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Albert S. Tay
Idaho State University, taysion@isu.edu

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Case: Technology Adoption Gone Wrong

Albert S. M. Tay
Idaho State University
taysion@isu.edu

ABSTRACT
In small organizations, the decision to adopt a technology is often based on the acquisition cost or purchase price of a technology. The decision maker fails to access the needs of the organization and other costs associated with hardware and software acquisition. This case explores issues related to technology adoption by Gallery International, a privately owned company in Singapore. Gallery International decides to be a voluntary Goods and Services Tax (GST) trader to reduce its sales tax burden. To ease GST reporting and filing with the Internal Revenue Authority of Singapore (IRAS), Gallery International adopts a financial software package. The critical decision of which financial software package and hardware configuration to adopt is based solely on the purchase price. As a result, issues with the chosen financial software package arise. The working environment becomes very tense and affected Gallery International’s operations.

Keywords
Technology adoption, small business

INTRODUCTION
Small and medium enterprises (SMEs) rely on information technology (IT) just as much as large organizations. However, SMEs often encounter problems while implementing IT solutions that larger organizations do not face. SMEs often lack the resources that are widely available to these larger organizations.

This case study explores the issues a small, privately owned company faces while taking advantage of a government incentive scheme to implement a financial software package. The government incentive package spurs the organization’s adoption of the financial software package and hardware solution.

LITERATURE REVIEW
SMEs often face barriers to the successful use of IT. Burgess (2002, p. 5) cites the following barriers:

- The cost of IT
- Lack of time to devote to the implementation and maintenance of IT
- A lack of IT knowledge combined with difficulty in finding useful, impartial advice
- Lack of use of external consultants and vendors
- Short-range management perspectives
- A lack of understanding of the benefits that IT can provide, and how to measure those benefits
- A lack of formal planning or control procedures.

In addition to the above-mentioned barriers, Burgess (2002, p. 5-6) also lists several critical success factors (CSFs) that also influence the successful implementation of IT solutions. These CSFs include:

- The involvement of owners/managers
- The involvement of users (employees) in development and installation
- The training of users
- The selection of applications chosen for computerization
- The use of disciplined planning methodologies in setting up applications
- The level of IT expertise within the organization
- The role of the external environment (especially consultants and vendors).

Diffusion of Innovation
Everett Rogers (1995) defines diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system. Rogers’ definition contains four elements that are present in the diffusion of innovation process. The four main elements are:

1) Innovation - an idea, practices, or objects that is perceived as new by an individual or other unit of adoption.
2) Communication channels - the means by which messages get from one individual to another.
3) Time - the three time factors are:
   a) innovation-decision process
   b) relative time with which an innovation is adopted by an individual or group.
   c) innovation’s rate of adoption.
4) Social system - a set of interrelated units that are engaged in joint problem solving to accomplish a common goal.

The rate of adoption is the relative speed with which members of a social system adopt an innovation. Figure 1 is a graphic depiction of the variables determining the rate of adoption of innovation.

![Variables determining the rate of adoption](image)

**RESEARCH DESIGN**

Case study allows for fieldwork that “retains holistic and meaningful characteristics of real-life events” (Yin, 1994). A goal of casework is to observe the details of interaction in a particular, complex single situation (Stake, 1995). The data for this case is collected via semi-structured interviews (telephone and emails) from November 2007 to May 2008. Background on the organization and Goods and Services Tax (GST) information are obtained from publicly available information.

**GALLERY INTERNATIONAL**

**Vignette**

The dateline for the Goods and Services Tax (GST) submission looms ominously over Lynn’s head. This is the second time Lynn files the GST submission on Gallery International’s behalf. The first submission she submitted three months ago has to be amended. Lynn believes that this second submission would not be any different. It is getting late and the submission dateline is the next day. Lynn struggles to reverse some of the journal entries in OHMY accounting software that Penny has erroneously entered into the system. Lynn is frustrated. She has instructed Penny, the office assistant, on numerous occasions the data entry procedures based on the projects’ invoices. However, Penny did not show any initiative to learn. Even with detailed instructions for the tasks, Penny still fouls up the tasks one way or another.
Lynn corrects most of the journal entries before she leaves the office for the night. She would prepare and send off the GST submission the next morning with the amendments for the first submission.

**History of Gallery International**

Rose Mei\(^1\) started Gallery International in 1975. Gallery International began as an art gallery that sold framed art works as well as customized framing. It started with one Gallery International and then expanded to three galleries in the late 1980s. Most of Gallery International’s customers were tourists who bought artworks by local artists. Hotels and large organizations occasionally contacted Gallery International to furnish their hotels or offices with framed artworks. These projects were very profitable.

In the 1990s, sales in the galleries declined as competition increased. In addition, it was difficult to find knowledgeable and reliable Gallery International sales staff. As a result, Rose pursued more project work - furnishing art works for offices, buildings, and condominiums. As Gallery International competed for and won bids for more projects and with declining sales from the three galleries, Rose reduced the number of galleries from three to two, and eventually closed all the galleries.

The projects that Rose tendered for also began to evolve. In addition to furnishing artworks, Gallery International also provided customized mirror and glass framing. As Gallery International diversified the projects they took on, the size of the projects grew as well. The size of the projects grew from several thousand dollars to several hundred thousand dollars. Gallery International’s revenue and profits grew over time. Rose realized that as a non-registered Goods and Services Tax (GST) trader, Gallery International is paying more sales taxes.

**Goods and Services Tax in Singapore**

The goods and Services Tax was first introduced in Singapore on 1 April 1994. The GST rate was set at 3%. For example, a consumer who paid one dollar for a product would be charged an additional 3% of the purchase price. The consumer has to pay a total of a dollar and three cents. The vendor would collect the GST of three cents and then remit all the taxes collected to the Internal Revenue Authority of Singapore (IRAS) on a quarterly basis. The GST rate was increased to 4% in 2003 and to 5% in 2004. The GST rate was subsequently raised to 7% on 1 July 2007. “GST is a tax on domestic consumption. The tax is paid by the consumer when money is spent on goods or services, including imports. It is a multi-stage tax which is collected at every stage of the production and distribution chain” (Internal Revenue Authority of Singapore, 2008).

A business entity with annual turnover exceeding SG$1 million has to be a registered GST trader. Business entities with annual turnover of less than SG$1 million can voluntarily register as a GST trader. As a GST trader, a business entity would reduce their tax burden.

A registered trader charges "Output tax" on his local supplies of goods and services. The tax is collected by the trader on behalf of the Comptroller of GST. The trader pays "Input tax" on purchases of goods and services for the purpose of his business. The input tax is deductible from output tax to arrive at the GST payable by the business entity, or amount to be refunded to the business entity.

However, not many small businesses sign up to voluntarily to be a GST trader even though it is advantageous to be a registered GST trader. As a result, the Internal Revenue Authority of Singapore put forward a scheme in March 2007 to defray cost for these small businesses when they sign up as a GST trader (Spring Singapore, 2008).

The GST Assistance Scheme supports up to 100% of accounting software costs, and 50% of the qualifying costs for the following cost items, subject to a maximum grant of SG$5,000 per company:

- Professional fees and training costs charged by third party IT consultants;
- Hardware costs; and
- Subscription fees and one-time activation charges for a new internet connection.

**Background on Gallery International Office Staff**

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\(^1\) The names of the organization and its staff have been changed. The name of the software is also disguised.
Lynn Lee, Office Manager and Rose’ assistant, joined Gallery International in 1982 as an account clerk. Over the years, her role in Gallery International expanded. Lynn has developed a keen sense for the framing business. She has an uncanny eye for details and is able to break down complex framing jobs into detailed, simpler tasks that the workshop staff can produce. When Lynn started work at Gallery International, her salary was about SG$600 a month. Currently Lynn earns about SG$3,000 a month plus profit sharing at the end of the year.

When Lynn first started working at Gallery International, she handled the accounts manually. Over the years, Rose introduced computers into the office by way of hand-me-down computers from her husband’s engineering firm. Lynn learned to use computer on her own. Nowadays, Lynn uses the spreadsheet program to calculate the materials needed and costing for projects. Lynn also uses the spreadsheet program to prepare financial statements for the external auditors/accountants.

Penny Kim joined Gallery International in March 2007 as an Office Assistant. She assists Lynn with office correspondence and inquiries as well as running errands. Penny is comfortable working with the computer. She has no problem installing software on to the computer or searching the Internet for information. However, Penny frequently calls in sick or takes time off (no pay leave) at the last moment to attend to her young family. Her job performance is dissatisfactory at best. Penny’s salary is about SG$1,200 a month.

**GST Registration**

With the increase in GST rate, Rose mulls over the possibility of registering Gallery International as a GST trader. After some research, Rose learns about the GST Assistance Scheme. She asks Lynn to do further research into the matter.

Lynn signs up to attend a GST seminar from one of several faxes and mailers the office received on GST. Lynn gathers the necessary GST registration information from the seminar. She also browses the Internal Revenue Authority of Singapore (IRAS) website as well as the Spring Singapore website to gather additional information. She receives quotes from various vendors for the hardware and software solution.

Lynn presents the information she has gathered to Rose in June 2007. The IRAS website recommends several accounting software and their computer system. Of the various accounting software, Rose decides that OHMY software best met their needs, as it is the lowest priced accounting software. In addition, OHMY software is one of the software that is listed first.

Rose wants to make full use of the GST Assistance Scheme by utilizing as much of the SG$5,000 incentive as possible. As a result, the computers configuration is upgraded. The total cost for the project is SG$6,763. Gallery International’s share of the cost is SG$3,185.

Through the GST Assistance Scheme, Gallery International is able to purchase two computers and OHMY accounting software with training. In addition, Gallery International also reduce their GST burden.


The consultant from the vendor shows Lynn how to set up the accounts, performed data entry, and various reporting features of the system. The six training sessions did not occur immediately one after another. They are spaced several weeks apart depending on Lynn’s availability and schedule. As a result, the progress is slow and many data entries have to be reversed as the entries are incorrectly posted. As the training progresses, Lynn learns that OHMY software could not accommodate some of Gallery International’s billing process. As a result, Gallery International has to change its billing process. The modified billing process created a lot of inconsistencies and headaches for Gallery International and its staff.

Lynn spends a significant amount of time trying ensuring that the data is accurate. However, at the next training session, Lynn realizes that Penny, who is task with the data entry of OHMY, has made many errors in her data entry. With the consultant’s help, Lynn is able to reverse the entries posted and post the entries into the correct categories. Penny often ignores instructions and assigns payments and cost to the incorrect categories and amount.
Penny, whom Rose has hired to eased some of Lynn’s workload, has been adding to Lynn’s frustration. Penny has worked with the data entry of OHMY system for six months and is still making mistakes when entering data into the system. Lynn is frustrated. She tells Penny on many occasions to be more careful when entering data into the OHMY system but Penny has not responded well to Lynn’s remarks. Penny would take ages to complete some of the tasks assigned to her by Lynn or Rose. Penny is often distracted by personal phone calls or her plans for the evening. Penny often misunderstands Rose’s instructions, as she is afraid to clarify Rose’s instructions.

In early April 2008, Lynn is staying late verifying the entries posted in OHMY against those in her ledgers. She has to adjust entries in OHMY application repeatedly. Gallery International’s revenue is improving owing to the tax offset. However, the additional work and frustrations that Lynn faces is reaching a critical level. She is spending too much time in the office. On weekends, she often goes into the office to do some work or she would bring some of the work home with her.

In May 2008, Rose terminated Penny owing to her poor work performance. Rose wants to replace Penny with someone who has better computer skills, knowledge of drafting, and project management skills. She thought that she would be able to find a foreign worker with the necessary skills requirement and pay him/her at a lower salary. She asks Lynn to check with employment agencies about hiring a foreign worker, but the cost of hiring a suitable foreign worker is much higher than anticipated. Rose decides to delay hiring Penny’s replacement.

**DISCUSSION**

In this case, Gallery International decision to become a registered GST trader is a result of Rose’s desires to reduce their GST tax burden and to take advantage of “free money” by the Singapore government. The technology adoption is a direct result of the change agents’ promotional efforts. The decision directly affects Gallery International’s bottom-line.

Without the Singapore government GST assistance scheme, Gallery International would not have invested in the new computers and financial software application. Rose minimizes Gallery International’s expenses by resisting making IT investments. As noted earlier, the computers that Gallery International has used are all hand me downs computers. Utilizing computers, especially slower computers would not boost the productivity of the staff of Gallery International. On the contrary, utilizing incompatible hardware and software would create more frustrations and negatively affect the productivity of the employees.

Roses’ decision to acquire OHMY application is driven solely by price. Neither Rose nor Lynn is technically inclined. Their IT experience is extremely limited. As a result, the chosen financial software does not meet all of Gallery International needs. If Gallery International had hired consultants to perform the necessary requirement studies for the new system, a software which is more suited to Gallery International would have been implemented. Instead, the consultant/vendor or choice did not provide sufficient help to Lynn or Rose about the functionalities of the OHMY financial software or learn more about Gallery International’s needs and financial processes.

The training provided by the consultant/vendor is too limited and over too long a period. In addition, not all the staff received the training. The training which is stretch over a long period of time and only to one staff, Lynn, resulted in a lot of confusion and improper use of the system. Rose ought to have set aside time for both Lynn and Penny to be trained on the new system together before the Gallery International starts using the system officially.

**CONCLUSION**

Managers and owners of SMEs are less likely to know how to use IT effectively or to keep up with the latest trends in IT than their counterparts in larger businesses (Burgess, 2002). The owners/managers often fail to realize the importance of information systems planning. Often the people involved in decision-making may not know what is best, as they are too distant from the front lines (McNurlin and Sprague, 2006). Management practice in small business is often based on the short term. It is important to establish the appropriate mindset for planning, i.e. “developing a view of the future that guides decision making today” (McNurlin and Sprague, 2006).

Multiple factors directly or indirectly affected the Gallery International’s technology adoption. The incentive in the form of GST assistance scheme spurs Gallery International’s registration as a GST register trader. However, the lack of use of external consultants and vendors, short-range management perspectives, a lack of formal planning, the lack of proper training
of users, the lack of use of disciplined planning methodologies in setting up applications, and the lack of IT expertise within the organization resulted in an IT system that is ridden with problems.

Cost should not always be the overriding factor or the only factor when SMEs make decision about IT projects. SMEs need to be better informed about technology. Cost savings actions taken by Rose resulted in the appropriate selection of financial software package for Gallery International. The software does not meet Gallery International’s entire requirements. Rose has to decide if Gallery International continues to use the OHMY application software or find a more suitable financial software package. Either way, Gallery International has to deal with reduced productivity or increase its IT investment.

REFERENCES