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INFORMATION TECHNOLOGY AND THE RETAIL INDUSTRY: A MALAYSIAN PERSPECTIVE

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ABSTRACT

Information technology plays an important role in the success of a business entity. This study surveys the receptivity of the Malaysian retailers in adopting information technology in their businesses. The results showed that the Malaysian retail industry have been relatively slow to invest heavily in this technology. The use of IT for the majority of retailers is still at its initial stage – mainly focusing on the operational activities. Various aspects of information technology usage (hardware, application systems, telecommunications, IT agenda, e-business) among the retailers were studied.

INTRODUCTION

Today, to be successful in a global competitive environment, organisations have to compete and win across the board. The significant shifts in the nature of competition highlight the need to reconsider the role of IT in transforming organisations (Sauer and Yetton 1997). Ideas about the appropriate role for IT have evolved over that period from the technology's being seen as purely a support to business to its being considered a crucial weapon in competitive strategy (Ives and Learmonth, 1984; Porter and Millar, 1985). Retailing is arguably the oldest profession in the world. From its inception in bartering and community trading to neighborhood corner stores, retailing has evolved into one of the largest, most competitive business across the globe. The retail industry in the United States of America and the United Kingdom has long adopted IT (Treadgold 1988, Brooksbank et al 1992). This paper intends to study the level of IT usage among the Malaysian retailers. Section 2 outlines the historical background of the Malaysian retail industry and its current situation. Section 3 describes the IT used in retailing and the scale of this application in the retail outlets. Section 4 describes briefly the methodology employed in the survey. This is followed by a discussion of data collection and analysis in Section 5 and 6 respectively. The final sections discuss limitations and directions for future research and examine the implications of the results for research and practice.

THE MALAYSIAN RETAIL INDUSTRY

Way before independence, when Malaysia was known as Malaya, trade was initiated simply because the rural farmers, who comprised the majority of the

population, had surplus of one type of goods and desired goods they did not have or could not produce. Many retailing institutions in Peninsular Malaysia originated in the late 19th century after the arrival of the British, mostly catering to the needs of the expatriates. The locals were drawn to more traditional forms of retail outlets – the daily and periodic markets or the local sundry shops.

Malaysia gained her independence in 1957, and ever since, the retail industry has undergone rapid and significant changes, inline with the growing affluence and changing lifestyle of the population (Rosmimah 1999). The number of retailing institutions grew together with the development of towns and city centers. The advancement in transport and communications also play an essential role in the development of the retail system. The most significant feature of the Malaysian retail trade as of 1980 was that 99 per cent of the retail trade in the country was operated by independent retailers and the other 1 percent by corporate chains and co-operatives (Zainal Abidin 1989). The early 1990s were a period of transition for Malaysian retailing. This was the time when multinational retailers entered Malaysian retail environment with new approaches in store concepts and distribution (Rosmimah 1999). Majority of these retailers have big stores (also known as hypermarkets) that caters for the customers needs under one roof.

Table 1 traces the development of retail institutions (particularly grocery) in Malaysia from the late 1950s till the 1990s.

TABLE 1: Grocery Retail Evolution in Malaysia

Period	**TYPES OF PROMINENT GROCERY RETAILERS**
Prior to 1957 (Before independence)	**Peddlers** **Daily markets** **Local sundry shops**
1960s	**Wet markets** **Periodic markets** **Sundry shops** **Bazaars** * The very first supermarket in Malaysia, Weld Supermarket, opened in 1963, mainly for the expatriates.
1970s	**Supermarkets** (Growth of shopping complexes where major supermarkets were often anchor tenants) **Mini markets** (Usually located in housing estates)
1980s	**Convenience stores** (The first 7-11 store opened in 1984) **Night markets** (Revival of the periodic markets operating in the evening, normally near housing estates. The main target market is working woman who find it convenient to shop near their homes as they are coming back from work).
1990s	**Hypermarkets** **Warehouse Clubs/Stores** **Night markets** (still popular among the urban and sub-urban consumers)

Source: Rosmimah 1999

Information Technology in Retailing

Information technology (IT) means computing and telecommunication technologies and associated know-how to apply them in different fields of organisational activity. In retailing, IT may be employed to perform three main groups of task; data collection, data manipulation and data communication (between stores, head office and suppliers). The disaggregated historical data can enhance business decision-making at principally three levels (Table 2). The most important benefit came from operational level of planning day-to-day in-store operations. This information can later be applied at the managerial level, for example, to enhance store design and layout. Finally the least immediate, but of greatest value, is the use of detailed sales data in strategic decision making, including questions of market positioning and segmentation strategies and branch opening programmes (Treadgold 1988).

TABLE 2: Level of Application of Information Technology – Sourced Data to Decision Making in a Retail Business

Level	**Time Horizon**	**Example**
Operational	Short-range	Stock replacement Staff scheduling
Managerial	Medium-range	Measuring store performance Space allocation
Strategic	Long-range	Merchandise mix Store development programmes

Treadgold has classified the IT applications in retailing as: intra-channel technologies, inter-channel technologies and extra-channel technologies (Table 3). Intra-channel application refers to the use of IT wholly internal to the business. Examples are the use of stand alone computers, ECR (electronic cash registers) and stand alone EPOS. Inter-channel applications relates to the use of IT in a communicating role linking together agents in the distribution channel (retailer, supplier and/or manufacturer). The remote stock ordering systems employed by some leading wholesalers are examples of this application. Finally, the highest level of sophistication, are the extra-channel applications – IT is used to facilitate communication between the retailer and some agent operating outside the distribution channel. The application of EDI (Electronic Data Interchange) and other business-to-business e-commerce came into this category.

TABLE 3: A Classification of IT Applications in the Retail Trades

Status	**Example**
Intra-channel technologies	Sophisticated Electronic cash registers Stand alone EPOS Stand alone computers
Inter-channel technologies	Information transmission systems
Extra-channel technologies	Teleshopping EFTPOS (Electronic Fund Transfer at the Point of Sale)

Source: Tread gold 1988

RESEARCH METHODOLOGY

A survey instrument was formulated to obtain feedback from retailers in the Klang Valley (Klang, Shah Alam, Subang Jaya and Kuala Lumpur), assessing their awareness, receptivity and adoption of information technology in their organisation. A letter of support for the research was obtained from the Ministry of Domestic Trade and Consumer Affairs.

DATA COLLECTION

Data for an empirical examination were obtained via interviews with the retailers. A total of 313 retailers were interviewed over a period of 5 months (June – October 2001). A convenience sampling method was chosen due to: the unavailability of total retailer population data and the difficulty of getting information from these retailers.

The questionnaire is divided into 2 parts, the Company Profile and Information Technology issues. The person interviewed at every store must at least be the store supervisor. The data collected about the company's profile are among others; store origin and ownership, store size, number of branches, inventory management, and sales recording. If the store does not use any computers, they will ask to reason out why and determine when computers will be part of their business. Otherwise, they will answer the IT issues –hardware and application systems used and whether they are involved in the recent trends of IT like datamining, datawarehousing, Internet retailing, EDI and e-business.

Note: the word 'store' and 'outlet' are used interchangeably in this document. The retailers are categorised into the following types: grocery – hypermarket, supermarket, minimarket and sundry shop; department store, convenience store, combination store (department store + supermarket), specialty store, pharmacy and drug store. The Ministry of Domestic Trade and Consumer Affairs's "Guidelines on Foreign Participation in Wholesale and Retail Trade" together with Berman and Evans (2001) have been used to define the retail types as follows:

- **Hypermarkets** – Store floor space of at least 8,000 sq. m., selling a wide variety of consumer goods (food and non-food products) in bulk. These are normally situated in the outskirts of the city.
- **Supermarkets/Minimarkets** – Self-service outlets selling a variety of food items, including groceries and meat and non-food items. Supermarkets are larger than minimarkets and usually operate from a separate structure of its own, having floor space of more than 2,800 sq. m. Similar smaller outlets are termed minimarkets.
- **Sundry store** – A traditional retail store selling a variety of food items, including groceries and non-food items. These stores are less structured than minimarkets, mostly dominated by the Indians (or Mamak) and have a floor space of 300 sq. m.

- **Department store** – A large retail with an extensive assortment of goods and services that is organized into separate departments for purpose of buying, promotion, customer service, and control; having a floor space of 2000 sq. m.
- **Convenience store** – A food-oriented retailer that is well located, is open long hours, carries a moderate number of items and having floor space of less than 500 sq. m.
- **Combination store** – Unites supermarket and general merchandise sales in one facility, with general merchandise typically accounting to 25 to 40 percent of total sales.
- **Specialty stores** – Stores dealing with one main brand name/product/line of goods associated with one product e.g. Healthcare products, optical goods, footwear, furniture, sports goods, electronic goods, household electrical appliances etc.
- **Pharmacy** – A retail store dealing with prescribed and off-the-shelf medications. The store also usually carries sideline items like cosmetics, stationeries and gifts.
- **Drug store** – A store selling Chinese medicinal herbs and health food. Mostly dominated by the Chinese, these stores also carry can food and several non-food items.

ANALYSIS

Of the 313 retailers interviewed, 281 companies (89.8%) are locally based, and 32 companies (10.2%) are multinational or of foreign origin. Out of these, 71.9% are independent retailer (1 to 3 branches) whereas 28.1% are multiples (operating more than 3 stores). Although one literature (Treadgold 1988) classified independent retailer as having 1 to 9 outlets, and multiples – more than 10 outlets, the authors think that for a small country like Malaysia, that number is not appropriate. The outlets interviewed plus their branches makes up to 2048 outlets covered in total. The retailers' profile is depicted in Table 4 below. From the survey collected, 143 companies (45.7%) used some kind of computerisation. 32% of the independent retailers use computers compared to 80.7% of multiple retailers. 94% of foreign retailers use IT and only 40.2% of the local retailers adopt IT.

TABLE 4: Retailers Profile

	Total	(%)	Use of computer	
			Use (%)	Non-Use (%)
All sample	313	100	45.7	54.3
Number of shops owned				
• Independent (1-3 stores)	225	71.9	32.0	68.0
• Multiple (more than 3 stores)	88	28.1	80.7	19.3
Number of shops by origin				
• Local	281	89.8	40.2	59.8
• Foreign or Multinational	32	10.2	94.0	6.0

When looking at the stores that use computers by the store type, we found that the hypermarket scored the most. The stores that did not use any computerisation are the sundry shop and the drug store. The distribution of this by retail-type could be seen from the Table 5 below.

TABLE 5: Details of Retailers Using Computers by Store Type

	Total	(%)	Use Computer	(%)	Non-Use Computer	(%)
All sample	313	100.0	143		170	
Store type						
▪ Grocery						
➢ Hypermarket	3	1.0	3	100.0	0	0.0
➢ Supermarket	6	1.9	3	50.0	3	50.0
➢ Minimarket	48	15.3	7	14.5	41	85.4
➢ Sundry shop	19	6.1	0	0.0	19	100.0
▪ Department store	9	2.9	6	66.7	3	33.3
▪ Combination store	2	0.6	1	50.0	1	50.0
▪ Convenience store	3	1.0	2	66.7	1	33.3
▪ Specialty store	206	65.8	115	55.9	91	44.1
▪ Pharmacy	10	3.2	6	60.0	4	40.0
▪ Drug store	7	2.2	0	0.0	7	100.0

Computer-Usage

The retailers were asked of their involvement in several aspects of IT; namely Application Systems, Telecommunications, Hardware, Business Agenda and the Internet Impact.

Application Systems

As mentioned above, 45.7% of the respondents use computers in their business. The areas of application are illustrated in Table 6 below. The survey took into account 2 types of computer application. Firstly the Retail Information Systems (RIS), which are usually bought from software vendors. (Only one retailer builds this system in-house). Most of the foreign companies brought in application systems from their parent companies. The second one is the general purpose software like Microsoft Office Tools. Some retailers utilise this software in their businesses. Out of the 143 retailers who use some kind of computerisation, Sales scores the highest point – 129 (90.2%), followed by Inventory - 121 (84.6%) and Accounting – 98 (68.5%). This confirms Treadgold's Level of IT Application in Table 2 above. The retailers will have more focus on operational activities before moving on to other activities. Managerial activities are like Merchandising – 69 (48.2%), Store Design - 50 (35%), Advertising and Publicity – 93 (65%). Even though the number is high for Advertising and Publicity, most retailers are actually using Microsoft Office Tools to design and print flyers, advertisements, etc. The strategic activities scored the lowest, Relationship Marketing – 42 (29.3%) and Market Research – 38 (26.6%). This figure shows that Malaysian retailers are only active in operational activities and have yet to invest in strategic applications.

TABLE 6: Retailers' Core Activities and the No. of Users adopting IT.

	Core retailing	**RIS**			**General purpose sw**			
		Ind.	**Mul.**	**Total (A)**	**Ind.**	**Mul.**	**Total (B)**	**Total (A+B)**
1	Contracting/ Agreement	8	16	24	31	14	45	69
2	Inventory	47	61	108	12	1	13	121
3	Accounting	37	48	85	13	0	13	98
4	Warehousing	21	39	60	8	1	9	69
5	Merchandising	19	32	51	13	5	18	69
6	Store Design	10	17	27	11	12	23	50
7	Sales	45	62	107	17	5	22	129
8	Advertising and Publicity	11	33	44	32	17	49	93
9	Relationship Marketing	3	16	19	10	13	23	42
10	Market Research	5	12	17	11	10	21	38
11	Customer Service	11	21	32	11	12	23	55
12	Administration	17	32	49	19	13	32	81
13	Planning	9	15	24	14	14	28	52

Telecommunication

From the 143 retailers that adopted IT, fixed line phones and fax scored the highest means of communication. Table 7 shows the breakdown of telecommunication used by the retailers. A considerable number of retailers are using the Internet (48.2%) and e-mail (45.4%). This shows that the Malaysian retailers are beginning to realise the potential of this technology.

TABLE 7: Telecommunications Used by the Retailers

Telecommunication system	**Count**	**(%)**
Fixed line phone	131	91.6
Mobile phone	76	53.1
LAN	37	25.8
WAN	9	6.2
Fax	106	74.1
Internet	69	48.2
E-mail	65	45.4

Hardware

When asked about the hardware used in their businesses, PCs and Computer printers score the highest. Only 60.1% of the retailers use POS terminals, while others resort to Cash registers. The number of retailers having computer servers is very small, only 27.2%. This shows that majority of the retailers still have stand-alone computers. Retailers do not see the necessity of having handheld terminals for remote data entry. The breakdown of the hardware used is shown in Table 8 below.

TABLE 8: Hardware Used by the Retailers.

Type of hardware	**Count**	**(%)**
POS terminals	86	60.1
Scanners	103	72.0
Barcode machines	83	58.0
PCs	128	89.5
PDAs	6	4.2
Lap top	15	10.5
Servers	39	27.2
Computer printers	127	88.8
Handheld terminals	11	7.6

Business Agenda

The retailers were also asked about their involvement and commitment in other Business Agenda. Only 8 (5.6%) retailers are involved in datawarehousing, 3 (2%) uses datamining technology and only 6 (4.2%) retailers tried their hands on Internet retailing. So far only one retailer (0.7%) adopts EDI in communicating and transmitting information to their suppliers.

E-business

On the question of the greatest barrier for implementing e-business, 64 respondents (44.7%) quoted high cost of implementation as a reason, followed by 30% quoting low use of e-business. The number of responses is depicted in Table 9 below. The Malaysians still do not see the benefit of investing in this technology.

TABLE 9: Greatest Barrier for Implementing e-business

Reasons	**Strongly Agree**	**Agree**	**Strongly Disagree**
a. High cost	64 (44.7%)	18 (12.5%)	10 (6.9%)
b. Lack of benefit	34 (23.7%)	26 (18.1%)	28 (19.5%)
c. Lack of key standard	30 (21.0%)	24 (16.7%)	35 (24.4%)
d. Low use of e-business	43 (30.0%)	19 (13.2%)	31 (21.6%)

Internet Impact

The retailers response on "when do you think the Internet will have a significant impact on your organisation?", 8% answered within next year, the other 16.3% think that their organisation will be involved within the next 3 years and majority of them (45.4%) are still unsure of the period.

Non-computer Usage

Of the 170 retailers not using computers, 70.5% of respondents quoted High start-up cost and another 67.5% respondents quoted high infrastructure cost as the main reasons for not using computers in their companies. Majority also disagree that they wait for others and they do not need computers in their

stores as the reasons of not using computers. The details are provided in Table 9 below.

TABLE 9 – Reasons for Not Using IT

Opinion Ranking / Reasons	Strongly disagree (%)	Agree (%)	Strongly Agree (%)
Do not understand the use of IT in retailing	23.5	48.5	28.0
High start up cost	4.2	25.3	70.5
High infrastructure cost	4.8	27.7	67.5
Waiting for others to use it	50.4	28.5	21.1
There is no need for it at all	30.5	29.3	40.2

The retailers were asked about plans for adopting IT in the future. 26.6% of the retailers intend to use computers in the near future (less than a year). Another 17.9% will adopt IT within the next 3 years and surprisingly 9.3% say they will never use IT.

DISCUSSION OF RESULTS

This research is an initial attempt to investigate the current level of IT usage among the retailers in the country. Since there is no comprehensive compilation on the retailers data, either by the Ministry or the Local Government, there is no statistics on the retailers alone. The research was conducted in the Klang Valley and it should be expanded to the other major cities in the country.

The research has proved that IT adoption is low among the local retailers. Main reason being the unwillingness to invest in the technology. Some independent retailers are happy with their state of business and are not confident that IT would change this. However, the majority of retailers view the importance of this technology and are slowly adapting to it. The emergence of foreign retailers is changing this scene. These foreigners invest a large amount of money in technology to attract more customers. The presence of hypermarkets and supermarkets which offer great bargains and discount prices are attracting many customers. The independent retailers who do not wish to change with time and technology, will be left behind.

CONCLUSION

The Malaysian retailers are still progressing slowly into serious computerisation. The government call for the retailers to be more IT inclined inline with the country aspirations to attain k-economy. The retailers commitment in IT is necessary to push the economy further. At present, the state of computerisation is below average, and the initiatives of e-commerce, especially business-to-business are only taken up by the big retailers. The government should encourage more retailers to seriously look into this investment.

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