

A COST EFFECTIVE, LOW RISK MODEL FOR CONSULTANT ENGAGEMENT IN SMALL BUSINESS COMPUTERISATION

C.W. RENSLEIGH & M.S. OLIVIER

Department of Computer Science
Rand Afrikaans University
P.O. Box 524 Auckland Park
Johannesburg 2006

EMAIL: MOLIVIER@RKW.RAU.AC.ZA

TEL: +27(11) 489-2525
Fax: +27 (11) 489-2138

Abstract

The small business is becoming ever more important to economies worldwide, and in South Africa it is even more so. Information Technology (IT) promises the small-business many benefits: automation of repetitive tasks, enhancing the image of the business, potentially supporting customer service or business processes and, perhaps, even providing (or enhancing) skills that are not (adequately) available within the business. To realise such benefits, it is important that such small businesses acquire appropriate technology. The prices of computer technology have reduced to a level where almost all small businesses can afford it. The small business environment is different to a large business and that is why the consultation model for the computerisation of a large business cannot be successfully implemented in the small business environment. Research has indicated that computerisation using a formal methodology has a greater success rate. The amount of research in the small business computerisation field is insignificant compared to that of large businesses. This paper discusses a consultation model for small business computerisation. This model consist of eight distinct phases and is designed to be cost effective and have very low risk to the small business. It describes the roles of the senior consultant and in particular the role of the junior consultant and the small business owner/manager. Furthermore the model shows the interaction between these individuals, and the criteria that the consultants must apply to improve the possibility of a successful implementation. This model will be particularly useful to new (junior) consultants entering into this field.

Keywords: Small business, computerisation, consultation model, junior consultant, end-users, computer knowledge, communication level, vendors, hardware, software.

1. Introduction

It is ironic to see the trivial amount of research that has been done on the engagement of outside IS expertise by the small business for computerisation (Gable, 1991), if compared to the amount done for large businesses, seeing that small business practises are growing significantly.

The small business is becoming ever more important to economies worldwide, even first world countries, as in the case for the United States of America (USA), according to a study done by Palvia, Means and Jackson (Palvia, 1994; Lai, 1994).

In South Africa it is even more so and according to the Small Business Development Corporation of South Africa (Small, 1992):

- More than 85% of business enterprise in South Africa can be considered as small.
- The number of small businesses in South Africa (formal and informal) exceeds 1 000 000.
- Approximately 40% of the overall economic activity in South Africa can be accredited to small scale enterprises.
- Approximately 75% of new jobs in South Africa are generated by the small business sector.

The small business, according to the Small Business Development Corporation (SBDC), can be defined as having total assets of less than 10 Million Rand (Small, 1994).

It is important to note that the business and computing environment of a small business is different, not just in size, from a large business, -- to quote Welsh and White, "A small business is not a little big business" (Raymond, 1985; Welsh, 1981). One area where it differs is that the small business does not have the financial and human resources and will typically not have a formal IS department; the owner/manager (of the small business) is responsible for all CIS

activities (Palvia, 1994; Gable, 1991; Nahavandi, 1988; Senn, 1981). The whole approach to managing a small business is different: We can typically say that if a manager is successful in the management of a large business, that he/she will not necessarily be successful if applied to manage a small business. The same principle applies to consultation for computerisation. A consultation model for computerisation that can successfully be applied to small businesses will not necessarily be successful when applied to large businesses (Lai, 1994). According to one of the largest consultation groups in South Africa (which specializes in computerisation of large businesses) their consultation model is too complex, too expensive and too big to be successfully implemented for a small business. Their models are also proprietary information. The small business has its own unique problems and these should be addressed in a different manner (Lai, 1994; Senn, 1981).

The goal of this article is to introduce a cost effective, low risk consultation model for the computerisation of small businesses. Cost effective (affordable) so that it is suited for the finances of a smaller small business, and low risk so that, if the manager/owner of the small business during any of the phases of the consultation, decides to withdraw, not a lot (minimal) is at risk.

The methodology used in this study is the synthesis of the results obtained in other empirical research into a new, directly implementable model. This paper will explore the consultation process for computerisation of the small business and it proceeds as follows: First, we will start with the reasons why the small business computerises and why they look for assistance from IS consultants. Second, we will look at some research done in this field, in particular the reasons identified why the consultation process fails. Third, we will discuss a model for computerisation that addresses some of the problems identified. Lastly we will summarize and make some recommendations for the small business.

2. Small business computerisation.

The cost of micro computers, which can be applied in the small business environment, have reduced to the point where almost all businesses, even the smallest of the small business, can afford to use computer power for information processing (Gable, 1992; Nazem, 1990; DeLone, 1988). With a computerised system they can solve many small business problems and improve the prospects of success. These problems can vary from lack of adequate operating data and information to the lack of planning (Senn, 1981). The use of computers will not just solve these problems but will increase the quality of information and this can be cited as the most significant benefit resulting from automation (Farhoomand, 1985). With the use of computers one can boost the speed and efficiency of operations as the business grows (Igbaria, 1992). One can also create competitive advantage by using information systems and information technologies, in that it will give one new ways of outperforming one's rivals (McGaughey, 1994; Johnston, 1988; Porter, 1985).

From the above it is clear that the use of computers in the small business environment can improve the way in which the business operates. Because of the shortage of skilled personnel (IT expertise), in the small business, the acquisition of a computer system for the small business environment can be problematic, and assistance is usually needed both in the selection of equipment and throughout the usage life cycle (Palvia, 1994; Carland, 1990; Mawhinney, 1990; Senn, 1981). Making use of external consultants can improve the chances of successful computer usage, and they can help the small business manager with their needs for on-the-job assistance in carrying out their chosen course of action (Gable, 1991; DeLone, 1988).

Despite the fact that external experts are used, there are still problems that need to be solved as the consultation process is not always successful. A study was done on the reasons why small businesses do not implement some of the recommendations that they receive from consultants (Nahavandi, 1988). They conducted a survey of 126 businesses that had sought assistance from the SBDC at the university of Utha. Results obtained from 106 respondents indicated that in general, business managers/owners were highly satisfied with the services they received and that they found it useful. They also reported that the consulting had a positive impact on their business.

Despite the positive impact of the consultants on the business, some of the respondents did not implement the recommendations. The following is a list of reasons cited why some recommendations were not implemented:

- 1) The respondent was not convinced the implementation was necessary.
- 2) Consultant did not understand the nature of the business.
- 3) Consultant's expertise was not adequate.
- 4) Recommendations were too expensive.

- 5) Recommendations were impractical.
- 6) Consultant's recommendation was too confusing.
- 7) Recommendations were too risky.
- 8) Recommendations were too complex.

In a study done by Gable (1991) some common concerns with consultant performance were identified: 1) lack of commitment to implementation success, 2) little relevant experience demonstrated, 3) lack of a methodical approach, 4) inadequate appraisal of vendors.

In another study done by Gable (1992) some of the reasons were identified why clients do not accept the recommendations of their consultants: 1) They were not convinced that the consultant's recommended solution was the best alternative, 2) It did not offer adequate benefits, 3) It was more expensive than they expected.

From the above examples we can see that research has shown that there is still room for improvement in the consultation process which consultants use when they do consultation for the small business computerisation. Some general problems with the computerisation of the small business are: 1) implementation problems (technical assistance, conversion and personnel problems), 2) training of personnel (Farhoomand, 1985), 3) personnel acceptance of computer system (resistance to change) (Amoako-Gyampah, 1993; Krovi, 1993), formal planning of computer efforts, implementation of computer controls (DeLone, 1988).

From the above it is clear that there is a wide area of problems that can be addressed to make the consultation process more effective. In the following section we present a consultation model which will address some of these problems.

3. A Consultation Model for computerisation.

If and when a small business manager decides to implement a computer-based system in his/her small business environment and do not have the necessary expertise for the task, it is recommended that they seek assistance from a consultant for computerisation (Carland, 1990).

In our model we refer to two kinds of consultants, the first being the senior consultant and the other the junior consultants. The senior consultant will obviously be more mature and will have more experience and knowledge on computerisation. This consultant can typically be leading more than one project. The junior consultants will typically work together as a team and on only one project at a time. Research has shown that in working together the junior consultants can compliment each other with their skills, for the one might have skills which the other lack, and their combined view will be more objective than for just one junior consultant (Hayne, 1992; Nahavandi, 1988).

The project team is made up as follows: The senior consultant, which will always be responsible for the project. Research has indicated that the clients prefer to deal with consultants which are more experienced and that have an understanding for their small business. The senior consultant can be in charge of more than one project at a time. Each of these projects will have one junior consultant which will be working on solving the problem, but this consultant can get assistance from other junior consultants when required (see figure 1). The crosses indicate consultants which are responsible for the project and circles indicate junior consultants which will assist the responsible junior consultants. In figure 1 we can see that senior consultant 1 is responsible for project 1 and project 2 and that junior consultant 1 is responsible for project 1, but junior consultant 2 can at any stage assist junior consultant 1. Junior consultant 2 is in turn responsible for project 2.

In the model we also refer to a manager/owner. This will typically be the person who will be responsible for the payment/financing of the project. Mention is also made of the user, this will typically be persons working on and accessing the system, and can include the manager as well. We also refer to vendors and experts, these would be the suppliers of hardware and software and also expertise which falls outside of the domain of the consultants, this might happen in exceptional cases. The model has eight distinct phases: 1) Initiation of consultation 2) Problem identification. 3) Planning the solution. 4) Problem solving. 5) Consultants' meeting. 6) Proposal interview. 7) Implementation. 8) Support. A summary of the model is depicted in figure 2 which also shows the people involved in each phase.

We will now discuss each of these phases in detail:

	SC1	SC2	JC1	JC2	JC3
PR1	×		×	○	
PR2	×			×	
PR3		×	○		×

*SC SENIOR CONSULTANT *X RESPONSIBLE CONSULTANT
 *JC JUNIOR CONSULTANT *O ASSISTING CONSULTANT
 *PR PROJECT

Figure 1. The project team.

Phase 1: Initiation of the consultation process.

This phase can also be referred to as first contact. This is where the owner/manager (of the small business) has decided to computerise the business and contacts the consultation firm. The contact will be with the senior consultant, which will be responsible for the project for the duration of the consultation. Research has shown that it is important for the first contact to be with a senior consultant (Nahavandi, 1988). The senior consultant will take down the particulars of the client (manager/owner). This will typically include the name of the firm, telephone number, etc. The client will now give a brief description (definition) of the problem, while the senior consultant takes down notes on the nature of the problem. The senior consultant will then determine if the client has any personal preferences aimed towards the consultants, this will typically include language, age, etc. This is done to optimize client/consultant compatibility (or avoid major incompatibility). A good client relationship is the most important variable of successful implementation (Gable, 1991).

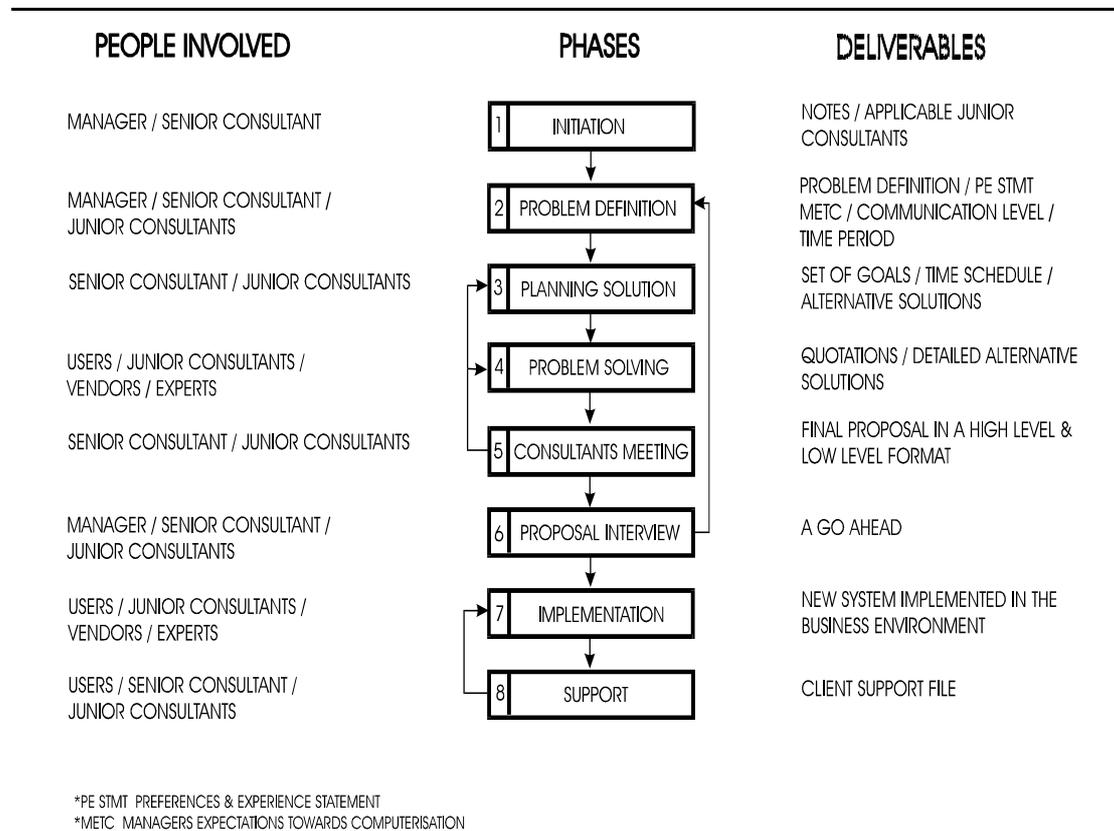


Figure 2. A summary of the consultation model.

The senior consultant will set a date for a meeting when all of the consultants, that will be working on the project, will be present (this will be the beginning of the second phase). The first part of the first phase can be done via the telephone. In the second part of this phase the senior consultant will review the notes and will then decide which junior consultant or consultants would be required (Hayne, 1992; Nahavandi, 1988). Matching the right skill for the project is a requirement for a higher success rate (see figure 3). The senior consultant will assign a junior consultant which will be responsible for the project.

Phase 2: Problem definition.

This phase begins when all the consultants (senior and junior) and the manager/owner get together for a meeting to discuss the problem. The senior consultant will take the responsibility and will lead the proceedings. Before they start with the problem definition the consultants have to determine the client's level of computer literacy, in other words they determine the client's level of computer knowledge. This can be done with three steps: 1) The consultant can ask well formulated questions. 2) The consultant will note the terminology and expressions used by the client. 3) The consultant will ask the client to grade himself/herself on a scale of one to ten. It is often difficult for an educated person to communicate with an audience that may not have had the same educational opportunities. The problem definition phase has little value if the consultation cannot be interpreted by the users, from whom we seek the input (Whitten, 1994).

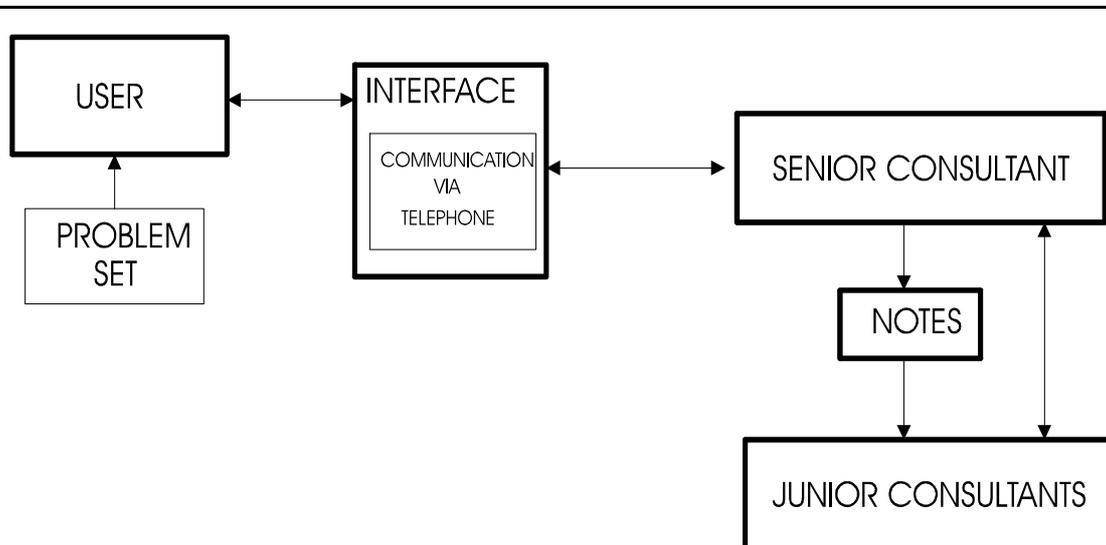
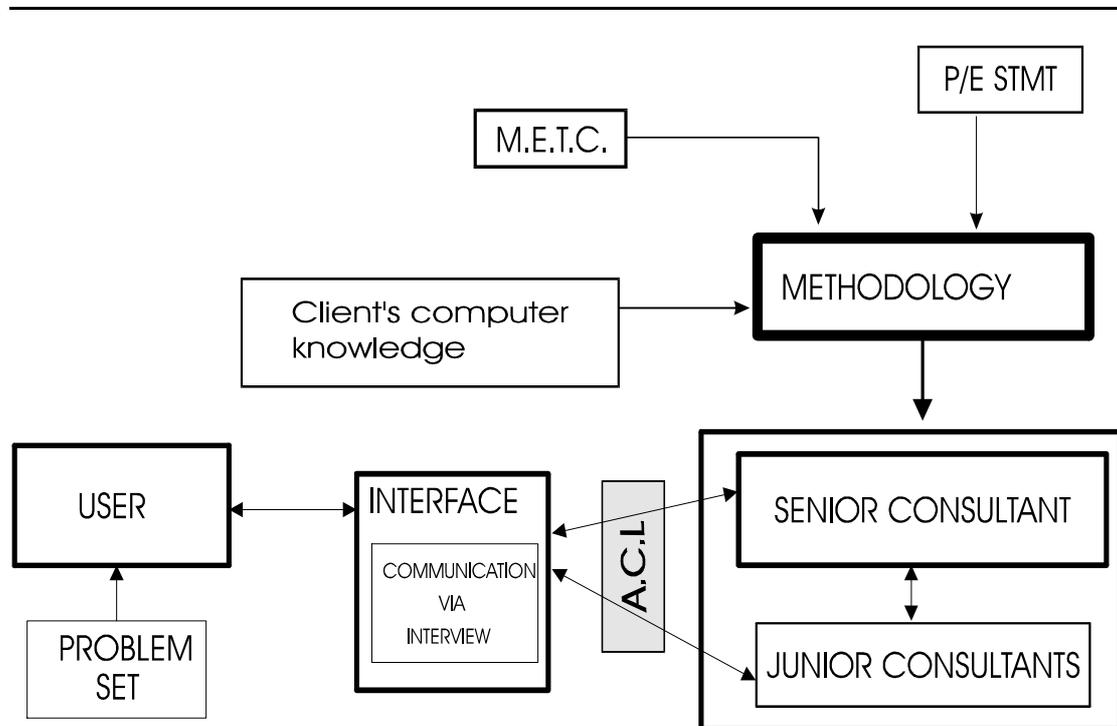


Figure 3. Phase 1: First contact.



*METC: MANAGERS EXPECTATION TOWARDS COMPUTERISATION
 *P/E STMT: PREFERENCES AND EXPERIENCE STATEMENT
 *ACL: ADJUSTED COMMUNICATION LEVEL

Figure 4. Phase 2: Problem identification.

A related problem deals with jargon. Often, the consultant allows the jargon of computing to dominate the consultation process. The computer industry constantly invents terms and acronyms to describe its products and disciplines. It is very important that the consultants know on what level to communicate/consult with the client, for if they communicate on a too high a level they will limit the client's contribution, as the client will not be able to give his/her full input. If they communicate on the same level they will increase the chances for a successful project. The

consultants will from now onwards communicate with the client on an adjusted level, which will be best suited for the client (Richards, 1994).

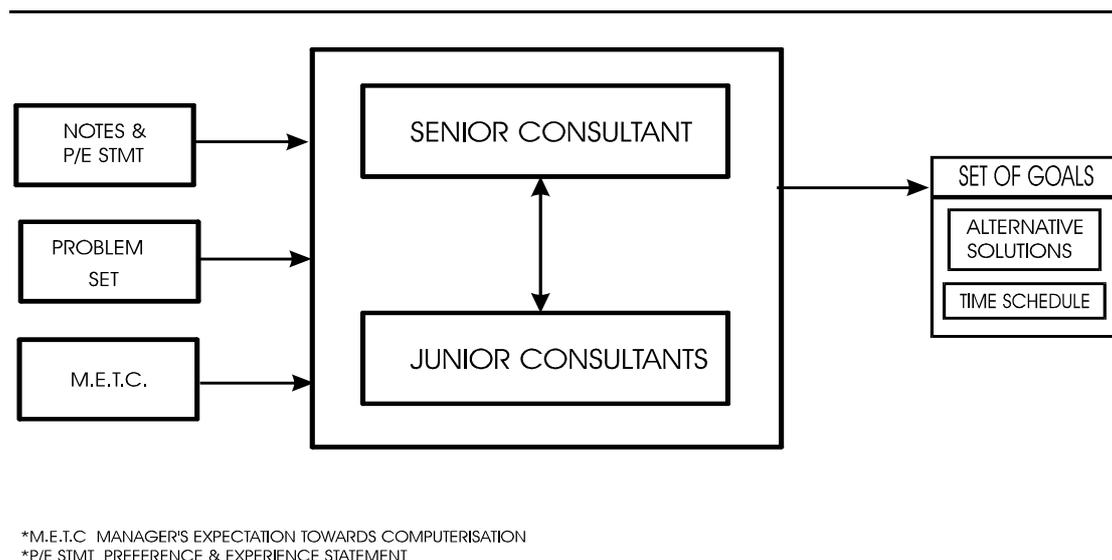
It is very important for the client to play an active role during the consultation process, for this will provide a more accurate and complete assessment of the user requirements (Amoako-Gyampah; 1993, Gable, 1991). Do keep in mind that the client is an expert on his/her small business and should be treated as such.

As a group they will now discuss the problem in detail. It is very important to determine what is the client's (Manager/owner) Expectations Towards Computerisation of the system (M.E.T.C). If these expectations are out of context or unrealistic, they should be adjusted to a level which can be achieved. This is necessary, for, if the client has an unrealistic expectation of the computerisation process it will most certainly decrease the chances of a successful implementation.

The next step in this phase is to determine the financial position of the company and the financing method for the computerisation project. We have to keep in mind that the finances of a small business are completely different to that of a larger one. From here the client's preferences are determined; these will include aspects like IBM instead of Apple or vice versa and MS Word instead of WordPerfect. The client will also get a Preferences and Experience statement (P/E statement) that the users of the new system have to fill in. The P/E statement will be completed and returned to the senior consultant. This statement (also describing what the current business environment looks like) will be used in a later phase to select the right software and hardware. The last step in this phase is to determine the time period involved for the project (see figure 4). At the end of this phase the consultants will have a detailed definition of the problem. This will include the P/E statement, the M.E.T.C, and an Adjusted Communication Level, and the time period and schedule (see figure 2).

Phase 3: Planning the solution.

During this phase the senior and the junior consultants will work through the notes and the P/E statement from the previous phases and will then make and review suggestions (see figure 5). After reviewing all the available facts pertaining to the project, the consultants will identify some alternative solutions for the problem. They will then set goals and generate a detailed time/task schedule. Though the consultant have clearly defined the project goals, he/she should be prepared to modify it where necessary (Gable, 1991).



*M.E.T.C MANAGER'S EXPECTATION TOWARDS COMPUTERISATION
 *P/E STMT PREFERENCE & EXPERIENCE STATEMENT

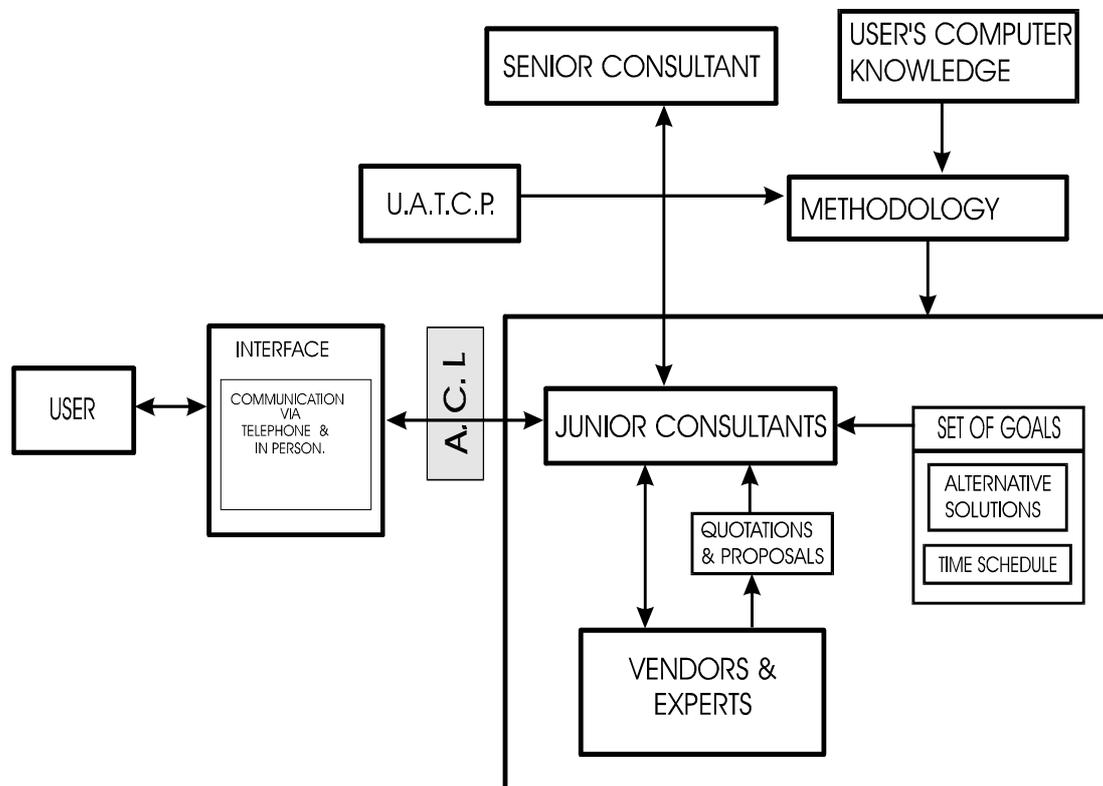
Figure 5. Phase 3: Consultant's meeting (planning the solution) .

Phase 4: Working on solving the problem

In this phase the junior consultants will play a major role. They will use the goals and the time schedule set in the previous phase as guidelines. The consultants will now use the proposed solutions and will work hand in hand with the end-users of the system if more detail is required than what is available. Here again when the consultants interact (communicate) with the end-

users it must be done on a level which is suited for that user's computer knowledge. This is done to get the best possible input from the end-users (O'Brien, 1994). Part of the interaction with the users will be to determine the Users Attitude Towards the Computerisation Project (U.A.T.C.P). This is done to identify any negative or non-positive attitudes (reactions/responses). A negative response towards the computerisation project can considerably influence the chances of a successful implementation (Gatian, 1994; Krovi, 1993). When such an attitude is identified the junior consultant will convey it to the senior consultant. It will in turn be reported to the owner/manager and all the necessary steps will be done to identify the reason behind the non-positive attitude.

The communication with the end-users can be done via telephone or, in person. The consultant can also view the business environment. The junior consultant will also be required to work (interact) with the vendors of hardware and software and occasionally if necessary with computer hardware and software experts. These experts would be people that are very specialised in a particular area of the computer field which falls outside of the consultant's domain. From these external agents the consultant will get quotations on various products and services which will be included in the various proposals. It is essential to provide the small business with a cost effective, low risk solution (Sherer, 1993; Nazem, 1990; Nahavandi, 1988)(see figure 6).



*U.A.T.C.P USER'S ATTITUDE TOWARDS COMPUTERISATION PROJECT
 *A.C.L ADJUSTED COMMUNICATION LEVEL

Figure 6. Phase 4: Working on solving the problem.

Phase 5: The consultants' meeting.

The junior consultant will now show and explain the alternative proposals to the senior consultant. They will discuss the proposals individually and will then review the goals which were set in the third phase. If the senior consultant is not satisfied with the outcome of the proposals then the consultants will move back to phase 2 for a more detailed problem definition. If the

proposals are not detailed enough the junior consultants will go back to the problem solving phase. If the proposals are acceptable the consultants will then decide which alternative will be best suited (cost effective and low risk) for the small business.

The junior consultant will now start to work on the client's proposal for the next phase, (see figure 7). The proposal will consist of two reports. The first being a detailed description (high level report) on a level which is suited for the clients' computer knowledge. The second report (low level) will be a detailed specification report on a more technical level, which will be more suited for professionals (advanced users).

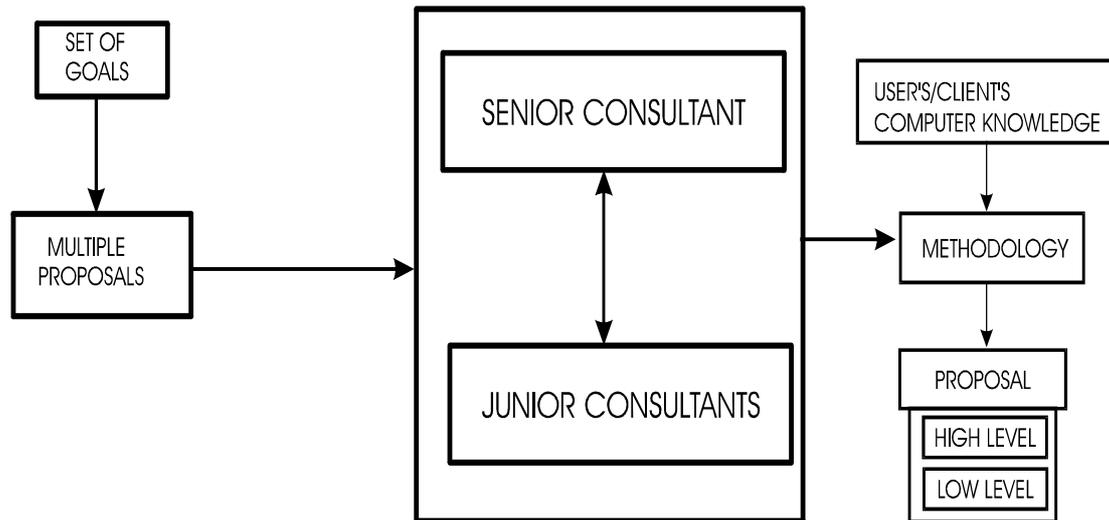
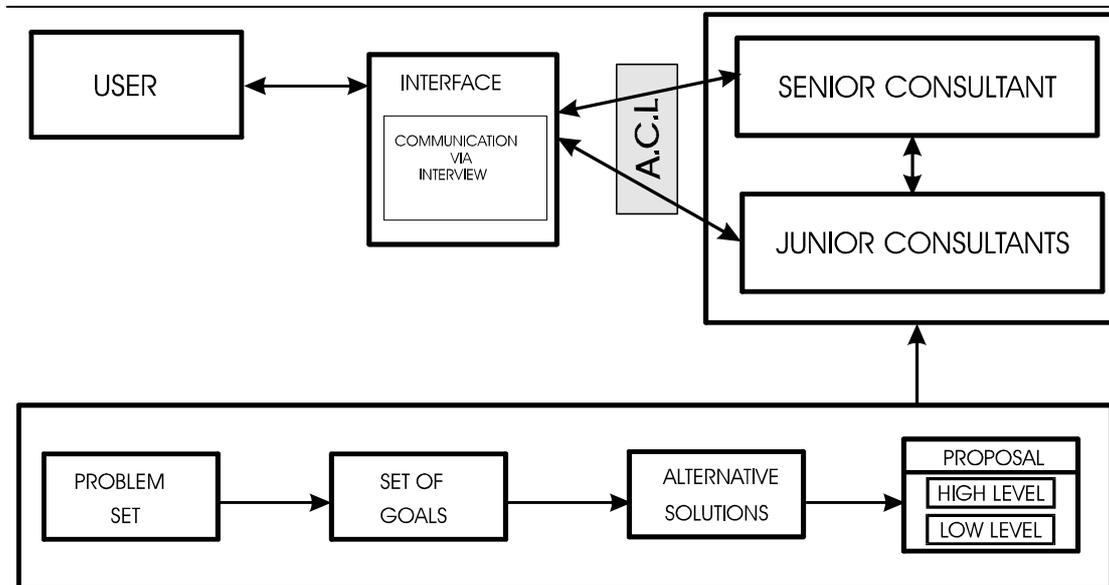


Figure 7. Phase 5: Consultant's meeting.

Phase 6: Interviewing the proposal.

In this phase the senior consultant, junior consultants and the client will have a meeting during which the senior consultant will explain to the client (manager/owner) what the final proposal entails (figure 8). The explanation/ communication will, once again, be done on a level which is suited for the client. The appropriate level of communication was obtained in phase 2 (see figure 4). The senior consultant will now indicate to the client how they got from the problem set to the goals and from there to the alternative solutions and finally the consultants will explain in detail why they think that the final proposal is best suited for this particular problem (Nahavandi, 1988). This will be the high level report and will include aspects like cost, time involved, and benefits. If the client wants a more technical report, the consultants can then continue with the low level report. The client will now be able to take the two reports and study it for a few days if necessary.



*A.C.L. ADJUSTED COMMUNICATION LEVEL

Figure 8. Phase 6: Interviewing the proposal.

If the client agrees (gives the go ahead) the consultants will move on to the next phase. If the client is not 100% convinced that the proposal is the best possible solution, the project can either be terminated or they can move back to phase 2 (see figure 2).

Phase 7: Implementation of proposal.

During this phase the junior consultants and the hardware and software vendors will work together to implement the proposed system in the user's business environment. It will typically include the following steps 1) Acquiring of the hardware and software. 2) Assembling/installing of the hardware. 3) Installation of the software on the hardware. 4) Integrating the new system into the existing business environment. Once the system is operational the consultants will work hand in hand with the end-users, making sure the end-users are comfortable with the changes in their business environment. The consultants will show the users how the system fits together and will ensure that they are able to work on the system. If additional tutorial sessions are required, the consultant will arrange for it with the vendors. Training will ensure a higher level of usage (Igbaria ,1992) (see figure 9).

This phase is very important to ensure a successful consultation project, for the success depends largely on how well it is received in to the organization (Krovi, 1993). If the users do not understand the new system or are not able to work productively on it, they will in turn reject and blame the system for it. A higher user satisfaction in computer applications is essential for a continuous growth in the degree of use and ability in handling complexity (Rahman, 1993).

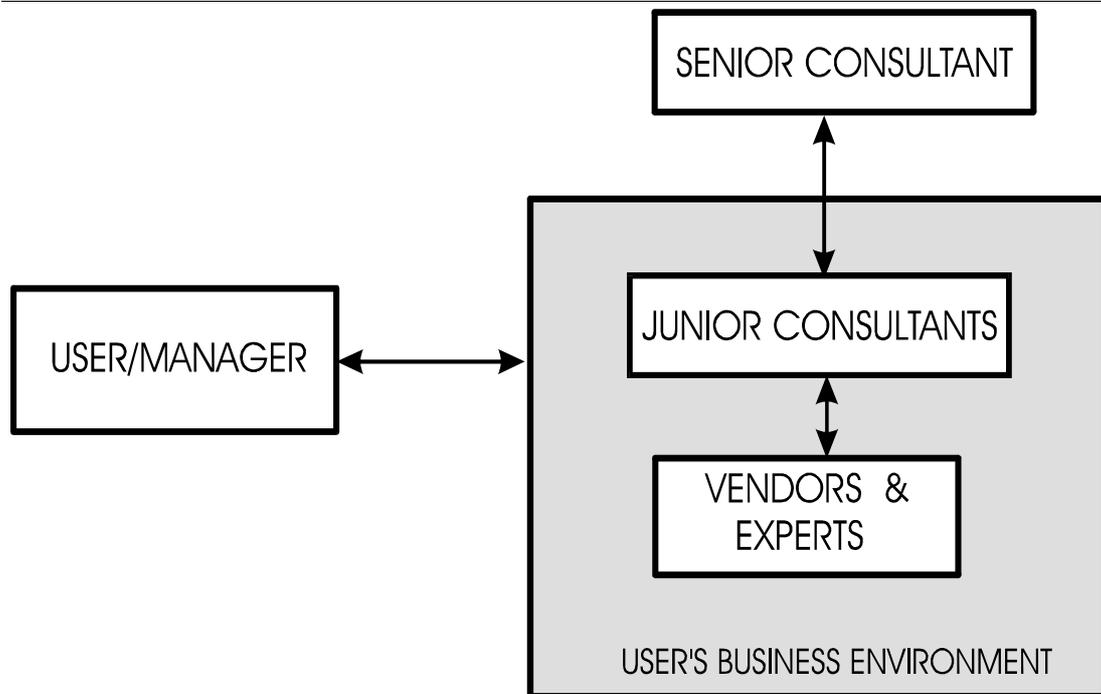
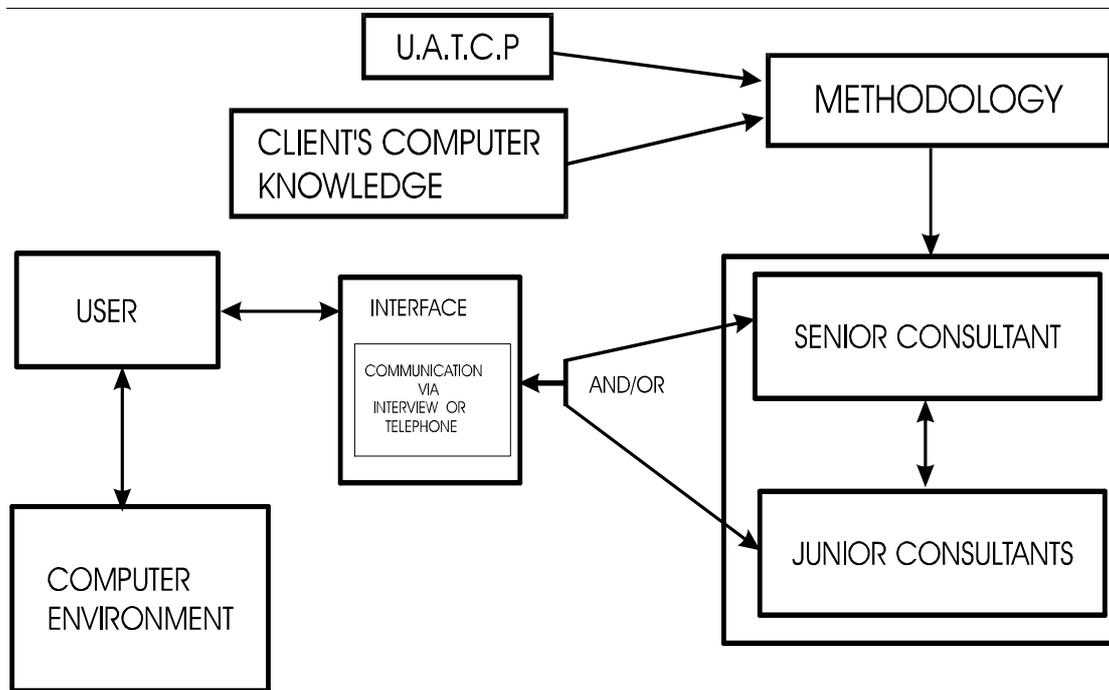


Figure 9. Phase 7: Implementation of the proposal.

Phase 8: After implementation support/maintenance.

This is basically a follow up service to the implementation of the project (Nadel, 1988). It is essential to keep the system users' attitude towards the system positive. The users will contact the consultants if and when they feel there is a problem with the system or when anything that is unclear to them, that pertain to the computerisation project. The consultants will start with the assessment of the Client's Computer Knowledge (C.C.K). The level of computer knowledge can also be retrieved from the client file, this level was determined in stage 2 of the consultation model. This is done to maximize the communication compatibility of the client and the consultant. The consultant will now communicate on a level which is comfortable to the user. Once the problem has been identified the consultant will, with the assistance of the vendors (hardware and software) if required, solve the problem. Research has shown that small businesses that buy off the shelf software think that the support/maintenance is inadequate and they are unhappy with the limited training opportunities (Nazem, 1990; Cheney, 1983). Research also indicates that there is a strong correlation between training and computer usage (Igbaria ,1992).

The consultant will on a periodical basis contact the client (manager/owner) to check if the system is still adequate for their needs and if any further training is required. If it is not adequate, a next project can be initiated. This information will be kept the client support file.



*U.A.T.C.P. USER'S ATTITUDE TOWARDS COMPUTERISATION PROJECT

Figure 10. Phase 8: After implementation support/maintenance.

4. Recommendations.

The model discussed above cannot be viewed as a rigid structure and in order for the model to be successful the following recommendations would be expected from the consultants and the client/user/small business:

For the small business:

- 1) Lack of understanding about computers is a frequently cited reason for failure of small business computer endeavours and for failure to consider computerisation opportunities. When in doubt about computerising one's small business one should rather contact a computerisation consultant about this respect.
- 2) If the user at any time during the consultation process loses track of what is being said, he/she should stop the process and ask for a better explanation. The user should ensure that he/she and the consultants communicate on a compatible level, in other words that they fully understand all the terminology and what is being said.
- 3) The client/users must get actively involved in the consultation process, in other words play an active role, this will give the client/users a better understanding of the whole process and will increase the chances of a successful implementation.
- 4) It is important that the client/users do not underestimate their role during the consultation process, for without it the consultation process will most definitely be unsuccessful.
- 5) The users should ensure that he/she and the consultant are compatible, by selecting specific consultants.
- 6) The client/manager/user must manage the consultant rather than the reverse. It is the client's money and business which is at stake.

For small business consultants:

- 1) For a consultant to be successful in small business computerisation it is necessary to have the right experience and knowledge pertaining to the small business management and ultimately small business computerisation, remember that the small business is not a small scale version of a large business.
- 2) The recommendations to the small business should neither be too risky, too expensive, too complex, confusing, nor impractical, it should be practical and cost effective.

- 3) The consultant should get the clients involved, and let them play an active role, for there is a positive correlation between user involvement and user satisfaction.
- 4) The consultant should ensure that the client's expectations of the computerisation project are reasonable and not unrealistic.
- 5) The consultant should always keep in mind that the client is an expert on his/her own business and should be treated as such.

5. Conclusion and future work.

In the above section we have discussed an eight phase consultation model for small business computerisation. The model would be best suited for the medium to larger sized small business. The costs involved would not be justifiable for the smaller small business. The consultation costs will include interaction from the senior consultant and more likely the majority of the work will be done by the junior consultant. This is likely to keep the costs reasonably low. A more detailed analyses of the costs involved will be done in the future. Other work will include a field study and a more detailed investigation/discussion on each of the eight phases.

Another area which still needs further research is the computerisation of the smallest (bottom end) of the small business. We are currently working on a computerised consultation system which utilize expert system technology to simulate a small business consultant.

6. References.

1. AMOAKO-GYAMPAH, K. & WHITE, K.B. (1993). User involvement and user satisfaction. *Information and Management*, 25, 1-10.
2. CARLAND, J. & CARLAND, J.A. (1990). *Small Business Management Tools for Success*. Boston: PWS-Kent publishing company.
3. CHENEY, P.H. (1983). Getting the most out of your first computer system. *American Journal of Small Business*, 7, 50-60.
4. DELONE, W.H. (1988). Determinants of success for computer usage in the small business. *MIS Quarterly*, 51-61.
5. FARHOOMAND, F. & HRYCYK, G.P. (1985). The feasibility of computers in the small business environment. *American Journal of Small Business*, 9, 15-22.
6. GABLE, G.G. (1991). Consultant engagement for computer system selection. *Information and Management*, 20, 83-93.
7. GABLE, G.G. (1992). Government initiatives for It adoption in small businesses. *International information systems*, 69-93.
8. GATIAN, A.W. (1994). Is user satisfaction a valid measure of system effectiveness?. *Information and Management*, 26, 119-131.
9. HAYNE, S., CARLSON, D. & RAM, S. (1992). Integrating information systems technologies to support consultation in an information centre. *Information and Management*, 23, 331-343.
10. IGBARIA, M. (1992). An examination of microcomputer usage in Taiwan. *Information and Management*, 22, 19-28.
11. JOHNSTON, H.R. & VITALE, M.R. (1988). Creating competitive advantage with inter-organisational Information Systems. *MIS Quarterly*, 153-165.
12. KROVI, R. (1993). Identifying the causes of resistance to is implementation. *Information and Management*, 25, 327-335.
13. LAI, V.S. (1994). A survey of rural small business computer use: success factors and decision support. *Information and Management*, 26, 297-304.
14. LAY, P.M.Q., ECCLES, M.G., JULYAN, F.W. & BOOT, G. (1993). *The Principles of Business Computing*. Johannesburg: Juta and co. Ltd.
15. MAWHINNEY, C.H. & LEDERER, A.L. (1990). A study of personal computer utilization by managers. *Information and Management*, 18, 243-253.
16. MCGAUGHEY, R.E., SNYDER, C.A. & CARR, H.H. (1994). Implementation information technology for competitive advantage: risk management issues. *Information and Management*, 26, 273 -335.
17. NADEL, R.B. (1988). Computer consulting for the smaller firm: opportunity or trap. *The CPA Journal*, 58, 18-26.
18. NAHAVANDI, A. & CHESTEEN, S. (1988). The impact of consultation on the small business: a further examination. *Entrepreneurship Theory and Practice*, 13, 29-40.

19. NAZEM, S.M. (1990). Sources of software and levels of satisfaction for small business computer applications. *Information and Management*, 19, 95-100.
20. O'BRIEN, J.A. (1994). *Introduction to Information Systems*. Sydney: Irwin.
21. PALVIA, P., MEANS, D. B. & JACKSON, W. M. (1994). Determinants of computing in very small business. *Information and Management*, 27, 161-174.
22. PORTER, M.E. & MILLAR, V.E. (1985). How information gives you competitive advantage. *Harvard Business Review*, 63, 149-160.
23. RAHMAN, M. & GABER, A.A. (1993). Knowledge workers' use of support software in Saudi Arabia. *Information and Management*, 25, 303-311.
24. RAYMOND, L. & RIVIERES, T. (1985). Organizational characteristics and MIS in the context of small business. *MIS Quarterly*, 37-52.
25. RICHARDS, M & PELLY, L. (1994). The ten most valuable components of an information systems education. *Information and Management*, 27, 59-68.
26. SCHIFFMAN, S.J., MEILE, L.C. & IGBARIA, M. (1992). An examination of end-user types. *Information and Management*, 22, 207-215.
27. SENN, J.A. & GIBSON, V.R. (1981). Risks of investment in microcomputers for small business management, *Journal of Small Business Management*, 25-32.
28. SHERER, S.A. (1993). Purchasing software systems. *Information and Management*, 24, 257- 266.
29. *Small business development corporation limited annual report 1992*. (1992). Johannesburg: Klem-Lloyd lithographers.
30. *Small business development corporation limited annual report 1994*. (1994). Johannesburg: Klem-Lloyd lithographers.
31. WELSH, J.A. & WHITE, J.F. (1981). A small business is not a little big business. *Harvard Business Review*, 59, 18-32.
32. WHITTEN, J.L., BENTLY, L.D. & BARLOW, V.M. (1994). *Systems Analysis and Design methods*, Sydney: Irwin.

<p>CW Rensleigh and MS Olivier, "A Cost-effective, Low-risk Model for Consultant Engagement in Small-business Computerisation," SAAA Conference, Johannesburg, July 1998</p>
--

<p>Source: http://mo.co.za</p>
--