

# Family businesses and management information systems (MIS): Seven wise steps to become more electronically intelligent

Nima S. Salami, DBA

[nima.salami@westcliff.edu](mailto:nima.salami@westcliff.edu)

## Abstract

Turning a brick-and-mortar family business into an E-business, would greatly pay off, and bring every manager's dream come true, since it has the potential of creating a sustainable growth (Baltzan & Phillips, 2015). This paper will introduce the step by step guidelines for managers.

## Introduction

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Proper implementation of MIS, and information technology systems in any company would be like Schumpeter's creative destruction idea (1942), where the new systems would replace the old ones, promoting sustainability, growth, and profitability. Most incumbents with their obsolete technologies are left vulnerable to the attacks that may occur from the startups equipped with the latest hardware, software, and technology (Bergek, Berggren, Magnusson, & Hobday, 2013). The battle will continue incrementally to the point where incumbents' experience with older technology only could gain small wins, and the startups' fresh technology with lesser experience but more innovative thinking will take over (Hölttä-Otto, Otto, & Luo, 2013). Therefore, thinking of acquiring MIS and information systems is a must, and would be explained here as seven wise steps that every manager should take for sustainable growth.

### **Discussion**

The first step before installing any new devices or technologies would be defining the competitive advantage of the company. Competitive advantage is the combination of proper strategies in a company leading to superior performance comparing to the rivalry in the same industry (Rothaermel, 2015). The four tools that managers use for that purpose are SWOT analysis, the five forces model, the three generic strategies, and value chain analysis. Later, when the competitive advantage was identified, it could be used for providing a feature in the product or service that the company offers and the competition cannot. In doing so recognizing critical success factors (CSF) and key performance indicators (KPI) and improving them, would determine how the strategy would be adjusted to gain the competitive advantage (Baltzan & Phillips, 2015). For instance, when Apple recognized the need of listening to the music in the customers, there were only some illegal websites answering the need. iTunes and iPods were the outcome of recognition and the understanding of their abilities in software and hardware technologies which significantly moved them ahead of their competition. The innovation created a huge competitive advantage for the company, pushing services like Napster almost out of the market, increasing Apple's profits and market share at that time (Baltzan & Phillips, 2015). Finding the competitive intelligence is the process of acquiring information about the "competitors' plans, activities, and products" to adjust the strategic plans and better hone, sustain, and adjust the competitive advantage (Baltzan & Phillips, 2015). Competitive advantage won't last forever and the rivals will

try to achieve it, or take the idea from you. They will try it by copying the business' operations, acquiring the new technologies, and hiring away key employees (Baltzan & Phillips, 2015).

The second step would be the selection of the size and type of the MIS and information systems. Since the family businesses are usually small at least at the beginning, finding smaller MIS solutions by Microsoft, Oracle, SAS or other companies would be a proper decision. Moreover, there should be an understanding of where the company would be in two years (or 18 months as some researchers suggest) incrementally from now, since based on Moore's law computers and information systems' abilities would be doubled, within this time, while their costs would fall in half, therefore updates would be required for scalabilities, and availabilities (Baltzan & Phillips, 2015). It has been also suggested that MIS and information systems' type and size to be based on CEO's understanding of the systems, since if the systems installed are so sophisticated and above and beyond the CEO's knowledge of the matter, their effectiveness and efficiency could be seriously reduced while the huge costs of implementation, maintenance, and running of that sophisticated system might lead company's scarce resources to the depletion (Thong, 1999). Also learning the capabilities of more available and inexpensive software such as Microsoft Excel would help the company to increase both its effectiveness and efficiencies. Effectiveness would be increased since the software is strong enough to capture, accurately process, and analyze the initial small amount of information. It can also increase efficiency, since the software is very inexpensive, available, and scalable. For instance, pivoting tables in Microsoft Excel can solve lots of problems for the managers as decision makers of the big data, where they can simulate dashboards in a more inexpensive way giving a quick, easy to understand, and detailed visibility to the raw data and information (smartsheet.com).

The third step would be the recognition of the E-business values, and to act accordingly to implement and exploit its offerings. Web 2.0 as a catalyst offers advantages of content sharing, collaborating, and user contributing technologies that can be capitalized on open-source software. Abilities such as email, collaborative webpage, VOIP, instant messaging, videoconferencing, and podcasting all work on Web 2.0 (Baltzan & Phillips, 2015). Therefore, exploiting these abilities that are much more powerful today would be a no-brainer. Proper use of social media marketing also can boost the business' growth. Techniques such as viral

marketing, using of hashtags, network marketing, and folksonomy taggings can enhance the marketing message we are sending to the specific receiver (Baltzan & Phillips, 2015). For instance, in folksonomy technique, websites that use weighted list (tag-cloud) such as Flickr and Delicious, will help their users to find their information “based on a user-generated system of organizing online content”, which is a form of taxonomy (Sinclair, & Cardew-Hall, 2008). Although Kelly, Kerr, and Drennan (2010) have suggested not to advertise on social media websites, there is a possibility of consumer skepticism about the advertiser and the message. For instance, if your Facebook page is open to public, the ad receivers that are not listed as known friends would not trust the message. Matching the title and subject of the social media page that you own and its relevance to advertising will reduce this effect (2010). Professional names, commercial use, and positive consumer and celebrity review endorsements (OCR) by credible users, will gain the trust of online users (Lee, Park, & Han, 2011).

Step four is, defining ethical guidelines and e-policies for the employees and managers in the work place. Topics such as information secrecy (computer security and protection of data), information property (who owns the information), information management (manages the flow of information in the organization for efficiency), and information governance (processes necessary for supporting risk, regulatory, and operational requirements) need to be addressed in detail, and are a must for any company (Baltzan & Phillips, 2015). For instance, in legal proceedings finding the necessary documents from the databases as the evidence to win the cases would be crucial, and therefore the employees need to know how to manage, secure, and organize them. Other policies such as ethical computer use, information privacy, acceptable use, email privacy, social media, and workplace monitoring need to be defined by the management and, explained to the employees. Prohibiting the employees from using the company’s computers for gaming would be an ethical computer use policy. Or, if employees can bring their own devices to the workplace (BYOD policy), the details need to be explicitly explained in written form for all members of the organization (Baltzan & Phillips, 2015). Also, in BOYD policies, the levels of granted accesses should be clear (Baltzan & Phillips, 2015). Another sensitive issue is privacy policies. Fair information practice, is one of the protective plans against the use of private information of the users, where the company defines the general terms and conditions of

collecting data from the users and the ways they share it with the third parties. Since these practices have been regulated differently in any country, expansive companies should be prudent (Baltzan & Phillips, 2015). Moreover, protecting the intellectual assets of the company would be another crucial responsibility for the managers. Information security will fall into this category, a broad term that includes the necessary protections against accidental and intentional misuse of intellectual properties and information belonging to the organization, both from inside and outside of the company protecting against threats such as viruses, hackers, worms, adware, spyware, or ransomware to name some. The cost of cybercrime has been increasing every year globally as it has been shown in Figure 1. The statistics of seven countries, from the years 2013 to 2015 have been compared. There have been two lines of defense identified so far against these online threats, people and the employees at the first line (insiders)

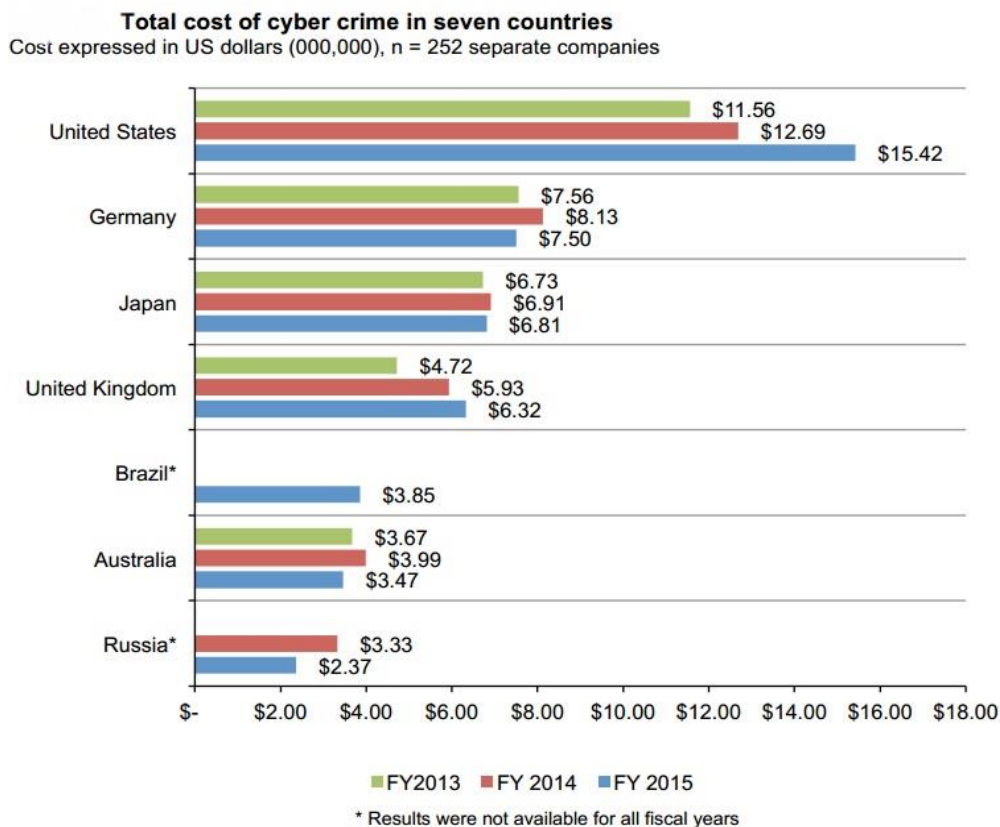


Figure 1. Total cost of the cybercrime in seven countries for years 2013-1015 (software.microfocus.com)

and technology as the second (Baltzan & Phillips, 2015). At the first line of defense, employees would be trained to secure passwords, defend against social engineering hackers (they use social

skills to get the passwords), defend against dumpster diving (looking through employees' trash), and the like (Baltzan & Phillips, 2015). At the second line of defense, authentication and authorization techniques will safeguard the organization's information against threats such as identity theft, phishing, vishing, pharming, and zombie attacks. Protective techniques such as, the use of user IDs and passwords, tokens, smart cards, fingerprints, voice signatures, and other biometrics, or the combination of some or all can be used. Also, other technologies such as data encryption, content filtering, certificate authority, digital certificate, firewalls, and antivirus software can be used. Moreover, installing intrusion detection software (IDS) will protect against the hackers. The software will constantly search the use of patterns in network traffic that might be suspicious for security breaches (Baltzan & Phillips 2015).

Step five would be to incorporate a solid MIS infrastructure that supports the operations. MIS would make information accessible and available for the day-to-day operations. Therefore, backup plans, recovery plans, disaster recovery plans, and business continuity plans should be considered beforehand for the emergencies. For instance, during power outages there should be another source of energy available to function as a backup to bring the power back immediately and support the business continuity. Backups are usually the exact copy of the information stored on the company's databases. Also, disaster recovery plans need to be in place as well to bring back and recover the lost information due to disasters such as fire. These plans could be very costly if the company decides to have a separate facility with all the hardware and software installed up and running (hot site). Other less expensive options are warm sites and cold sites. Warm sites are separate facilities, with ready to install hardware and software. Cold sites are usually just an extra facility without any equipment used to move to in case disasters hit. Additionally, business continuity plans (BCP) will lessen the impact of disruption in the normal flow of information in day-to-day operations. Some business continuity plans can operate parallel to the main system as a replica and immediately replace the disrupted system in case disasters happen (Baltzan & Phillips, 2015). For instance, Union Bank of California's business continuity system includes hot sites that can backup and recover the system in just couple of minutes (p., 179). A solid MIS must be agile. Agility in this case means having accessibility, availability, maintainability, portability, reliability, scalability, and usability in company's MIS and information

systems. The classic example of benefits of an agile system, is knowing about the growth rate of the company and changing the MIS systems accordingly. So, if the company is supposed to grow 60% per year, the MIS systems should be still available, reliable and usable to take care of the business functions for the next year according to the growth (Baltzan & Phillips, 2015). Also, sustainable systems that will reduce E-waste, carbon footprints, and energy consumption make the MIS solid as well. Grid computing, virtualization, and cloud computing technologies have helped the companies to be sustainable. In grid computing the processing power of several computers would be shared and combined to be used for complicated calculations. In virtualization techniques, a single computer can handle the workload of several devices saving on space, costs, and energy consumption in the companies. Cloud computing will let organizations to store, manage, and process the data, therefore the need for preparing extra hardware, software, and security measurements would be redundant, saving on energy consumption, and reducing carbon footprints, E-waste, and overhead costs (Baltzan & Phillips, 2015).

The sixth step would be benefiting from business intelligence technologies that can filter, analyze, and compute billions of bits of everyday data used for strategic decision-making processes. Information needs to be leveled into different granularities for different levels of employees. Detailed information (high granularity) are needed for lower level departments, and high-level managers will get a coarse form (low granularity) of what others would receive and see (Baltzan & Phillips, 2015). It is essential for the organizations to be able to handle and distribute high quality information for the employees and the management. There are several characteristics for high quality information such as accuracy, completeness, consistency, timeliness, uniqueness, and relevance. For instance, if the customer's name has been recorded in the phone number section of the information sheet it is considered inaccurate. Since the size of the accumulated data in the companies is enormous, they need to be stored in places where they are manageable, secured, and classified. Relational databases can store different types of data (objects, events, people and places) and database management systems can create, read, update, and delete them, increasing the flexibility, integrity, security, and scalability of the information while reducing redundancies (Baltzan & Phillips, 2015). Then business intelligence

technologies such as data warehousing, data marts, multidimensional analysis, and information cleansing, will give meaning to the huge amount of meaningless information (poor information), by finding patterns and relationships among the bits of data, increasing its accuracy and completeness. Other strategic technologies such as big data analytics, data mining, and data visualization are adding more and more to the quality of information for the managers (Baltzan & Phillips, 2015). Infographics, an instance for visualization techniques, can depict the results of lots of analytical processes in few eye-catching graphical formats, making them more appealing and easy to understand for the management for further study and review. Also, business intelligence dashboards can track and analyze critical success factors together with key performance indicators much more precisely, quickly, and effectively, letting the managers manipulate and control the data for advance analysis and better strategic decision making (Baltzan & Phillips, 2015). Although acquiring, maintenance, and updating of these technologies can be expensive for the businesses, still the results will pay off. For instance, some BI technologies called “Text Analytics” can go through the text surveys, read them thoroughly and analyze the content, where customers have been asked to leave a comment about a product or service. Without this technology, the company will bear the pressure of spending its human resources to read through the huge amount of texts stored on the databases, to answer the questions on blogs, surveys, and web documents, an expensive and impossible practice. BI systems such as text analysis engines are capable of reading and understanding customers’ texts (Chaudhuri, Dayal, & Narasayya, 2011).

The seventh and the last step, is having mobile and wireless technologies in place. Interconnectedness of all computer systems would be possible by intranet, internet, and local area network (LAN) solutions. Networks between devices inside the company (intranet) will enable them to exchange and share the information in all its different forms. Wireless technologies such as WLAN (Wireless Local Area Network), WWAN (Wireless Wide Area Network), and WMAN (Wireless Metropolitan Area Network) will connect the company to the outside world and to a much bigger market, more efficiently. Additions such as extranet to the system for authorized outsiders will make the network more accessible for customers, suppliers, and other partners. Satellite communication systems can also send and receive data to mobile



devices in no-coverage areas (Baltzan & Phillips, 2015). For instance, in real estate business, global positioning systems (GPS) and geographic information systems (GIS), have been used to locate the properties for the customers, giving them an ample amount of information about coordinates and topology if necessary.

### **Conclusion**

All the above technologies would be beneficial for business, in its right form and scale, and fortunately there are many different solutions out there in the market by big companies such as Microsoft, Oracle, SAS, and others that can provide, maintain, and support the right BI solutions with reasonable prices. Companies need to understand that based on their true needs, wants, and growth rate they will require BI systems, not necessarily the most state of the art, but the ones that are robust, agile, and sustainable. For the future growth of a company, enterprise solutions such as customer relationship management (CRM) and enterprise resource planning systems are crucial (ERP).

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