

Facing Geopolitical Issues Surrounding Strategic IT Betting on Information Technology at the Royal Hong Kong Jockey Club

This case was prepared by Tawfik Jelassi, Associate Professor at INSEAD, and Claudia Loebbecke, Research Assistant. The valuable help provided by Jérôme Moitry, INSEAD MBA 1991, is gratefully acknowledged. The case is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

'In keeping with the high standards of horseracing in Hong Kong, the Club aims to be among the world leaders in the application of technology to the racing industry and to provide the highest standard of service both to the Club members and the public. The application of Information Technology (IT) is a core competence of the organization.'

The Royal Hong Kong Jockey Club Internal Document, 1991

It is January 1, 1993. Warren Wilson, Director of Betting and IT, and John Markwell, Head of IT, are in Happy Valley watching another series of horse races with outstanding betting turnover. While waiting for the start of the major race of the day, they were reflecting on the IT contribution to the Club's performance and on the challenges ahead . . .

Racing in Hong Kong

Racing was introduced in Hong Kong by the early British settlers. In the mid-1840s the residents set up a race course in the area they called 'Happy Valley'. Initially there was only one race meeting a year, usually at Chinese New

Year. Today, however, racing takes place on most Saturdays, Sundays, and Wednesday evenings between mid-September and mid-June; 67 races were held in the 1991/92 season. In the table of the international league of horse-racing countries, Hong Kong is the leader in terms of the highest turnover per race (see Exhibit 1).

Exhibit 1 *Horse-racing betting turnover for the top ten countries in the world (1989/90 season)*

Country	No. of Races	Seasonal Turnover (US \$ Million)	Average Turnover per Race (US \$ Million)
Japan	26,782	23,512	0.9
U.S.A.	74,371	13,930	0.2
U.K.	6,425	7,364	1.1
Australia	25,214	6,787	0.3
France	6,469	6,097	0.9
Hong Kong	502	5,544	11.0
Italy	4,460	1,704	0.4
Canada	7,329	1,674	0.2
South Africa	4,259	1,257	0.3
Sweden	666	924	1.4

The Royal Hong Kong Jockey Club (RHKJC)

History

The Royal Hong Kong Jockey Club was founded in 1884 as a non-profit organization; all surplus funds are given to social welfare and community projects. In 1959 the Hong Kong Jockey Club (Charities) Ltd was formed to administer charitable funds separately from the Club funds. In recognition of the Club's contributions to the community, Queen Elizabeth II granted the 'Royal' prefix to the Club's name and the Club became the Royal Hong Kong Jockey Club in 1960. The Club managed all racing activities while the betting was operated by private clubs, with the Club receiving a commission. Under the auspices of the RHKJC, racing has greatly expanded. In 1973, the Government authorized the Club to set up 'off-course betting' (OCB) centers to help combat illegal bookmaking. The following year a phone-based betting service was started. In 1978, a second race course was opened at Sha Tin in the New Territories; its grandstands can accommodate 70,000

people. Happy Valley facilities have also been improved on many occasions over the years. Today, the Club controls and operates both racing and betting in Hong Kong.

Financial Situation

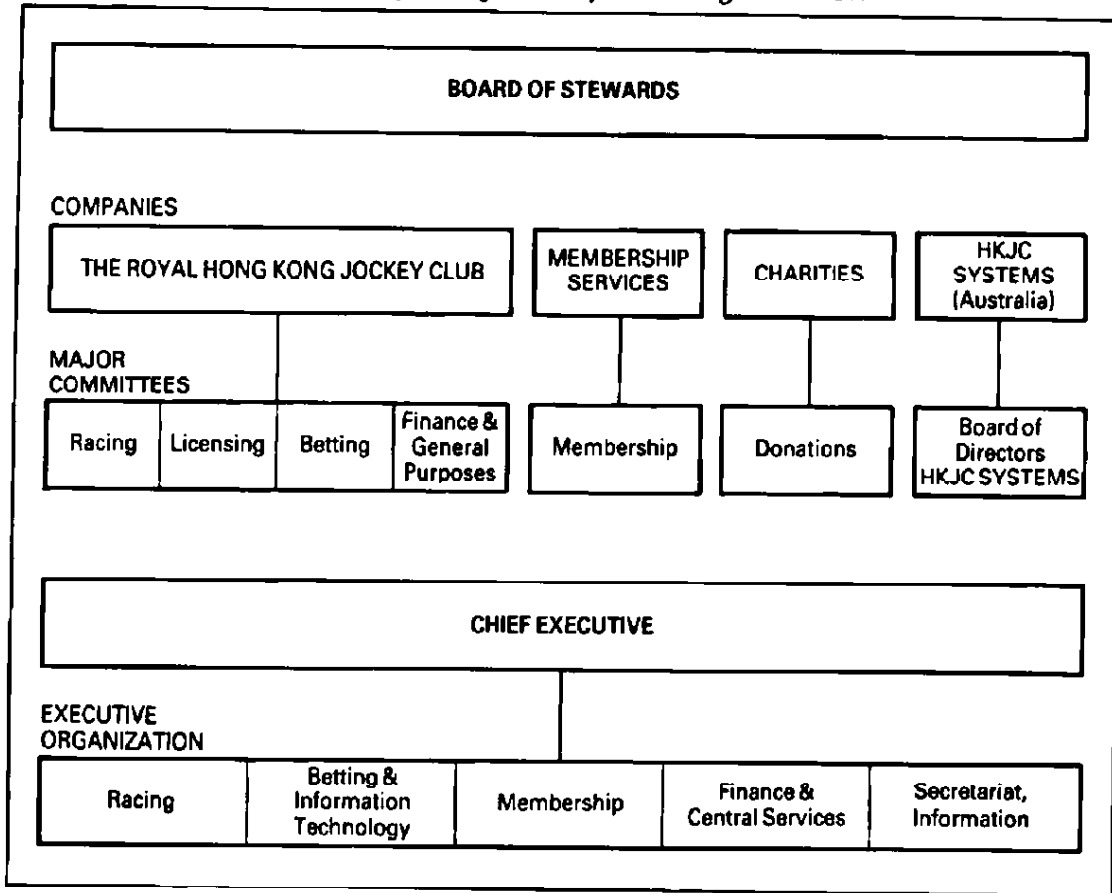
From the 1991/92 betting turnover, the Club deducted 11.9% as Government betting duty and 6.4% as its own commission; the balance of 81.7% was paid as dividends to the winning punters. For the 1991/92 race season, the Club's commission on betting turnover increased in line with turnover (HK\$ 55.5 billion)¹ at 18% over the previous season. Operating expenditure (HK\$ 1.7 billion) increased by 12%, and the resulting group surplus after tax of HK\$ 2.2 billion for 1991/92 was 22% higher than in the previous season.

The Club is a company limited by guarantee with no shareholders. As a non-profit organization, net earnings from racing and betting – i.e., the amount remaining after prize money, operating costs, taxes, and investments to improve racing and betting facilities are deducted – are donated to charitable and community projects.²

Corporate Structure

The Club, with about 4,200 permanent staff and 10,000 hourly-paid employees,³ is one of the largest employers in Hong Kong. It is directed by a Board of Stewards, a body of 12 people elected by and from the Club's voting membership⁴ who provide their services without remuneration. The number of active Club members stands at more than 12,000 including 200 voting members. Under the Board there are four separate corporate entities: the Royal Hong Kong Jockey Club itself; the Jockey Club Membership Services Ltd which manages all members facilities, the Hong Kong Jockey Club (Charities) Ltd which manages all the Club's charities activities, and Hong Kong Jockey Club Systems (Australia) Pty Ltd which provides software development and maintenance services (see Exhibit 2).⁵

Day-to-day management is delegated to professional executives headed by a Chief Executive who oversees the activities of five divisions covering Racing, Betting and Information Technology, Membership, Finance and Central Services, and Secretariat and Information.⁶ The IT Group, which is part of the Betting and Information Technology Division, provides IT support for all Club activities. For Warren Wilson, the Director of this Division, 'IT will assume an even higher profile in the organization as all

Exhibit 2 *The Royal Hong Kong Jockey Club organization*

activities, especially the non-betting ones, become totally dependent on the IT systems.' The Board of Stewards has strongly supported the Club's IT developments and, over the last seven years, has invested in IT on average HK\$ 250 million annually. This investment level is expected to continue throughout the 1990s.

Information Technology: Early Developments at the RHKJC

The Club was first planning to install an electronic totalizator in the pre-war period, before the Japanese occupation. In 1951, Hong Kong became the fourth horse-racing organization in the world to install the 'Electronic Tote': an electro-mechanical system pioneered by the British Standard Telegraph and Cable Company. In 1962, a second electro-mechanical system was

installed. These early systems could calculate odds and validate betting tickets sold, but payout remained a manual operation. The first computer was introduced in 1968.

In 1974 the introduction of off-course betting and the phone-based Telebet service significantly increased the manual operating procedures. Two years later the Crosfield ticket processing systems for lottery and exotic bets were added. With the construction of the second track at Sha Tin, the Club invested in a state-of-the-art computerized betting system capable of handling both selling and payout. While on-course betting systems were running quite well, and Telebet was state-of-the-art, the Club still had to aggregate totals manually from off-course and feed this data into the on-course computers. Customers had to wait for the manual updates before making their selections. Consequently, the next target was to fully computerize the off-course betting. The Digital Equipment Corporation's VAX platform was adopted for the Cashbet system and subsequently became the Club's standard. The Cashbet system turned into a great success; in its first full-year of operation during the 1983/84 season, off-course revenues increased by 54%.

Overview of Current Betting and Lottery Systems

Betting operations, which represent the heaviest data processing task, consist of five basic elements:

1. the Cashbet system which processes all transactions at on-course booths and off-course betting (OCB) centers;
2. the Telebet system which handles all transactions generated by Telebet account holders, either through the phone operator or via a hand-held computer called the 'Customer Input Terminal' (CIT);
3. the systems controller which aggregates totals from Cashbet and Telebet, generates the odds and calculates dividends;
4. the racing and betting information gateway, which broadcasts information to outside parties;
5. the video control system which supports customer information display on two giant-sized color screens and 2,270 TV sets.

Cashbet

There are 5,900 terminals linked to the Cashbet system, around half of which

are installed in the Club's 127 OCB centers with the remainder distributed between the Club's two race courses. Moreover, the Club installed about 700 self-vending terminals and 144 electronic fund transfer (EFT) terminals which provide customers with machine-readable cash vouchers. In 1991, there were already 92 EFTs available in Hong Kong for Telebet customer use. In the 1991/92 racing season, CITs transferred over HK\$ 1.8 billion through EFT terminals. Significant savings in cash handling were achieved, and customers appreciated being able to manage their funds on-line. The 1991/92 season was a milestone in that cash across the counter for bet selling was exceeded by other forms of cash movement for the first time. The Cashbet system supports a peak transaction rate of up to 800 bets per second or 120 payouts per second and can carry up to 200 million live bets at any one time.⁷

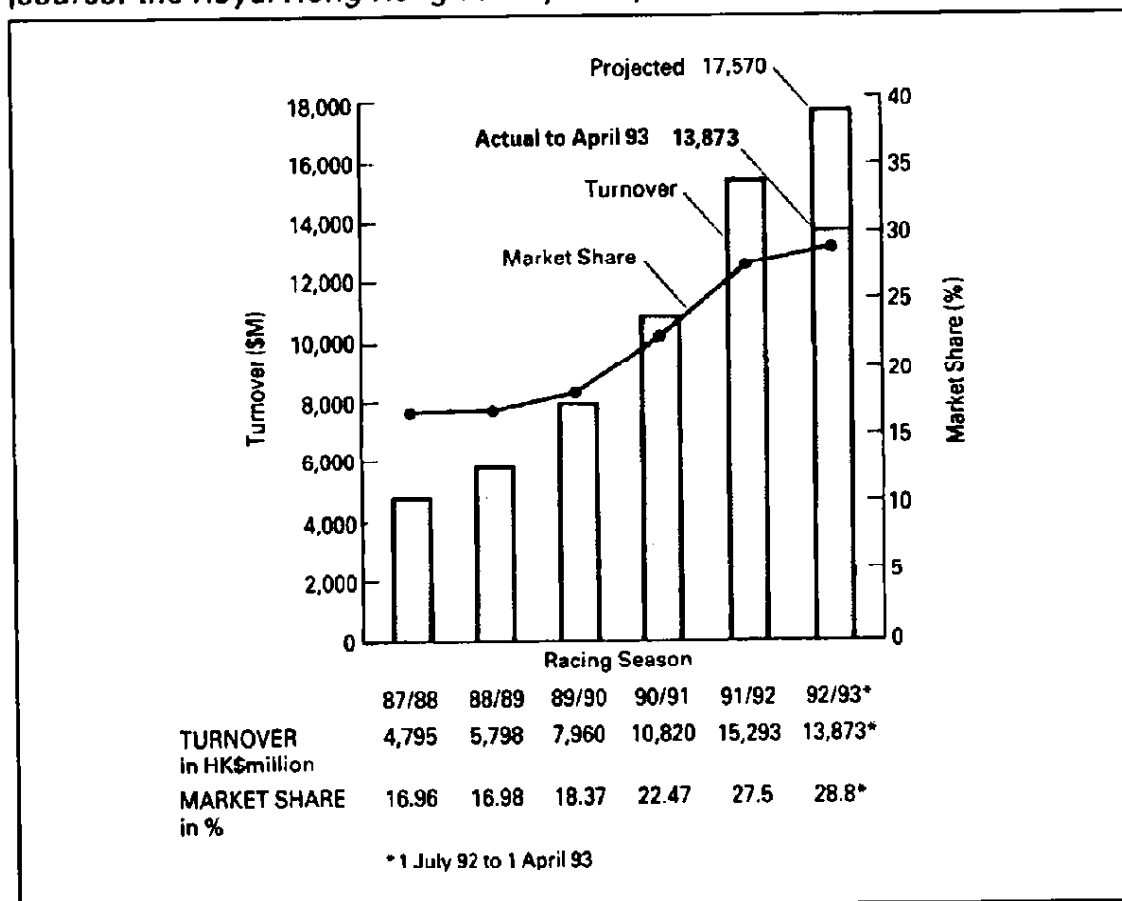
Telebet

By June 1992, there were approximately 530,000 Telebet accounts which generated during the 1991/92 race season a turnover of over HK\$ 15 billion (see Exhibit 3 for turnover and market share). There were 300,000 active Telebet accounts (or a rate of 60%), with an average of approximately 100,000 active accounts per race day.⁸ The Club operates two Telebet centers having together a total of approximately 2,000 operator positions. Per race day, operators answer on average 500,000 phone calls in one of the three languages (English, Cantonese, and Mandarin) offered by the centers. Telebet's communication requirements are significantly different from that of Cashbet. In order to resolve potential claims by or disputes with customers, all operator-based bets are tape-recorded and kept for two months. This time frame corresponds to the official claim period for customers.

In order to alleviate the telephone congestion, the Club increased the minimum value of a bet line placed through an operator from HK\$ 30 to 50 from December 1991, a restriction which is not applied to CIT. In spite of this measure, demand on the Telebet service is such that many calls still cannot get through due to busy operators. Although the Club has already introduced a second 'Automated Call Distribution' system, the CIT is viewed as the most effective long-term solution.

CITs incorporate banking-standard cryptographic data security and funds transfer software, a touch-sensitive screen, and a built-in modem and serial port, all in a package weighing less than 500 grams. The Club charges customers an annual fee (a service charge) for using CIT and it requires

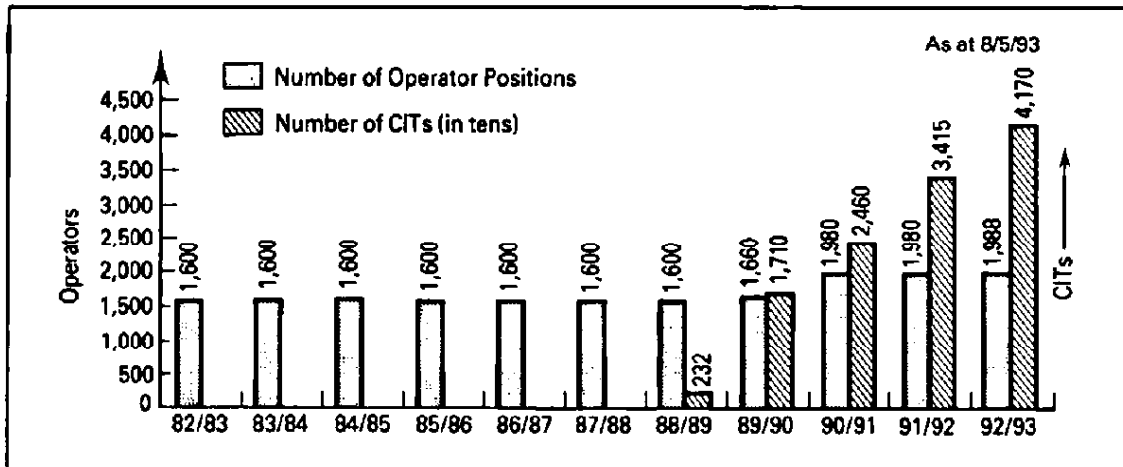
Exhibit 3 *Telebet: five years' turnover and overall betting market share*
 (source: the Royal Hong Kong Jockey Club)



making a deposit which is refunded upon return of the device.⁹ Moreover, an integrated imaging system has been applied to automate the process of signature verification and to store Telebet customer account application forms along with customer correspondence, such as standing orders.

By June 1992, there were 34,150 CITs in circulation which represent an increase of approximately 40% over the previous year (see Exhibit 4). These CITs have generated 33% of all Telebets placed; the remaining Telebets were made through the operator. Telebet account holders use CITs to prepare (off-line) their bets, transmit them to the Telebet network, check account balances, and transfer funds to and from bank accounts. They can also obtain through the CIT information on the forthcoming races (e.g., race length, horses running, their handicap weight, their rider, barrier draw, etc.). This information becomes available starting on the pre-sale day (i.e., one day prior to the race day).

Exhibit 4 *Telebet operator positions and CITs*
(source: the Royal Hong Kong Jockey Club)



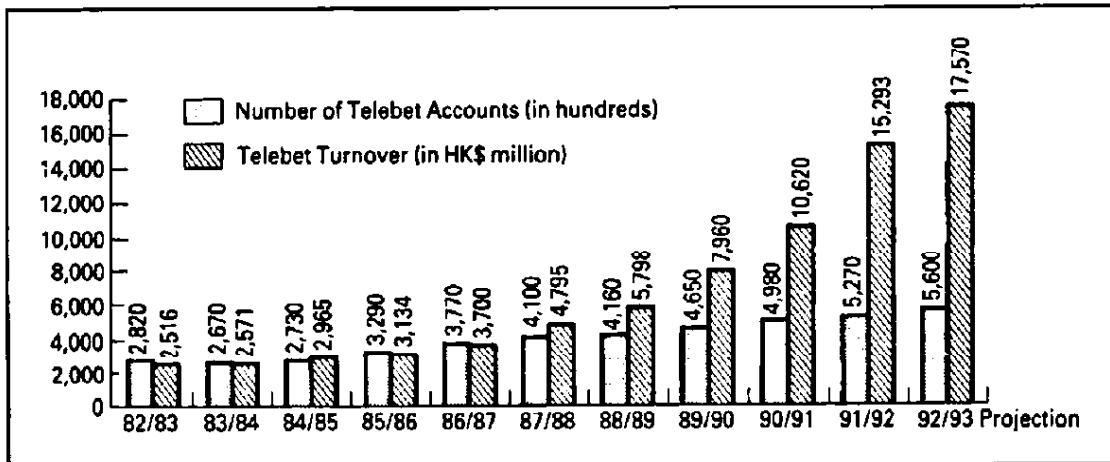
While the majority of CIT transactions come through the public telephone network, they can also be hooked up to portable radio units supplied by Hutchison Mobile Data Ltd, which operates the world's first publicly available mobile packet-switching data network.¹⁰ The CIT portability is restricted by the lack of battery miniaturization and the need to plug into a telephone socket. High volume punters are offered a secure PC-based system that runs the CIT software and has a private leased line direct to the Club's computer.

A direct result from the use of CIT has been an increase of Telebet accounts and turnover (see Exhibit 5) without the requirement to add operators. 'The Club's investment in the development of CIT technology has proved very valuable indeed. The contribution of both phone-based betting and CIT to total turnover has dramatically increased over the last three years,' the CEO of the Club, G.H. Watkins, declared in the 1992 Annual Report (see Exhibit 6).

CIT Usage and Customer Perspective

Only 25% of the phone-based betting accounts were active in 1991, with an average bet per meeting and active account of HK\$ 1,009. For CIT, these figures were respectively 64.3% and HK\$ 2,724. The average bet per line is higher with CIT than with phone-based betting. Peter Ng, Telebet Manager, explained: 'I think the 25% rate is in part due to the difficulty [for customers] to have access to the phone-based operator. Only 15% of the calls get

Exhibit 5 *Telebet accounts and turnover*
(source: the Royal Hong Kong Jockey Club)



through. It is also due to the fact that these are not active punters, otherwise they would have been equipped with a CIT terminal.'

CIT had nearly a 100% success rate in accessing the Telebet service due to more telephone lines being available during its launch period. In spite of such high performance, some customers still prefer to go through the operator-based Telebet procedure. Steve Sung, IT Administration Manager, explained: 'I guess some people trust more the voice [than the CIT system].' Peter Ng added: 'Different customers have different habits and therefore different preferences. However, we want to push self-service facility, I mean customer-operated systems such as CIT.'

Although most customers have been fully satisfied with CIT, some of them have suggested improving some aspects of the system, especially the number of bets that can be stored in the CIT buffer before transmission and the long wait to obtain a CIT. Kenny Lo, responsible for the CIT Section, answered: 'Some customers say the buffer is too small but we increased it from five to ten bets in 1991. Regarding the other issue, we can't avoid putting [CIT] applicants on a waiting list because we are ourselves constrained by the hardware manufacturer.¹¹ He delivers 200 to 250 CITs per week while we need to satisfy an average weekly demand of 300 systems.'

The Club has three major customer categories: 'Key Accounts' which refers to big punters; 'Express Service' which corresponds to customers who occasionally bet large amounts; and 'Normal Accounts' to which the majority of users belong. There are approximately 3,000 key accounts which represent 30% of Telebet total turnover of HK\$ 280 million per race day.

A 'key-account' customer, Paul, had switched to using CIT in 1990 after

Exhibit 6 *Statistical highlights (years to June 30)*

	1992	1991	1990	1989
Betting Commission and Duty				
Club commission (HK\$m)	3,557	3,020	3,199	2,519
Betting duty (HK\$m)	6,603	5,640	4,791	3,779
Operating costs (HK\$m)	1,883	1,689	1,566	1,253
Off-course				
Turnover (HK\$m)	28,664	26,203	25,352	20,239
Number of centers	126	127	129	129
Number of self-vending terminals	321	186	152	—
Number of electronic fund terminals	113	92	89	—
Avg. turnover per meeting (HK\$m)	427	390	367	321
Avg. bet per ticket (HK\$m)	90	81	72	65
On-course (including cross-bet)				
Turnover (HK\$m)	11,663	10,437	10,026	8,102
Number of self-vending terminals	358	315	304	—
Number of electronic fund terminals	58	52	52	—
Avg. turnover per meeting (HK\$m)	173	155	145	129
Avg. bet per ticket (HK\$m)	203	183	166	154
Telebet				
Turnover (HK\$m)	15,293	10,620	7,960	5,798
Number of terminals	1,988	1,988	1,665	1,600
Number of accounts (,000)	509	481	448	400
Account active rate (%)	23.2	25.0	23.5	24.5
Number of calls per meeting (,000)	440	458	406	415
Avg. bet per call (HK\$)	517	345	283	222
Avg. investment per line (HK\$)	208	159	143	123
Avg. bet per active ordinary account per meeting (HK\$)	1,347	1,009	852	707
Number of CITs	34,270	24,600	17,100	2,320
Account active rate (%)	64.6	63.4	67.4	—
Avg. investment per betline (\$)	198	168	160	—
Avg. bet per active CIT account per meeting (HK\$)	3,322	2,757	2,614	—

relying for three years on the operator-based Telebet. He found the system easy to learn and to use. The amount of Paul's bets ranges between HK\$ 5 and 1,500. Paul uses a PC-based CIT to place his bets and make balance enquiries, but he does not transfer funds electronically. He explained:

My two collaborators and I don't electronically transfer funds because there is a ceiling regarding the amount we can transfer. So we send a check directly to the Betting Division which deposits it with the bank. . . . We use CIT twice

a week for a period of four to six hours. We place several thousands of bets per race meeting. For example, on a Wednesday [race] meeting, we make 1,600 transactions and on a Saturday, we place approximately 3,000 bets. These figures are quite typical for the entire [racing] season. It would be to our advantage if CIT worked faster. Nevertheless, we place more bets with CIT than when we had to go through the operator.

IT Strategy at the RHKJC

The Club has reached a mature stage in terms of its betting systems; developments in the areas of non-betting will happen at a slower pace through business process redesign because the pressure to change is not as great as it was in betting.

'Through the 1980s, IT was oriented towards the core business of betting because that's where the money came in from. I think we built a very solid base both in terms of hardware and software and also in terms of people. From that we gained not only a tremendous amount of revenues but also an immense credibility both here in Hong Kong and on the international scene. Customers' perception of the Club and the integrity of our systems is essential because of the business [that] we are in: high cash-flow related to gaming and gambling . . . Today we could do with what we've got. We have reorganized ourselves. We are moving towards an open architecture and international standards which allow us to have robust, yet flexible systems. Future IT applications should be built with the international market in mind. We can do this through alliances, partnerships, contracting or licensing.'

*Warren Wilson
Director of Betting and IT*

Internal Management of IT

Until the late 1970s, the Club's operations were handled by accountants Peat Marwick, with Cable & Wireless providing equipment maintenance. In 1977, the Club decided that in-house expertise should be extended to cover not only operations but also systems development. A new policy was implemented to give the Club more control over the standard of service provided to its customers. Automation of Telebet was set as an early target. It only brought greater self-sufficiency to the Club and also led to a spectacular increase in the number of accounts – from 27,000 in 1979 to 541,000 in 1992.

The self-sufficiency policy and the increasing importance of IT for

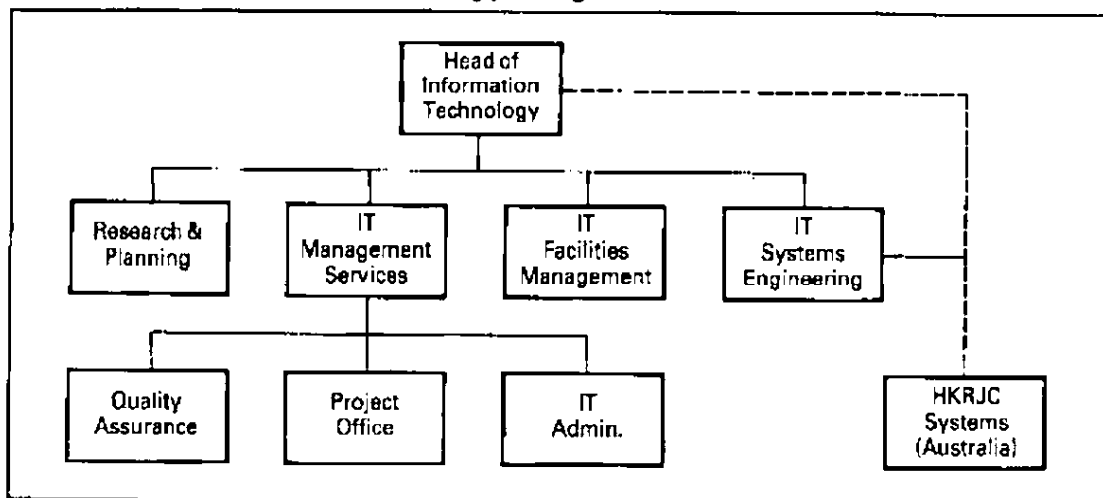
providing a quality customer service led to the involvement of senior Club executives in some IT management issues. Before September 1991, the IT functions were managed by two independent groups: one handled information systems development and computer operations, and the other was in charge of maintenance and telecommunications. The IT Management Committee attempted to coordinate the activities and users of both groups and to set priorities as well as recommend policies to the Club's Chief Executive.

After September 1991, the structure was rationalized by combining the two groups, adding ownership and focus to key strategic areas such as research and planning, quality, and project management (see Exhibit 7). Moreover, the maintenance and operations sections were brought together. John Markwell, Head of the Information Technology (IT) Group,¹² explained: 'We want to provide a one-stop service for our computer users.'

Standardization of IT

Standardization became a cornerstone of the Club's strategy to reduce the number of suppliers and to build up expertise in critical areas not requiring a high diversification of skills. In 1984, the Club upgraded its network operations to a VAX platform and in the following year migrated Telebet to the new infrastructure. In 1983, the telephone betting system provided the basis for the automation of the off-course betting. Three years later, the off-course betting system replaced the aging on-course systems and the

Exhibit 7 *Information technology – organization structure*



combined on- and off-course systems were called Cashbet. For the first time ever, the Club had a unified computerized betting system.

Standardization of the technology was considered an appropriate way to create expertise with a streamlined staff. It was applied to software design and programming, in-house documentation, and operating procedures. Moreover, professionalism was enhanced by training some staff members to manage IT projects.

IT Evolution

The Club gradually improved its systems rather than made revolutionary changes. The policy of using state-of-the-art technology did not imply expensive and frequent equipment replacements. Some 13-year-old terminals are still in use today in the Club and several on-course terminals in the 'sell-only' tote were taken out only after 26 years of service. This policy of IT evolution rather than revolution has forced the Club to adopt a stratified IT architecture, so that a particular layer could be updated without affecting the others. It has allowed for coexistence of different technologies and enabled the Club to re-use old equipment for less demanding tasks.

Future Issues

Standing on the balcony of the Executive Box at Happy Valley, Warren Wilson and John Markwell were waiting for the RHKJC Chairman to award the New Year's race trophy to the winner. Warren ponders the future of the Club. 'Should the Club foster new developments in IT? Will Hong Kong's return to the People's Republic of China in 1997 drastically change the business environment and possibly make the Club's state-of-the-art IT too expensive or even inappropriate? Would the availability of a large, cheap labor force boost phone-based betting over CIT? How could the Club alleviate the increasingly high turnover of IT professionals caused by the political and social uncertainty in the Colony? How could the Club cope with an 8% reduction of its commission caused by another Government increase of the betting duty? How would the Club best leverage its IT capabilities and know-how?'

'You know, Warren', says John,

'I think the People's Republic of China offers great business opportunities for us. Betting is illegal there but we might be able to play a role in the lottery.¹³ For example, we could help provide expertise on how to set up an on-line

lottery system in Southern China. You know that ten CIT terminals, placed in a special function room inside a Beijing hotel, were recently made available for Hong Kong residents visiting or based in the city. Although they only generated a small volume of bets,¹⁴ they certainly increased the awareness within the Beijing Government.'

'Yes, John,' says Warren, 'maybe it is wrong that we have always considered China a potential risk for the Club. It could also represent a tremendous market opportunity.' 'Yes, for sure,' says John. 'But how can we best use our IT-rich environment in the next five to ten years?' . . .

Notes

1. HK\$ 1 = approximately US\$ 0.13 (December 1992 figure).
2. The Club has been a major source of funds for clinics and hospitals throughout Hong Kong and has also supported medical research. In the field of education the Club has provided for the building of schools and for scholarships and grants. In 1987, it assumed the financial and project management responsibility for the new Hong Kong University of Science and Technology for which it provides funds up to HK\$ 1.9 billion. Furthermore the Club supports recreation facilities, youth programs, artistic and cultural life, community services, and rehabilitation facilities.
3. The majority of these hourly-paid employees sell as many as 7.5 million betting tickets for each race meeting both on race courses and at off-course betting centers. Other part-time staff include chefs, waitresses, and barmen who work at both race courses.
4. Besides the right to attend race meetings, Full Members enjoy a variety of recreational facilities such as horse-riding, squash and tennis courts, swimming pools, exercise centers, and Chinese and European restaurants at the Club houses at the two race courses, at the Sports Complex at Shan Kwong Road, and at Beas River in the New Territories. The Members' facilities are not a charge upon racing income; they are fully supported under separate accounts by Members' subscriptions and payments.
5. In addition, the Club operates the Mark Six Lottery (a '6 out of 45' lottery) on behalf of the Government-appointed Hong Kong Lotteries Board. This lottery is drawn twice a week throughout the year. Its turnover in 1990/91 was approximately HK\$ 1.9 billion. The Club derives no profit from this activity but charges its operating costs to the Hong Kong Lotteries Board.
6. Several Club executives, including the Chief Executive Officer, the Head of Secretariat, and the Security Controller, are former officers of the British Army.
7. A total of 275 leased telephone lines connect the OCB centers to 12 front-end processors (FEs) and a further 16 FEs support betting operations at the two race courses. There are also 127 leased telephone lines that provide direct voice communication between the OCB centers and the Betting Operations Control Center. In addition the Club has introduced direct video links to some OCB centers.
8. There are typically eight races organized during a race day.
9. For CIT2 (which handles only the English language), the annual fee is HK\$ 400 and the deposit is HK\$1,500. For CIT3 (which uses both English and Chinese languages), the annual fee is HK\$ 500 and the deposit is HK\$ 2,000.

10. A packet-switching data network is a network that divides messages into packets for transmission at their source and reassembles the packets into messages at the destination. It may be public or private. For public networks, users make the connection locally and pay the network service provider based upon the number of packets transmitted.
11. The hardware manufacturer is Varitronix Ltd, a Hong Kong-based company. The software was developed internally by the Club's IT Division.
12. Over the last fifteen years, John Markwell has been involved in making the Club a world leader in using IT for racing and betting activities.
13. Betting is illegal in China whereas the sport of racing is allowed as is lottery; the literal translation of the latter is 'a contribution to social welfare with a chance of winning a prize'.
14. Approximately 30,000 Telebet calls per race day originate from areas outside Hong Kong; China, especially the Guangdong Province, and Macau accounted for a substantial share of respectively 73% and 24% of the total calls.