmental requirements	13
Financial	DCF - Profitability Index Method	14
Development	Introduce / learn new technology	15

Following field studies in 10 very large Canadian corporations, Huff and Munro (1985) developed four separate models of the IT assessment and adoption process. The models were dependent on the relative emphasis given by firms to technology and to business issues. Technology emphasis is in essence a bottom-up process which is driven by the identification of an interesting technology. Conversely, issues emphasis is a top-down process where the issues have been determined by top management on the basis of business need through a formal planning process. Table 3 shows the different models.

The normative ideal model represents the approach that fully rational firms with few resource restrictions should follow, i.e., it is the ideal. Processes in this model are:

- assessment of current IS environment;
- assessment of future goals of organisation;
- assessment of current and future IS applications;
- forecasts of the availability of new technology;
- mapping of technology assessments to organisational needs.

**Table 3** Huff and Munro's (1985) Models of the processes in IT assessment and adoption

		<i>Issues emphasis</i>	
		<i>High</i>	<i>Low</i>
<i>Technology emphasis</i>	<i>High</i>	Normative Ideal	Technology Driven
	<i>Low</i>	Issue Driven	Opportunistic

In their Information Economics model, Parker et al (1989) suggest the starting point for decision-making and planning processes to be a common business and technology vision. The authors explain that most of the literature in this area focuses either on the vision->ideas or the planning->execution phases, but not on the processes as a whole. They expect that the specific processes will vary from company to company, but will all cover the vision->ideas->planning->execution phases. The particular processes may be formal (eg., establishment of a special planning group with a fixed agenda) or informal (eg., interaction over time between the concerned management). The diversity in decision-making processes in Western firms is confirmed by empirical studies of US and UK firms. (Galliers 1987, Wilson 1989, Premkumar and King 1991, Farbey et al 1992, Earl 1993). Earl's study (1993) of very large UK firms shows a wide variety of mainly formal SISP practices.

The number of empirical studies in this area (shown above) provides some indication of the potential significance of strategic decision-making factors and processes to both practitioners and researchers. This significance is apparent regardless of whether the IT to be adopted has been specified in advance as a complete solution (the view of the majority of studies) or, as proposed by Ciborra, the specification has arisen as a result of repeated cycles of decision-making (i.e., 'tinkering' - Ciborra, 1994). These adoption decision-making practices must be considered within an organisational context which clearly differs between Eastern and Western firms. But how significant are the differences?

### 3 DIFFERENCES BETWEEN CHINESE AND WESTERN MANAGEMENT PRACTICES.

Management style in Chinese organisations has been described as 'paternalistic'. This style of management is strongly hierarchical with centralised decision-making where managers are responsible for protection of the employees and employees are loyal to management. (Redding, 1990). Lu and Farrell (1990) provide an insight into differences between developed and developing countries which may have an important influence in IS use. One of the areas of major difference is management practice. In developing countries the management practices of firms typically have:

- short to medium planning horizons ;
- informal ad hoc policies and plans;
- little use of specialised staff;
- unclear definitions of authority eg., no formal organisation chart;
- high degree of centralisation;
- leadership style autocratic or paternalistic. (Lu and Farrell, 1990).

These characteristics of management practice have been found to be applicable to Chinese organisations in Hong Kong (Elliot, 1994). There is little understanding of decision-making in Chinese organisations:

"For all we know, Chinese and Western leaders may use precisely the same data, emphases and weightings in deciding how to proceed with a given situation." (Bond, 1991).

While Chinese decision-making practices have not been formally recorded, Bond (1991) cites recent exploratory research on decision-making in Taiwan which suggests that there are basic steps (i.e., identify objectives, collect information, consider alternatives, find out disadvantages of alternatives etc.) which are an integral part of decision-making in Western and Eastern cultures.

The literature has yielded little research into strategic IT decision-making in Chinese firms. A single study into strategic IT decision-making practices of Hong Kong Chinese manufacturing firms indicates strong alignment between Chinese and Western firms. (Elliot, 1993). However, since those manufacturers primarily market, produce and distribute internationally the degree of international influence on their IT adoption practices is uncertain.

## 4 RESEARCH DESIGN

The overall objectives of this research are to:

- identify critical factors and processes used in strategic decision-making for the adoption and implementation of IT by Chinese firms, and
- compare these decision-making characteristics with strategic level Western models for the adoption and implementation of IT.

The purpose of this paper is to consider the applicability of Western models of IT adoption to Chinese business organisations, with a particular focus on firms operating solely in a domestic market.

### 4.1 Research Questions

Questions considered by this research are:

1. How do Chinese firms decide to use IT?
2. How do Chinese firms decide not to use IT?
3. What factors are most important in these decisions?
4. What processes are most important in these decisions?
5. How do these factors compare with those used by organisations in Western countries in their decisions to invest in IT?
6. How do these processes compare with those used by organisations in Western countries in their decisions to invest in IT?

## 4.2 Research Propositions

Notwithstanding the exploratory nature of the research questions, and the lack of available research in this multi-disciplinary area, predictive propositions have been identified.

*Proposition 1. There are common factors in the decisions of Chinese firms to utilise and not to utilise IT.*

Proposition 1 addresses research questions 1, 2 and 3, ie what are the relevant factors in decision-making by Chinese firms to use or not to use IT. This proposition is based on Bacon's (1992) finding that there is commonality of decision-making factors between large firms in USA, UK, Australia and New Zealand and seeks to identify if commonality exists in the decision-making of Chinese firms. This proposition is exploratory, seeking to confirm research based on Chinese manufacturing firms (Elliot, 1993). No other studies have been identified which document IT decision-making factors of firms in Eastern countries.

*Proposition 2. There are common processes in the decision-making of Chinese firms to utilise or not to utilise Information Technology.*

Proposition 2 addresses research questions 1, 2 and 4, ie what are the relevant processes in decision-making by Chinese firms to use or not to use IT. This proposition is based partly on work in Western firms by Rockart and Crescenzi (1984), Huff and Munro (1985) and Parker et al (1989) and partly on research into Chinese organisations (Elliot, 1993). Western firms show diversity in decision-making processes, however, the paternalistic / centralistic / autocratic nature of Chinese firms (Redding, 1990) as well as research identified by Bond (1991) indicates the possibility of common processes in Chinese firms.

*Proposition 3. The factors and processes are substantially similar to those used in Western organisations, as shown in contemporary models.*

Proposition 3 addresses research questions 5 and 6, ie a comparison of Chinese and Western decision-making practices. This proposition also seeks to confirm research based on Chinese manufacturing firms (Elliot, 1993). Details of factors and processes are provided above.

The research questions and propositions identified above meet the requirements specified by Lee (1989) research to be considered scientific, in that they are:

- falsifiable (i.e., propositions contain the potential to be shown to be false).
- are logically consistent (research questions and propositions are not mutually contradictory).
- at least as explanatory, or predictive, as any competing theory.
- potentially able to survive attempts made at their falsification. While being falsifiable, the research questions and propositions should be able to survive the research.

### **4.3 Research Methodology**

To maximise the potential richness of the elements in this exploratory research, and to support exploration of differences between Western theory and Eastern practice, a case study research approach was selected.

There has been some contention, now largely historical, that case study research is not capable of supporting sufficiently rigorous, or scientific, research. These arguments have been laid to rest by improvements in the principles for application of case studies. Benbasat et al (1987), Lee (1989), and Yin (1989) have shown how this strategy can be conducted in a suitable manner. The strength of case studies is the ability to capture a greater number of variables than is possible with any of the other strategies. Further, it is possible through this strategy to follow up areas of interest which emerge in the course of the research which have significance to the research propositions. Historical weaknesses of this research approach included the problems associated with making generalisations from limited cases.

In order to support generalisations from case studies, the research was conducted with adherence to the formal processes for rigorous case study research proposed by Yin (1989). As the research questions are directed at a organisational level, a single organisation is the unit of analysis. Primary research findings were based on triangulation of interviews from multiple sources (including both IS and corporate management) and on documentation. A chain of evidence was established to enable an external observer to follow the derivation of any data or evidence from initial research questions and propositions to ultimate conclusions of the case study. All respondents reviewed and confirmed details and interpretations after interviews. Data collection practices were consistent with those nominated by Yin (1989) and Benbasat et al (1987): construct validity was established by triangulation, chain of evidence and formal review by the interviewees; and a case study protocol and case study data base were utilised to support the objective of reliability, ie stability of the qualitative research process. All interviews were conducted by the same researcher to minimise investigator bias. The application of rigorous site selection criteria (to identify banks which had local Chinese ownership and control) supports analytic generalisations from the research. Prior to commencing data collection the research question areas were previewed with a pilot site. Pilot testing was utilised to aid in the prediction and resolution of scaling and administration problems. Pilot testing also assisted in the establishment of reliability and construct validity. Validity has been used in the sense of the capability of the qualitative process to return plausible results based on anticipated responses and results from similar or related research. (Easterby-Smith et al, 1991). Pretesting was also used to ensure the areas of questions were easily understood and correctly interpreted without cultural difficulties. The exploratory nature of this research precluded the use of previously validated instruments, and the research instruments were grounded through the research questions, the research propositions and comparison with the selected Western models.

Case studies were conducted on four firms of different size in the banking industry. Banking is recognised as having high information intensity of the value chain and high information content of the product. (Porter and Millar, 1985). High information intensity and content in an industry indicates strategic use of IS. The banking industry was selected as being a 'best case' or most likely industry to utilise IT strategically and, therefore, one most

likely to undertake strategic level decision-making for the adoption and implementation of IT. Empirical research into an industry unlikely to utilise IT strategically is not seen as being able to address the research objectives. The case study research was longitudinally oriented in order to maximise the knowledge and understanding of IT adoption practices over time.

Hong Kong is seen to be a suitable setting to research the management practices of Chinese firms since its Chinese firms have a strong, independent and internationally competitive presence and decision-making by these firms is comparatively free of political or governmental influence. The latter point is important to establish that the decision-making factors and processes are based on the organisation's needs rather than the priorities and agendas of external bodies.

## 5 HONG KONG'S BANKING SCENE

Hong Kong's excellent communications facilities, the absence of restrictions on capital flows in and out of the Territory and low corporate tax rates have contributed to the Territory's potential as a regional banking centre. In recognition of these benefits, and with minimal barriers to entry, about 80 of the top 100 banks in the world have operations in Hong Kong. While much of their activity focuses on off-shore banking, these banks maintain a considerable presence in retail banking. The retail banking market for Hong Kong's population of six million is characterised by over capacity and resulting intense competition. Competition for the local banks comes not only from international banks but also from local quasi-banks, i.e., restricted licence banks and deposit-taking companies, as can be seen in Table 4.

Hong Kong's three largest banks: Hongkong Bank (previously Hongkong and Shanghai Banking Corporation); Standard Chartered Bank; and the Bank of China; control the market. Since the relocation of the Hongkong Bank holding company to the UK in 1993, these banks are all foreign owned. Locally incorporated licenced banks currently represent less than 15% of the local market. Notwithstanding this dominance by international competition the local banks have managed to survive and to prosper.

**Table 4** Competition in HK banking market (KPMG, 1994)

<i>Type of banking institution</i>	<i>Number</i>
Locally incorporated licenced banks	31
Locally incorporated restricted licence banks	32
Locally incorporated deposit taking companies	139
Overseas incorporated licenced banks	140

IT has a key strategic role in the survival of local Chinese banks. Alice Lam, General Manager of Hang Seng Bank, part of the Hongkong Bank group, stated in 1991 that due to the high costs of property and labour, it was not cost effective for banks to compete in the domestic market by adding more branches. She added that,

"To survive in today's competitive environment, banks are making heavy investments in new technology in order to improve services without having to increase staff." (Lam, 1991).

Ms Lam considered that retail banking in the 1990s was increasingly dominated by new technologies and products since individual attention was no longer the main appeal in reaching new retail customers. The public demanded efficiency and convenience, which could only be provided cost-effectively by IT based innovative services.

The Hongkong Bank, the massively dominant force in the market, has certainly pursued IT with vigour. Attributed particularly due to technology and systems, between 1988 and 1992 the bank's real costs per transaction were reported to have declined by nearly 15%. The bank's operating costs were claimed to be 25% lower than those of a comparable Western bank. (Martinsons, 1992). No comparison of operating costs between the Hongkong Bank and local banks is available. The implications for the local banks of this aggressive use of IT to gain cost advantage on a large scale transaction base, however, must be apparent.

## 6 CASES

In 1993 there were 31 licenced banks, 32 restricted license banks, and 139 deposit-taking companies incorporated in Hong Kong. (KPMG, 1994) Of these 215 locally incorporated institutions, four (4) were selected for interview. Restricted license banks and deposit-taking companies, while being numerically the largest groups of institutions, were not considered as these categories are particular to Hong Kong and of questionable relevance to other countries. The use of special categories of banking institutions which are not present in other countries would reduce the utility of the research outcomes. The 31 licenced banks were reduced to 14 locally-incorporated locally-owned licenced banks, as the research was directed at Chinese companies. Several of the remaining 14 are owned by other banks, which would prevent a clear picture of their decision-making factors and processes.

The final four banks selected were identified as being local Chinese owned and operated in a range of sizes from assets of \$US 9.2 billion (\$HK 71.5 billion) and staff of 2,500 to assets of \$US 2.0 billion (\$HK 16 billion) and staff of 850. The selected banks represent medium to larger sized locally incorporated banks. (Elliot, 1994).

Interviews were sought with the manager of a strategic business unit (SBU) as well as the manager responsible for EDP. In two of the banks the SBU manager was an executive director of the bank. In the other sites, one manager was responsible for retail banking operations, and the other was the bank's corporate secretary. Consequently, both EDP and strategic management perspectives were obtained.

All of the banks were running large and very sophisticated computer systems, as can be seen from the profile of current computer usage in banking sites, Table 5. The banks have all had a great deal of experience with computer systems since they installed their first systems in the 1960s and 1970s. In the tables following, banking sites are identified as follows:

BEA	Bank of East Asia, Limited
BX	BankX requested confidentiality
LCHB	Liu Chong Hing Bank Limited
WLB	Wing Lung Bank, Limited

**Table 5** Profile of current computer usage in banking sites (Elliot, 1994)

<i>IT equipment</i>	<i>BEA</i>	<i>BX</i>	<i>LCHB</i>	<i>WLB</i>
Mainframes	2 x IBM ES9000	2 large mainframes	NCR 9863 (6 parallel CPUs)	2 x IBM 4381
Terminals	400	>100	80*	200
Mini-computers	IBM AS/400	-	-	-
PCs	>400	>60	>70	>100
EDP staff	>90	>40	>40	>60

\* using a proprietary system which supports two tellers using each PC.

> more than

Each bank was asked to compare its level of use of IT with that of its competitors. It is important to note that the Chinese banks do not see their competition as being the major international banks. They consider themselves to be in friendly competition with other Chinese banks. Two of the banks considered they were more advanced users than their competitors, the other two thought they were about the same as other Chinese banks.

## 7 RESEARCH OUTCOMES

Longitudinally oriented case study research was conducted of the strategic decision-making practices for the adoption and diffusion of IT by indigenous banks. This research has produced the following outcomes:

*Proposition 1. There are common factors in the decisions of Chinese firms to utilise or not to utilise IT.*

Interviews identified the factors on which banking sites would base investment decisions for IT if making decisions today. These factors include those on which previous decisions have been made, as adjusted in light of their subsequent experience. The factors were unprompted, i.e. they were not selected from a list of alternatives. Priorities were assigned after consideration of all factors. Table 6 refers.

The business requirements specified included the necessity to provide competitive products or to support strategic positioning of the bank (many responses), and improvements in the speed and accuracy of processing data. The Commissioner of Banking, from time to time, establishes requirements which must be met by all banks. An example of these requirements is likely to be the establishment of a backup computer site for banking operations. Banks varied in their view of the importance of these requirements from imperative (major factor)

to able to be incorporated into the bank's medium and long term plans, and therefore a minor factor. Doubtless the degree of importance given reflects the situation of each individual bank.

**Table 6** Major factors (Elliot, 1994)

<i>Major factors</i>	<i>BEA</i>	<i>BX</i>	<i>LCHB</i>	<i>WLB</i>
Business needs and requirements	1*	1*	1*	2*
Requirements of Commission: of Banking			2	1
Financial return	2			
Management Information				3
Operational factors				4

\* Includes computing capacity planning to support current systems with high anticipated rates of growth, as well as to support additional business requirements in the future. Also includes recognition of the operational life span of a computer and the necessity for upgrades / replacements in order to meet business needs and requirements.

Financial return includes cost as a factor as well as cost benefit and returns on investment. The lower emphasis on financial return was unexpected in banking institutions. More detailed responses indicated that financial return was particularly important for non-strategic investments of IT by the banks. Given the extreme exposure to international competition and the effective absence of barriers to entry, it is not unreasonable to find that strategic investments in IT are made in support of business imperatives. Operational factors reflected a policy of the bank to more closely integrate the operation of existing systems.

Medium level factors were also considered. Three of the four EDP departments have approved corporate policies to use the latest proven technologies. Reasons given for this policy included competitive threat (potential release of competitor's products which require support of latest technology); service levels to clients which require latest technology (e.g. automatic passbook printing); service levels between banks (e.g. Clearing House and JETCO use cartridges rather than tapes); and lack of vendor support for out of date technology. This policy was reported as being not sufficient justification by itself to upgrade IT, but was taken into account for business driven upgrades.

Computer systems were not seen by the banks as providing a solution for every banking problem. All of the banks had performed evaluations on IT at various times and had decided not to proceed with its use. In each case the decision was based on the factors and processes previously identified. Reasons given for these decisions were:

"The optical signature storage & verification system was evaluated and declined as the signatures were not sufficiently clear for Chinese characters."

"After evaluation, we decided it was not suitable. i.e. the cost was too high and the technology was not mature"

"The technology was no longer the latest technology."

"The total cost became prohibitive."

The reasons given are consistent with the factors specified above, however, cost figures more highly than would be expected from the table of factors. An explanation for this situation may be that the examples provided are at a minor rather than a strategic level of investment. In these minor decisions, cost and financial returns become more significant. Examples of major investments are the mainframe platform and mainframe backup machines which each cost in the region of \$US 5 million. Minor investments would include optical signature storage and verification systems, automated passbook printers and microfilm storage for internal reporting. Consequently, cost is seen as having a greater influence in minor investment decision making for IS/IT in contrast to the ranking of factors in strategic decision-making shown above.

Notwithstanding the differing emphasis in minor and major IT investment decisions, there is striking commonality between the banks' major decision-making factors to adopt IT. Strategic level decisions not to adopt IT have been seen to be based on the same factors. Consequently, this proposition is considered supported.

*Proposition 2. There are common processes in the decision-making of Chinese firms to utilise or not to utilise IT.*

The processes identified are those which sites would adopt in investment decisions for IT if making decisions today. These processes include those from previous decisions, as adjusted in light of their subsequent experience. As with the propositions above, the processes were unprompted. Priorities were assigned after consideration of all processes. Table 7 refers.

The uniformity of these unprompted processes across all banks reflects their importance. Perhaps they may be considered to be representative of prudent practice in the planning for and utilisation of IT. All processes were considered major. The processes adopted will vary according to the situation. The full range of processes identified will be utilised for major investments. For an upgrade or a minor equipment purchase, the processes will not be as detailed nor will all be used. The core processes, however, will be applied in all cases. These core processes are requirements determination, capacity monitoring, proposal, consideration by CEO, and approval by CEO (subject to delegations).

As with proposition 1 above, all of the banks had performed evaluations on IT at various times and had decided not to proceed with its use. The processes adopted which resulted in rejection of IT investments varied only according to the relative importance of the investment. Evaluations of major IT investments completed the full set of processes. Minor investments completed a sub-set. In each case the decision was based on processes previously identified in decision-making to adopt IT. Consequently, this proposition is considered supported.

**Table 7** Major processes in IT investment decisions (Elliot, 1994)

Major processes	BEA	BX	LCHB	WLB
EDP Dept advised of bank's future plans	X	X	X	X
Capacity forecasts prepared based on current requirements and future plans	X	X	X	X
Requirements determined*	X	X	X	X
Discussions with vendor on IT (ability to meet requirements)	X	X	X	X
Other vendors considered for major upgrades and replacements	X	X	X	X
Computer purchases by competitors reviewed		X	X	X
User divisions consulted as required	X			X
Development of technology plan				X
RFP** candidates determined	X	X	X	X
RFP or RF Quotes	X	X	X	X
Evaluate RFP (include trials and reference sites checking)	X	X	X	X
Prepare proposal	X	X	X	X
Reviews with senior management	X	X	X	X
Approval by CEO / Board	X	X	X	X
On-going capacity monitoring	X	X	X	X
Monitoring of IT development ongoing by senior EDP staff	X	X	X	X

\* includes business requirements & functional requirements

\*\* Request for proposals (RFP) from vendors for IT solutions

*Proposition 3. The factors and processes are substantially similar to those used in Western organisations, as shown in contemporary models of SISP.*

The first and second most important decision factors by the banks were business requirements and financial returns. These findings are entirely consistent with the Western model of Bacon (1992) who finds that the most important factors in decisions to invest in IT are to support business objectives and to meet financial criteria, *in that order*. The major processes identified are completely consistent with Western models of processes for IT assessment and adoption. Elements of each of Huff and Munro's (1985) four process models: issue driven, technology driven, opportunistic and normative were included. Due to the

strong alignment of research findings with Western models this proposition is considered supported.

## 8 DISCUSSION

The outcomes of this exploratory research should be considered in light of its limitations. The Hong Kong Chinese banks focus on the domestic market and may be less subject to international influence in management practice than internationally focused manufacturers. However, the banking industry is an extreme case. Banks are strategic users of IT due to their high information intensity (Porter and Millar, 1985). They could be expected to have well established strategic level IT decision-making practices and considerable experience in this field. The generalisability of experiences from Hong Kong Chinese banks and manufacturers to Chinese firms in other industries needs to be further tested. Additionally, the experiences of Chinese firms have been considered in only one economy.

Notwithstanding these points, this research has contributed insights into the applicability of strategic Western models for the adoption and implementation of IT to Chinese firms. Where there has been uncertainty regarding decision-making practices in Chinese firms, clarification has been made. The banks displayed strong alignment of both factors and processes in their strategic IT decision-making. The banks' practices, in turn, strongly aligned with previous findings in Chinese manufacturing firms' factors and processes. Together, the studies of Chinese banks and manufacturers display alignment between the strategic IT decision-making practices of Chinese and Western firms.

These findings reinforce suggestions of some universality of basic organisational functions such as decision-making. The implications of these findings are significant both as a potential source of assistance in management practice to Chinese firms and as a rich source of future research. Chinese firms have a major influence in business world-wide. Consequently, research into the practices and experiences of these firms could be of considerable significance especially since they appear to have similarities with as well as marked differences to Western firms. There appears to be less diversity of practices both within and between Chinese firms, perhaps due to the strong cultural model of centralised authority and paternalism. Further research is required to explore these similarities, as well as differences, particularly as they relate to the adoption, implementation and management of IT.

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