

## The Relationship Between Information Technology Usage and the Planning Behavior of SMEs in Developing Economies

<sup>1</sup>Z.T.Temtime and <sup>2</sup>J.P.W. Shunda

<sup>1</sup>University of Botswana, P.O.Box: 70471, Gaborone, Botswana

<sup>2</sup>University of Botswana P.O.Box: 0022, Gaborone, Botswana

**Abstract:** The relationship between the degree of information technology usage, company size and its strategic planning practices has critical implications for sustainability of firm competitiveness. However, the relationship has been conceptualized and operationalized in relation to only large firms. Only few studies have attempted to examine the nature of this relationship in Small and Medium Enterprises (SMEs) in developing economies. This article examines three things. (1) The perception of SMEs about the role of IT in firm competitiveness, (2) the planning behavior and practices of SMEs, and (3) the relationship between SMEs IT usage and planning behavior. Data were collected from 44 SMEs in the Republic of Botswana through questionnaire and analyzed using simple descriptive statistics such as mean and standard deviation. The results show three important findings. (1) The degree of IT usage is positively related to both firm size and planning behavior of SMEs. (2) The planning behavior of SMEs is positively related to firm size, as measured by number of employees. (3) The degree of IT usage is more strongly associated with planning behavior than firm size. It is also found that though SMEs engage in both operational and strategic planning, IT resources were primarily used for operational and administrative tasks. Some recommendations and major implications of the findings have also been presented.

**Key Words:** Information Technology, Firm Size, Planning Behavior, Strategic and Operational Planning, Decision Support System, Small and Medium Enterprises

### Introduction

There has been a tendency for many large, multi-product, multi-divisional, and multi-national companies to develop centralized computer based information systems in the belief that this provides the best way of approaching the capture, management and exploitation of the information that is essential for their business needs. A key determinant of the success of Information and Communication Technologies (ICT) is their alignment with the business. It is extremely important for ICT plans and strategies to be linked directly to the objectives and strategies of the various business units in large organization. This has created wrong perception on small and medium enterprises, which assume that ICTs is appropriate for only large firms.

The information required for running a business can broadly be broken into three types. First, information required for regulatory, financial and tax reporting, without which the business could not legally function and which must be produced quickly, accurately, and efficiently for the purpose of external reporting. Second, information required to manage day-to-day situations and decisions. The last type of information is that required to support long-term decision-making, and the development of strategy. Studies indicate that most SMEs at best use the first two types of information (Sawyer, 1993; Elenkov, 1997). It is with this last type of information with which this paper is concerned, although there will be overlaps between all types of information since the divisions may largely be conceptual.

Today's business environment is characterized by an increasing intensity of competition, globalization of the

world economy, rapid technological changes, and the growing expectations of customers, suppliers and the workforce. Surviving and growing in this turbulent and dynamic business environment requires strategic thinking and decision-making. Although research findings on the association between business planning and organizational performance remained controversial and inconclusive (Mintzberg, 1994; Pearce, Freeman and Robinson, 1987; Miller and Cardinal, 1994; Bracker and Pearson, 1986; Brews and Hunt, 1999; Hopkins and Hopkins, 1997) there is much consensus that strategic planning is a vital means of meeting these challenges. Strategic planning, among other things, deals with assessing the internal and external business environment for the purpose of identifying organizational strengths, weaknesses, opportunities and threats. It is based on this assessment that firms establish organizational goals, and determine the strategies to achieve them.

Both large and small firms require information about customers, products, processes, and factors in the external environment. Strategic advantage and long-term competitiveness are therefore largely affected by the ability of firms to systematically gather and process relevant, timely and reliable information about customers, suppliers, competitors, changes in technology and market place, socio-economic, political and legal conditions.

Recent advances in computer technology have made it simple for managers to gather and process information and develop decision models. Advancement in computer technology can also assist owners or managers of SMEs in making the transition from "doing" to "managing" (Herbert and Bradley, 1993). The advent of powerful,

## Temtime and Shunda: The Relationship Between Information Technology

low-cost microcomputers coupled with user-friendly software, has allowed greater number of SMEs to use computerized Decision Support Systems (DSS) and Expert Systems (ES). As both hardware and software become more sophisticated, the use of microcomputers is moving from facilitating day-to-day routine business transaction to supporting managerial decision-making. However, though firms have greater access to computer technology than ever before, a plethora of studies (Boyd, 1991; Raymond, 1988; Muller-Boling and Susanne Kirchhoff, 1991; Dean, Brown and Bamford, 1998) indicated that only large, multi-national, and multi-divisional firms use microcomputers and computer software packages for strategy formulation and managerial decision-making. Most applications particularly in the small and medium sized firms are restricted to basic transaction and word processing, which are inexpensive to automate and maintain. The objective of this paper is to investigate how a group of 44 selected small and medium firms were actually using microcomputer-based technology in Botswana, a developing middle-income African country.

**Managerial Decision Making and IT:** Information technology facilities such as microcomputers and software packages have been effectively used for strategic decision-making purposes for the past two decades in both small and large firms in the developed societies. It was in 1981, 20 years before, that IBM launched personal computers onto the market. This second anniversary, in 2001, seemed an appropriate time to investigate the extent of usage, the attitude and perception of SMEs toward computers, the reasons for adoption or rejection, the main purpose for which microcomputers are now being used in SMEs in developing countries. Review of a number of small enterprise surveys (Raymond, 1988) concluded that "all the surveys lead to the same conclusion: SMEs have to keep pace with technological changes if they want to keep a competitive edge." Furthermore a survey of 414 medium sized firms (Smith, 1996) reported that the motivation for investing in new technology was to improve short-term operational efficiency as opposed to developing long-term competitive potential. In this context, previous research (Fuller, 1996) suggests that computer usage by SMEs is largely restricted to operational or administrative tasks (Fuller, 1996).

Decision Support Systems (DSS) have emerged as a promising new technology for structuring, guiding, and improving information processing and management decision-making. A DSS is an interactive computer-based system that provides the user with easy access to decision models in order to support semi-structured and unstructured decision making tasks. DSS typically possesses capabilities such as data management, graphic display, financial and statistical analysis, financial modeling, and optimization analysis (Chen, 1989). While large corporations have relied more and more upon DSS for effective decision-making, SMEs have virtually ignored this new technology. With the proliferation of personal computers, practical and inexpensive DSS are within the reach of SMEs to improve the quality of inferences and judgments. However, in order to

stimulate diffusion of DSS technology to SMEs, the perception and attitude of SMEs toward the role of microcomputers and computer software packages must be challenged and changed.

One currently popular application of DSS is the expert system (ES), a method of applying human knowledge captured in a computer to solve problems that normally require human expertise (Herbert and Bradley, 1993). An expert system is a computer system that is designed specifically to emulate the reasoning of an expert. Expert systems handle a wide variety of management and planning problems regardless of problem sophistication and hence provide an opportunity for SMEs to use computer-technology to attain strategic advantages (Sullivan and Shively, 1989). The impact of ES in SMEs may be greater than in large firms since SMEs may not have the luxury of alternative solutions.

In large firms, managers rely on DSS for effective decision-making. Chen (1989) and Sullivan and Shively (1989) point out, however, that this technology has not been fully utilized by SMEs despite advantages cited by several authors. Chen and Williams (1993) have sufficient evidence to suggest that most of the impact of microcomputers on SMEs has been basic and operational than decisional and strategic. Other studies (Fuller T, 1996; Muller-Boling and Kirchhoff, 19991), however, indicated that there are some evidences that the main use of microcomputers in SMEs is shifting from record keeping (word processing and bookkeeping) to managerial decision-making (financial modelling, forecasting and data management). Moreover, as suggested by Gupta and Harris (1989) and Amer and Bain (1990) the use of computerised information systems in SMEs would lift the focus of business from operational matters to long-term business success.

Microcomputers and DSS can be effectively used in business planning and a wide variety of strategic applications such as sales forecasts, profit and cash flow forecasts, econometric models, stochastic and financial models, project planning and control, investment appraisal and industry analysis, new product development, customer survey, networking suppliers and customers, materials requirement planning, facility layout and so on. As confirmed by 93.2 percent of the sample firms in this study, SMEs in Botswana do not use DSS in their business planning and decision-making. The important question now is whether SMEs in developing countries use microcomputers and software packages (rather than DSS or ES) to support managerial decision-making.

**IT and Behavioral Changes:** Human behavior is influenced by attitudes, which can be measured and changed. A number of managerial attitudes, beliefs, or expectations about information technology and systems may be important to the successful implementation of these systems. Computer training and development programs can make important attitudinal and behavioral changes in SMEs. The attitudes which one would expect to be affected by computer training and experience include feelings about one's understanding of the information system; feelings about participation in systems development and implementation; and

## **Temtime and Shunda: The Relationship Between Information Technology**

satisfaction with the information system. Managers with more computer experience and training will have more positive attitudes and greater usage of computers for strategic decision making.

Lack of computer training and skills can be a major problem in SMEs. For instance, a lack of know-how about the possibilities, limits and requirements of business computing can cause SMEs to depend too much external consultants, to misunderstand their own information requirements, or to under-use or mismanage their information resources.

As Raymond (1988) argues educators, managers and information systems practitioners should look for computer training and education to accomplish several objectives. Small business management education should include computer and information systems courses geared not only toward producing "computer literate" administrators, but also toward education entrepreneurs who view computer based information systems as a strategic tool, which can be used to gain competitive advantage. He also suggests the need to make SMEs aware of the importance of training for the initial computerization process. When adopting a computer system, managers with little or no computer experience should be trained along with the personnel who will operate the system as primary users.

**The Need For Business Planning in SMEs:** The literature on business planning is both descriptive and prescriptive. Although, there is an overwhelming consensus in the literature that business planning is a prerequisite for the survival and profitability of both small and large firms, the findings of most studies on the relationship between planning and firm performance are inconsistent, inconclusive, and controversial. The traditional, and may be the only way of measuring the importance of planning is by comparing the financial performance of planners and non-planners, and strategic planners and operational planners.

Although a plethora of studies found that planning firms achieve better financial performance than non-planning firms, few studies found that planning firms performed no better than non-planning firms. In one study, for example, it was found that Banks that engage in the planning process tend to have significantly low ROIs (Return On Investment) than Banks that did not engage in the process (Gup and Whitehead, 1989). Robinson and Pearce (1983) studied 38 non-formal planners and 12 formal strategic planners and found that formal planners put more emphasis on setting goals and objectives than non-formal planners who find formal goals and objectives of secondary importance. They concluded that no significant differences exist between the financial performance of planning and non-planning firms. In contrast, the study of Clausen (1990) attributed BankAmerica's return to profitability to the Bank's commitment to strategic planning process.

Shrader, Mulford and Blackburn (1989) concluded that formal plans are superior to informal plans because the process of writing the plan forces ideas and objectives to be thought out. In deed, a study by Robinson and Pearce (1988) also suggests that the more sophisticated the planning process, the better the organizational

performance. While SMEs usually do little planning, studies (Matthews and Scott, 1995) show that those with formal planning outperform their counterpart, because formalized planning provides a statement of purpose, which extends throughout the firm. Miller and Cardinal (1994) reviewed 26 studies and concluded that strategic planning positively influenced firm performance, while a similar analysis of 14 studies (Schwenk and Shrader, 1993) concluded that the relationship was significant and positive.

In contrast, Pearce, Freeman and Robinson (1987) reviewed 18 empirical studies and concluded that the link between formal strategic planning and firm performance was 'tenuous'. Boyd's (1991) analysis of 21 studies found that the formal strategic planning/performance link was weak. Robinson, Logan and Salem (1986) found that strategic planning was not related to improved financial performance of small firms, but that operational planning was positively related to performance. Najjar, (In Shrader *et al.*, 1989) in a study of 118 small manufacturing companies, and Unni (1981), in a study of 120 manufacturers and retailers, found that top managers judgment was a more important determinant of performance than strategic planning; and that few small businesses have engaged in strategic planning. A growing body of literature has suggested that improving the effectiveness of operational planning may be critical for the success of SMEs. Robinson, Pearce, Vozikis and Mescon (1984) for example, found that SMEs managers considered operational planning more important than strategic planning.

In spite of all these ambiguity and inconsistency, there is a general consensus among researchers, academics and practitioners that business planning is necessary for the survival and growth of firms regardless of their size and location.

**Survey Design And Methodology:** The research methodology used to produce this paper was a descriptive survey research. It is descriptive because data the relationship between IT, firm size and planning behavior were collected through questionnaire. Only 74 firms were randomly selected to fill a 3-page questionnaire. The study was initially intended to include only manufacturing firms. However, the small number of manufacturing firms in Botswana forced the author to take samples from the merchandising and service sectors of the economy. As part of a follow-up on the questionnaire, each respondent was reminded, on average, three times to complete and return the questionnaire. Although 56 questionnaires were filled and returned during the 82 days data collection period, only 44 were found usable for this study. Small firms are defined in Botswana as having 6 - 25 paid employees and medium firms having as many as 26 to 99 paid employees. Hence, micro and large firms are excluded from the study.

Efforts were made to increase the response rate by dividing the content of the questionnaire into three specific parts. Part one deals specifically with the profile of SMEs and part two covers questions designed to evaluate the degree of emphasis placed on strategic and operational planning and whether the planning process

was systematic and formal. As several previous studies (Armstrong: 1982, Boyd: 1991, Boyd and Reuning-Elliott 1998: Hopkins and Hopkins, 1997: Bracker and Pearson: 1986) indicated, the most commonly used technique to separate strategic planners from operational or short-term oriented planners is to evaluate the degree of emphasis they put on selected planning indicators. Based on the work of Boyd and Reuning-Elliott (1998) and Hopkins and Hopkins (1997), this study identified fourteen items (Table 1) to be used in measuring the planning construct. The last part covered the use of microcomputers and software packages to support strategic planning and the attitude of managers/owners toward the use of IT in strategic planning and managerial decisions. This was designed to evaluate the relationship between types of planners and the use of microcomputers for decision-making purposes.

As the study deals with the attitude and perception of SMEs about business planning and computer application, the main data analysis techniques used were descriptive statistics such as mean, standard deviation, and rankings.

## **Results and Discussion**

**Findings of the Survey :** The major problem of this study was the mixed nature of the sample firms. Out of the 44 SMEs included in the study 19 were manufacturing, 14 were service firms and the remaining 11 were merchandising (wholesale and retail business) firms. Only 9 (20 percent) of the CEOs were women. 26 (60 percent) were small companies with employees less than 26 while the remaining 18 (40 percent) were medium sized firms with number of employees ranging from 26 - to - 99. All the legal forms of business ownership-sole proprietorship, partnership, and corporations-were found in the sample firms. Out of the 44 sample firms, 6 (14 percent) were sole proprietorships, 9 (20 percent) were partnership and joint venture firms, and the remaining 29 (66 percent) were corporations. The average managerial experience of the CEOs was 4.6 years, and the number of years the companies have been operating in Botswana was 5.3 years, on average.

After DSS and ES were defined and explained, the respondents were asked to indicate the level of usage of these new technologies to support managerial decision-making. 93.6 percent of them indicated that they have never used these technologies with the exception of two medium sized firms who indicated that they sometimes use DSS. To confirm that business planning is a precondition for the survival and growth of firms, firms were asked whether they engage in business planning or not. All the firms (100 percent) responded positively and confirmed that SMEs in Botswana engage in some form of business planning. Then, to evaluate whether their planning is systematic or unstructured, formal or informal, strategic or operational, the respondents were asked to indicate the degree of emphasis they place on each of the 14 selected planning indicators during their planning process using a 5-point Likert scale ranging from no emphasis (1) to very high emphasis (5).

As shown in table 1, more emphasis has been placed on

operational planning related activities by both small and medium enterprises than strategic planning related issues. Small firms placed the highest emphasis on operational efficiency (Mean=4.70), followed by sales forecasting (Mean=4.42), functional budgets (Mean=4.26), short-term goals (Mean=4.16), annual action plans (Mean=3.90), profit forecasting (Mean=3.68) and so on. They put only very little emphasis on strategic planning related activities. The lowest emphasis, for example, was placed on the development of mission statement (Mean=1.68), followed by market research studies (Mean=1.82), technology forecasting (Mean=1.90), and establishment of long-term goals (Mean=1.96).

Medium sized firms have also put greater emphasis on operational planning than strategic planning. The development of short-term goals has received the highest emphasis (Mean=3.44) from medium firms, followed by annual action plans (Mean=3.42), sales forecasting (Mean=3.36), operational efficiency (Mean=3.36), all of which are operational planning indicators. The other important findings are marked by "asterisk" and "plus signs". For small firms, the difference between the mean points for long-term goals (1.96) and short-term goals (4.16) is statistically significant at 1% level. The difference between the mean points for "building long term potential" (2.02) and "operational efficiency"(4.70) is also statistically significant at 5 % level. From this, one can easily infer that small firms are excessively operational and short-term oriented. However, as shown by the "+" signs, for medium sized firms, the difference is not statistically significant. The mean point of "long-term goals" (2.78), for example, is close to the mean point of "short term goals" (3.44). This indicates that medium sized firms put more emphasis on strategic issues than do small firms. Hence, as firm size increases, firms tend to move from operational and short-term oriented planning toward strategic planning.

The above findings are also confirmed by the size of the standard deviations for each item in Table 1. The lower the standard deviation for a particular item the higher will be the common understanding of firms about that item. The standard deviation for operational efficiency (small=0.5; medium=0.3) for both small and medium sized firms is lower than the standard deviation for "mission statement" (small=1.8; medium=1.5) and "long term goals" (small=1.7; medium=1.6). This reveals that most SMEs in the sample have clearer understanding of operational planning related activities than strategic issues. In other words, SMEs have perceptual and attitudinal problems with regard to strategic planning issues. Almost all SMEs use microcomputers and some computer software packages in their day-to-day business activities. Before investigating the use of microcomputers and software packages in business planning and decision-making, the respondents were asked (on a 5-point Likert scale ranging from 1 = not used at all, to 5 = used throughout the business) the extent to which they used the following six computer software packages in their business in general.

For all SMEs participating in the survey (N=44) and

## Temtime and Shunda: The Relationship Between Information Technology

Table 1: Rankings and Mean Degree of Emphasis on 14 Selected Planning Indicators

Planning indicators	Small		Medium		All Firms	
	Mean	S .D	Mean	S.D.	Mean	S .D
Mission statement	1.68	1.80	1.96	1.50	1.80	1.60
Market Research Studies	1.82	1.10	2.22	1.10	1.98	1.10
Technology Forecasting	1.90	0.50	2.70	2.20	2.22	1.40
Long term goals	1.96++	1.70	2.78++	1.60	2.30	1.70
Building long term Potential	2.02**	0.90	3.04**	2.10	2.44	1.50
Planning Manual usage	2.10	2.10	2.84	1.90	2.40	1.90
Industry Analysis	2.18	1.80	2.78	2.10	2.42	1.90
Environmental Scanning	2.30	1.90	2.56	1.90	2.40	1.90
Profit Forecasting	3.68	0.70	3.30	0.70	3.52	0.70
Annual action plans	3.90	0.30	3.42	1.20	3.70	0.80
Short – term goals	4.16+	0.40	3.44+	0.60	3.86	0.50
Functional budgets	4.26	0.50	3.30	0.90	3.86	0.60
Sales Forecasting	4.42	0.90	3.36	0.80	3.98	0.90
Operational efficiency	4.70*	0.50	3.36*	0.30	4.16	0.50
Sample Size	26		18		44	

\*, \*\* Indicate statistically significant difference at 1% and 5% level, respectively. +, ++ Indicate statistically insignificant difference at 1% and 5% level, respectively.

Table 2: Rankings and Mean Usage of Information Technology Facilities by SMEs

Computer Software Packages	Small Firms		Medium Firms		ALL Firms	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Word Processing	24.5	0.6	23.5	0.3	23.0	1.3
Accounting Packages	19.0	1.1	24.0	1.8	22.0	1.2
Spreadsheet packages	18.0	0.8	22.0	0.8	21.0	1.6
Database Packages	13.5	1.2	20.5	1.1	19.0	1.8
Integrated MIS	9.0	1.8	18.0	1.1	15.5	1.4
Statistical Packages	7.0	2.1	14.0	1.1	11.0	1.9
Sample size	26		18		44	

Table 3: Rankings and Mean Frequency Use of IT Facilities By Firm size, and Planning Behaviour

Business Applications	Small Firms			Medium Firms			All Firms		
	STR	OPR	ALL	STR	OPR	ALL	STR	OPR	ALL
Risk analysis	15.05*	13.25*	10.90^	16.05**	11.15**	14.15^	17.55	10.20	12.25
Market research	15.05*	13.25*	11.40^	18.25**	11.90**	15.80^	17.25	10.90	13.20
Strategic analysis	15.05*	13.25*	10.95^	18.40**	10.10**	15.15^	17.55	9.90	12.65
Investment appraisal	15.05*	13.25*	11.30^	19.40**	14.40**	17.45^	18.55	11.15	13.80
Marketing mix	15.45*	15.75*	15.70^	16.90**	14.90**	16.10^	16.45	15.55	15.85
Profit Forecasting	15.55*	13.25*	13.70^	20.05**	14.45**	17.85^	18.65	13.55	15.40
Cash flow forecasting	16.45*	13.25*	12.15^	19.50**	11.20**	16.25^	18.55	11.15	13.80
Staff planning	19.80	15.10	16.00	20.15	13.75	17.65	20.05	14.75	16.70
Stock control	19.90	17.45	17.90	22.80	20.80	22.00	21.90	18.30	19.60
Production planning	20.05	20.70	20.60	20.45	19.90	20.25	20.35	20.05	20.45
Sales planning	20.05	18.25	18.60**	22.40	20.65	21.70**	21.65	18.55	19.85
Budgeting	22.10	22.60	22.50	24.40	24.50	24.45	20.35	23.10	23.30
Payroll	23.40	23.90	23.80	23.80	24.25	24.00	23.70	24.00	23.85
Cost and mgt acctng	24.45	23.70	23.85	23.25	23.40	23.30	23.65	23.65	23.65
Financial accounting	24.60	24.55	24.55	24.55	24.40	24.50	24.55	24.50	24.55
Sample Size	5	21	26	11	7	18	16	28	44

STR and OPR =strategic planners and operational planners, respectively. \*, \*\*, and + indicate the existence of statistically significant difference between strategic and operational planning oriented SMEs at 1% confidence level. ^ Indicates the statistically significant difference between small and medium enterprises in mean usage of strategic issues. Weighted average multiplied by 5 for convenience of presentation.

## Temtime and Shunda: The Relationship Between Information Technology

particularly for smaller firms (N=26), word processing was the most widely used computer software package (mean = 24.50 for small firms and mean=23.00 for all firms), followed by accounting packages, spreadsheets, databases, integrated management information systems, and statistical packages. No less than 97.7 percent (43 firms) of the sample firms used word processing software (with only one small company indicating that it never used such software) 90.9 percent (40 firms) used accounting packages. But only 31.8 percent (14 firms) used spreadsheets, 20.4 percent (9 firms) used database packages, 9 percent (4 firms) used integrated management information system, and only very few firms used statistical packages (6.8 percent).

The results also indicated that medium - sized companies tended to use the various software packages more extensively than small firms, with significant differences (for mean usage) being evident in respect of word processing, spreadsheets and MIS packages - and with 7 percent of small firms indicating that they used MIS software, compared with 18 percent of medium-sized companies. In sum, business support systems (word processing and accounting) are used extensively, but that specialized decision support software (databases, MIS and statistical packages) are employed less frequently even by medium sized enterprises.

It has been stressed in the small business literature that the adoption of information technology and the utilization of Computerized Information Systems (CIS) may result in firms focusing on long-term business success rather than on operational matters (Chen and Williams, 1993), and that information technology and CIS have the potential to provide SMEs with a competitive advantage (Fuller, 1996). To examine whether computer usage is related to the degree of strategic planning in SMEs the sample firms were divided into strategic planners (who indicated 4 or 5 on the ordinal planning scale reported in Table 1) and operational planners (who indicated 3, 2, or 1). 11 (60 %) medium and 5 (20%) small firms were found to have strategic orientation (STR) while the remaining 7 (40%) medium and 21 (80%) small firms were largely focusing on operational and short-term issues (OPR). To investigate in more detail the different business applications for which computers are utilized, respondents were requested to indicate (on a 5-point scale ranging from 1 = never, to 5 = always), the frequency with which computer - aided systems were used in a range of business activities.

Business applications and activities for which microcomputers are most frequently used include financial accounting, cost and management accounting, and payroll, followed by budgeting, production and sales planning, and stock control. Microcomputers were not extensively and effectively used for the purpose of strategic planning and decision-making. Managerial activities for which microcomputers were least used include risk analysis, strategic analysis, investment appraisal, market research, project planning, cash flow and profit forecasting. As shown in Table 3, in both the medium and small firm group, strategic oriented firms tended to use microcomputers for strategic decision

making issues more extensively than operational planning oriented firms, with significant differences (for mean usage) being evident in respect of market research, project planning and strategic analysis-and with only 34 percent of operational planners indicating that they used microcomputers for managerial decision making, compared with 81 percent of strategic planning oriented firms. From this, one can derive that strategic orientation and computer usage are positively related. As the degree of strategic orientation (as measured by their involvement in strategic planning) increases, they tend to use microcomputers to achieve competitive advantage more extensively than before.

Table 3 also indicate that no operational planning oriented firm (small or medium) has scored a mean frequency of computer usage for strategic activities above the scale mid-point 3, and with the proportion of respondents indicating that they always used computers systems for these applications never rising above 20 percent. These applications comprised marketing mix; strategic analysis; staff (manpower) planning; risk analysis; investment appraisal; forecasting; and market research. But, all strategic planning oriented firms (small and medium) scored above the scale mid-point 3 for these applications.

The frequency of use of computer aided systems for, for example, profit forecasts and sales planning differed significantly between respondents in the small and medium-sized firm sub-samples. The mean frequency score of medium-sized firms for profit forecasts (17.85) was significantly higher (at the 1 percent statistical level) than for small firms (13.70) - with only 22 percent of medium-sized firms indicating that they never used computer-aided systems for profit forecasting, compared with 36 percent of their smaller counterparts. A similar picture emerged with respect to investment appraisal, with 29 percent of small firms intimating they never used computer-aided systems for investment evaluation and selection (mean=11.30) compared with only 11 percent of medium-sized companies (mean=17.45).

As Table 3 reported, the mean frequency statistics for strategic and operational planners in respect of the various business applications utilized with computer-aided systems is different. For operational planning firms, it shows that, on average, and for all business applications, strategic planners use computer-aided systems more extensively than operational planning oriented firms. Consistent with prior expectation, however, Table 3 shows that the largest mean differences relate to the last six applications-risk analysis, strategic analysis, investment appraisal, market research, and cash flow forecasting. For example, there is little difference between the average use of computer-aided systems by strategic and operational planners in the small company sub-sample in respect of financial accounting, cost and management accounting and payroll applications. This contrasts with the significantly high computer usage by strategic planners in such business activities as profit and cash flow forecasting, production and sales planning, investment appraisal, risk

analysis and market research. The mean use of microcomputers by strategic planners in the small firms sub sample (mean=16.45) is, for example, significantly higher than operational planners (mean=13.25) for cash flow forecasting.

In general, although Table 2 reveals a similar picture for medium-sized firms, some differences are evident. Although the table shows that, on average, strategic planning oriented firms use microcomputers more frequently and extensively than operational planning oriented firms for staff planning, the difference is statistically significant for medium sized firms only. However, for all SMEs participating in the survey, Table 3 clearly demonstrates that, other than in respect of financial, cost and management accounting and payroll applications, the use of microcomputers by strategic planners is significantly higher than it is for operational planners.

### Conclusions and Implications for Research:

Although the purpose of the study is to investigate the relationship between information technology, firm size and planning behaviour, the scope is very limited. The main weakness of this study is threefold. First, the sample firms are from mixed industries (manufacturing, merchandising, and services industries). The degree and intensity of strategic planning and the use of IT varies from industry to industry, and depending on the type, size and the nature of firms. Second, the sample size is very small. This paper is extracted from a major research project on Strategic Planning. But, the data on the use of IT was collected from only 44 firms. Third, as there are no valid measurement instruments to divide firms as strategic and operational, only subjective criteria were used.

### Conclusion

The finding of the study showed that SMEs in Botswana use the various IT facilities mainly for day-to-day operational activities. They do not use microcomputers and software packages, for example, for supporting managerial decision-making and strategic planning. Almost all SMEs, regardless of size, use microcomputers mainly for basic administrative activities such as accounting, payroll, stock control and so on. Although this finding holds for both small and medium sized firms, medium sized firms tend to put higher emphasis than their smaller counterparts on the use of IT to achieve competitive advantages.

The survey shows that both Small and Medium Enterprises (SMEs) in Botswana engage in some form of strategic and operational planning. Most of them (70 percent) engaged in intuitive, non-formal, and unstructured form of business planning. Only few firms are found practising strategic planning. Most SMEs perceive that business planning is costly and time-consuming task, and hence appropriate only for large firms. Although most of them put much emphasis on day-to-day, short-term business activities rather than building long-term competitive potential, strategic planning oriented firms put greater emphasis on

strategic use of IT than do operational planning oriented firms. It is therefore found that there is strong and positive association between IT perception and planning behaviour of SMEs.

It is also found that there is important relationship between firm size and perception of the role of IT. Medium firms put more emphasis on strategic use of IT than do small firms. This could be attributed to resource endowment of medium sized firms. As the firm size increases from small to medium and large, the resources available for investment in IT also increase. Thus, growing firms tend to shift the use of IT from focussing entirely on operational issues to long-term strategic advantage.

**Research Implications:** The adoption of IT and DSS may spur small businesses to focus on long-term planning and business success. Given the widespread use of microcomputers by SMEs participating in the current study, the findings in this paper suggest that the key to a wider use of information, its analysis and application, should not just rely on educating the SME sector on the benefits of IT adoption, but also in fostering a strategic planning orientation which will encourage management to utilize their existing capabilities more fully. Although complexities in the relationship between strategic planning and IT usage requires further empirical investigations, future research should promote the culture of strategic planning and visioning rather than propagating the great benefits of IT adoption, because the development of strategic orientation leads to efficient use of microcomputers and software packages. However, there is no evidence in the literature indicating that efficient use of microcomputers will lead to the development of strategic orientation. The relationship between firm size and IT usage is purely a matter of resource capability. As firms grow in size and their resource endowment increases, they tend to invest more in IT than before. Thus, future studies should also pay attention to the impact of lack of adequate resource on the competitiveness of SME.

The link between user participation and experience in information technology may be due to an experiential learning phenomenon. Managers with more IT experience have had more opportunity to observe or be involved in system development of IT based projects. This implies that computer training and know-how should be made available to present and prospective small business managers if one aims to foster more positive attitudes toward more frequent and diverse use of computers in managerial decision making in SMEs. To the extent that positive attitudes and behaviours are necessary in order for information systems to affect business performance, IT trained managers would be expected to be in a better position to enhance their administrative and decision making functions through the use of available IT facilities and resources. Future studies should, therefore, focus on the training and education of managers/owners of SMEs in IT, and critical success factors for the effective use of IT resources for managerial decision making and planning.

## Temtime and Shunda: The Relationship Between Information Technology

### References

- Amer T.S. and C.E. Bain, 1990, 'Making Small Business Planning Easier,' *J. of Accountancy*, 170, pp. 53-60
- Armstrong J.S., 1982. 'The Value of Formal Planning for Strategic Decisions: Review of Empirical Research', *Strategic Management J.*, 3: pp.197-211.
- Boyd, B.K., 1991. 'Strategic planning and Financial Performance: A Meta analytic Review', *J. of management Studies*, 28, pp.354-374.
- Boyd, D.K. and E. Reuning-Elliott, 1998. 'A Measurement Model of Strategic planning', *Strategic Management J.*, 19, pp.181-192.
- Bracker, J.S and J.N. Pearson, 1986. 'Planning and financial performance of small mature firms', *Strategic Management J.*, 7: pp.503-522.
- Brews P.J. and M.R. Hunt, 1999. 'Learning to Plan and Planning to Learn: Resolving the Planning School/Learning School Debate', *Strategic management J.*, 20: pp. 889-913.
- Chen Kuang-Chian, 1989, 'Developing Decision Support Systems For Small Business Management: A Case Study,' *J. of Small Business Management*, 27: pp.11-22.
- Chen, Jui-Chih. and Bernard C. Williams, 1993. 'The impact of microcomputer Systems on Small Business: England, 10 Years Later', *J. of Small Business management*, pp.96-102.
- Clausen A.W., 1990. "Strategic Issues in management change: The Turn Around at BankAmerica Corporation", *California Management Review*, 32, pp. 98-104.
- Dean, T.J., Brown R.L. and C.E. Bamford, 1998. 'Differences in large and Small Firm Responses to environmental Context; Strategic Implications from a comparative Analysis of Business Formation', *Strategic management J.*, 19, pp.709-725.
- Elenkov Detelin S., 1997, 'Strategic Uncertainty and Environmental scanning: The Case for Institutional Influences on Scanning Behaviour', *Strategic Management J.*, 18: 287-302.
- Fuller, T., 1996, 'Fulfilling IT Needs in Small Businesses: A Recursive Learning Model,' *International Small Business J.*, 14:, pp.25-44.
- Gup, B. E., and D.D. Whitehead, 1989. "Strategic Planning in Banks: Does it pay?" *Long Range Planning*, 22, pp.24-130.
- Gupta, J.N.D and T.M. Harris, 1989. 'Decision support Systems for Small Businesses,' *J. of Systems Management*, February 37-41.
- Herbert F.J. and J.H. Bradley, 1993. 'Expert Systems Development in Small Business: A Managerial Perspective,' *J. of Small Business Management*, 31: pp.23-34.
- Hopkins W.E and Shirley A Hopkins, 1997. 'Strategic Planning - Financial Performance Relationships in Banks: A Causal Examination,' *Strategic Management J.*, 18: pp.635-652.
- Mathews C.H. and Scott G. Suzanne, 1995. "Uncertainty and Planning in Small and Entrepreneurial Firms: An Empirical Assessment", *J. of Small Business Management*, pp.34-52.
- Miller C.C. and L.B. Cardinal, 1994 'Strategic Planning and Firm Performance: A Synthesis of More Than Two Decades of Research,' *Academy of Management J.*, 37, pp.1649-1665.
- Mintzberg H., 1994. *The Rise and Fall of Strategic Planning*, Prentice Hall International (UK) Limited, London, UK.
- Muller-Boling D and Suzanne Kirchhoff, 1991. 'Expert Systems for Decision Support in Business Start-Up,' *J. of Small Business Management*, 29: pp.83-90.
- Pearce, J., E. Freeman and R. Robinson, 1987. 'The Tenuous link Between Formal Strategic Planning and financial performance' *Academy of Management Review*, 12, pp. 658-675.
- Pearce, J., E. Freeman and R. Robinson, 1987. "The Tenuous link between Formal Strategic planning and financial performance; *Academy of Management Review*, 12, pp. 658-675.
- Raymond Louis, 1988. 'The Impact of computer Training On The Attitudes and Usage Behaviour of Small Business Managers,' *J. of Small Business Management*, pp.8-12.
- Robinson R. B., J.E. Logan and M.Y. Salem, 1986. "Strategic versus operational planning in small firms" *J. of Small Business Management*, 10, pp.7-16.
- Robinson R.B, Jr. and J. Pearce, 1983. " The Impact of Formalized Strategic Planning On Financial Performance in Small Organizations", *Strategic Management J.*, 4: pp.197-207.
- Robinson R.B., J.A. Pearce, G Vozikis and T. Mescon, 1984. "The Relationship between the Stage of Development and Small Firm planning and performance", *J. of Small Business Management*, 22, pp.45-52.
- Sawyer, O.O., 1993, 'Environmental Uncertainty and Environmental Activities of Nigerian Manufacturing executives: A comparative Analysis' *Strategic Management J.*, 14: pp. 287-299.
- Schwenk, C.R. and C.B. Shrader, 1993. "Effects of Formal Strategic Planning on Financial performance in Small Firms, a Meta Analysis", *Entrepreneurship Theory and Practice*, Spring, pp. 53-64.
- Shrader, C. B., C.L. Mulford and V.L. Blackburn, 1989. "Strategic and Operational planning, Uncertainty and performance in Small Firms", *J. of Small Business Management*, 27, pp.456-60.
- Smith, 1996. 'Surveying Small Company Planning Problems', *Planning Review*, September, 11: pp.30-32, 41.
- Sullivan J.J. and G. O. Shivley, 1989. 'Expert Systems Software in Small Business Decision Making,' *J. of Small Business Management*, pp.17-26.
- Unni V. K., 1981. "The role of strategic planning in small business", *Long Range Planning*, 14, pp.54-58.