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WHAT IS THE IMPACT OF INFORMATION TECHNOLOGY ON REVENUE GROWTH, RISK AND DECISION MAKING?

Abstract. The purpose of this paper is to provide recent overview on the impact of information technology on revenue growth, risk and decision making. To understand impact of information technology for the industry, track which shifts and changes could occur in comparison to traditional industry cooperation without information technology systems and finally analyze further development of IT projects and investments, its consequences for the company.
Keywords: information technology, revenue growth, risk, decision making.

Introduction

The purpose of this paper is to provide recent overview on the impact of information technology on revenue growth, risk and decision making. To understand impact of information technology for the industry, track which shifts and changes could occur in comparison to traditional industry cooperation without information technology systems and finally analyze further development of IT projects and investments, its consequences for the company.

This paper starts from analyzing correlation between investments in information technology and revenue growth and analyzing impact of implementation of information technology systems on revenue growth and cost reduction. Next, paper evaluates how deep implementation of information technology system could affect industry and which shifts or changes could occur. Paper also trying to analyze positive effects of information technology to company, including its risks, access to capital, changes in revenue and costs. Finally, paper trying to analyze and predict further development of IT projects and investments along with the impact of such development in the point of view of company's finance.

Information Technology and Revenue Growth

Since the late 90s we have era of high computerization all around the world. Computers tend to be smaller and smaller in the following years. Software, however, is oriented to the end-user and getting more user-friendly or company oriented. More and more companies invest in information technology (IT). Even small books or grocery stores want to have simple information system in order to register transactions. Complex organizations require complicated systems, such as enterprise resource planning, customer relationship management, inventory tracking and so on. Huge corporations and global companies cannot survive without information technology systems.

Finance and information systems are closely interconnected to each other. According to Kohl, Deva raj and Own (2012), IT investment does indeed influence non-publicly traded firm market value. That is why we can speak about impact of information technology on finance and decision making. First of all we need to say that all the transactions in modern companies are done electronically and saved in database for the further report or research. Information stored in database further used for finance decisions. Marketing department can use such information for price evaluation or new service estimation. Finance department uses such information for further forecasting or sales collection estimation. Finally, information technology has a great role in decision making inside the company.

Researches differentiate two main impacts of information technology investment – revenue growth and cost reduction. While both impacts tend to be true, the most working one is revenue growth due to information system investments. According to Mithras, Taft, Bradman, Goh (2012), IT systems allow firms to create new value propositions to better meet needs and develop new offerings for customers. Extensive direct marketing is also merit of information technology. Companies now able to track users and show only relevant ads for them what lead to increase in sales? Increasing power of customer recognizing and customer knowledge is also lead to increase in customer loyalty and customer retention. Simple CRM system that recognizes customer's number calling and quickly provide all the customer's information prior to pick up the phone allows manager to decrease time spent and increase customer loyalty, simple because you are able to pick up the phone and call customer by name.

Latest research by Mithras et al. (2012) test several interesting hypothesis according information technology implementation in the company. They are tried to track the impact of IT investments on revenue growth and operating expenses decrease; tried to figure out if IT investments have a stronger effect on profitability than cost reduction and if IT investments have greater effect on profitability than advertising and R&D. Mithas et al. (2012) use information from 452 firms that made different IT investments including hardware, software, personnel training, IT facilities and so on. Of 452 com-

panies, 49 percent have revenues $1-$5 billion, 8 percent of the companies more than $25 billion, at average gross revenue is $10 billion (Mithas et al., 2012). Research shows average spending $15000 on IT, $13000 on R&D and $10000 on advertising on per employee basis. Average income, sales and expenses on per employee basis is $22000, $386000 and $44000 respectively (Mithas et al., 2012).

The following findings were distinguished – survey support hypothesis that IT investments have significant impact on revenue growth, while there is insufficient support to prove that IT investments lead to cost reduction. According to Mithas et al. (2012), IT investments per employee have a positive but statistically insignificant relationship with operating expenses, thus researches proved that IT investments have a stronger effect on profitability than cost reduction. Mithas et al. (2012) believe that cost-reduction principle is not working due-to inability to setup sustainable competitive advantage among the companies. There are not so many software solutions for highly complex corporations and they tend to use software packages from the same vendor and thereby eroding cost-based competitive advantage. Another important fact is that IT investments have greater effect on profitability than advertising and R&D. Results found by Mithas et al. (2012) are highly important for managerial decision making in terms of IT investment.

Impact of Information Technology for the Industry

Information technology implementation could lead to changes in how the industry work and compete. Mithas et al. (2012) provide Wal-Mart example, which uses IT to forge links with vendors and employees. Using its highly innovated and complex RetailLink system Wal-Mart is able to receive, accumulate and distribute information online. Sales information is sent to financial department, inventory information sent to supply departments and copy of the report in real time transmits to the suppliers' IT systems for automatic order creation and further delivery. Moreover, IT systems allow Wal-Mart's and supplier's users to check which store need which inventory and load store specific inventory to the truck, after that, store is able to track in real time movement of the truck and will be prepared to its arrival. Finally, such complex and highly integrated information system will lead to just-in-time delivery approach.

Further, we can analyze consequences for the industry and shift from traditional system to information or digital age. As previously stated, now Wal-Mart and only Wal-Mart creates and sends orders to suppliers. Wal-Mart's information system automatically order necessary inventory to specific stores for specific time. Supplies have to follow rules dictated by Wal-Mart and do as Wal-Mart requested. Today buyer determines monthly quantity, quality and delivery time of inventory produced at supplier's factory. There is an important shift from traditional system, when byer is seeking for

the supplier and always agreed for conditions dictated by supplier. There is no place for such suppliers' today. If you want to work with big, stable company and always payable buyer you have to accept such changes and always follow it.

In the point of finance view, such innovations tend to increase inventory turnover and highly decrease information transmission and processing costs including orders receipts, different reporting forms and so on. Highly integrated information systems allow to receive any financial information in real time, there is no need to wait for report to be prepared, information is always ready-to-use. Definitely, such approach decrease time required for decision making and costs to collect, process and prepare reports or financial statements – you just need to select required form and run process for its creation, in a few moments all will be done.

Moreover, highly integrated information technology systems help management track sales and make real-time corrections. For example, for new product in sales, if there is significant deviation from forecasted level of sales – IT system is able to report to marketing or sales department; further, departments will analyze why deviation is appeared and could force supplier to decrease price or change production process in order to increase quality of the product. Such process can take only week since starting of sales before reporting due to real-time information collection and further analyzing by special software; while it takes months or quarters and even years for non IT companies to realize the effect of the new product or decrease in sales for old product, required some innovations due to competition, for example.

Information technology systems lead to high level of company transparency, which in turn lead for positive reports from analytics and banks. Finally, it leads to cheaper cost of capital, increase in payable date in comparison to non-transparent companies. Let's try to analyze why it is possible? First, transparent companies always seem to be less risky, which in turn tend to lower interest rate speaking in terms of access to capital. Second, supplier always has an updated information regarding orders and knows how many inventory stored in warehouse thus the supplier is always confident with good standing of the buyer. Otherwise, if warehouse has excess of inventory it will be signal for supplier to decrease payable date, due to possible buyer's difficulties. Third, companies like Wal-Mart not only share internal information with suppliers, but also with many other companies, which provide services for the company. In such a way it is highly difficult to hide any difficulties in case they are emerged.

Further Development of IT Projects and Investments

In their research Dewan, Shi and Gurbaxani (2007) found that IT investments are riskier than other types of capital investments, and that IT returns are associated with a substantial risk premium. However, according to

Roztocki and Weistroffer (2009), investments in IT do not lead to abnormal stock price reactions.

This conclusion could be interpreted in two ways. First, there is a big probability of failure; second, companies, which successfully implement their IT systems, could receive highly positive return.

Definitely, process of new technology implementation is always complicated. Information technology projects are even more complicated and require highly trained personnel in order to reach success. Combine the results of research by Dewan et al. (2007) and complexity of IT projects we can make an assumption that companies, which decided to invest in a new information technology should clearly understand the following: first, the high risk of project failure; second, have highly detailed plan of new system development or new system integration; third, have highly trained personnel, who will make system integration and further maintenance and development.

Taking into consideration risks connected to any investment and especially to information technology projects recent research conducted by Han, Kauffman and Nault (2008) found that information technology outsourcing not only able to decrease level of risk correlated with improper project implementation but also lead to increase company revenues and decrease in costs.

Information technology outsourcing refers to providing services by the third-party provider. Outsourcing is applied not only to current operations such as maintenance of company's PCs, but also to support of company internal network, equipment and software and even to the new IT projects development and implementation.

Analysis of IT outsourcing among U.S. industries between 1998 and 2006 conducted by Han et al. (2008) showed that $1 spent on IT outsourcing was associated with $5,31 growth in output of the margin; however, $1 spent on other materials and services outsourcing as associated with only $1,38 growth in output.

From the finance point of view information technology outsourcing lead the following advantages for the companies.

First and the most substantial factor is the ability to decrease risk associated with capital expenditures for IT project though outsourcing. Using third-party as the sub-contractor for IT project, company is able to decrease its capital spending. Such third-party vendors or services providers are usually big IT companies with enough experience to carry-out huge projects and usually already have IT date centers with project's required equipment and software. Through the leasing power of these facilities, company is able not to invest in new equipment, but just pay for the services. In case of project failure or other circumstances, which require cancellation of the project, company will need just to cancel lease contract; on the contrast, in case of huge expenditures in computer facilities company loose this option.

Second, decrease in investment outflows. As stated before, data center services leasing is much less costly than investment in own data center construction or buying additional equipment. Cash outlays for leasing will be clearly stated in the outsource agreement and approximately split among the year or years; however, capital expenditures will require big initial cash outflows sometimes further require additional capital thorough equity or loan which turn to additional expenses and can increase cost of the project.

Third, focus on main business. Due to outsourcing IT projects, company is able to focus on its primary business and be more concerned of maximizing company's performance, value and shareholder's wealth rather than controlling and analyzing of implementation complex IT project. Not only implementation, but also maintenance of current IT infrastructure can be costly and time consuming.

Offshore IT outsourcing is the ability for company to outsource IT services while working out of state or overseas to local service provider or vice a versa, outsource local services to overseas provider. It is not much a finance advantage but is able to substantially decrease company's spending. Both examples allow saving on capital spending and service payments. If company plan to operate out of state or even overseas it is still able to use services from the same service provider it uses operate locally, which in turn save money for company for expenditures in the new location. Company just need to request resources for additional remote workplaces from its local IT outsource provider. Otherwise, if company is going to operate out of state or overseas and found cheaper IT outsourcing services, it is able to move its core information system from local outsourcing provider to another, located in different state or overseas. All of these will lead company to be more competitive among others, which have to invest locally or overseas for new equipment or software and therefore, have more expenses.

All of these advantages summary turn to positive effect for the company. Risk decrease is often helps to decrease cost of capital and increase investments into company. Decrease in investment outflows can increase the probability of positive investment decision, which in turn would increase revenue growth. Focus on main business allow companies to spend more time on management of critical parts of the company including all the advantages of information technology and therefore, be more open to investors.

Previous part of the paper stated that information technology development and implementation lead to shift in how companies further compete and even change how industry cooperate. IT tend to revenue growth, time decrease in some routine operations and so on, but the main business is the primary source of company financing, so company have to be concerned about its main business, using outsourcing where applicable primarily in information technology services which are complicated, time consuming and require high-skill personnel.

Conclusion

Throughout the paper we analyze how information technology systems affect company, its revenue and cost, how IT could change the whole industry and how it could change cost of capital for the company and degree of risk for investors.

During analysis we found that IT investments have significant impact on revenue growth and realize that cost reduction is almost unaffected. We also found that information technology implementation could lead to change in how the industry work and compete. On the Wal-Mart's example we realized that interconnection shift inside industry could be sufficient and could affect both buyers and suppliers. Further analysis shows us that IT provide useful instrument for real-time correction decisions.

Finally, we figure out that information technology lead to risk minimization, increase transparency and could decrease cost of capital for the company.

Paper has some limitations regarding available information to research. There is no so much research using data analysis of recent years. It could be highly informative to analyze after world crisis years and compare results. Also, further research based on our findings could analyze latest progress of companies, which invest heavily in IT.

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