Reengineering Business in the E-Business Age: A Field Study

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Abstract:

A field study was conducted to determine organizational readiness for implementing E-business solutions by utilizing drivers suggested in the business process reengineering literature. Based on a literature review, we theorized a schematic framework to reflect the anticipated relationships between the independent variables of technology team capabilities, nature and scope of legacy business applications, high-tech resources, value-chain, management expertise, supply chain management and enterprise resource management, and the dependant variable of E-Business readiness. A survey collection method comprised of a 29-item questionnaire was used. The study was carried out with a sample population from employees in various departments of a large, multinational pharmaceutical company. Data analysis of project hypotheses showed that 47.7% of the variance of E-Business readiness was explained by the five independent variables, and that management expertise had the most significant influence. Recommendations directed at the senior management and E-Business Teams include the importance of having an E-Business team to manage new technology, and the need to create synergy between the organizational functions and departments. Though this analytical field study was conducted in a framework of one case study, results can be used to establish a foundation for a comprehensive study across business firms.

Key words:

Business Process Reengineering (BPR), Supply Chain Management, Supply Chain Planning (SCM/SCP), Enterprise Resource Management, Enterprise Resource Planning, Sales Force Automation, E-Business, E-Commerce, IT alignment with business.

1- Introduction

The Web-based applications phenomenon is growing at a faster rate than many other medium, creating more opportunities for business than ever before. Software systems with web capabilities can enhance the business added value even more effectively with their ability to reach customers, affiliate with partners and enrich with information [1]. Three important criteria to assess business

value in IT-based systems are: productivity, business profitability and consumer surplus [2]. Web applications extend traditional business goals beyond direct financial measures to encompass operational measures of customer satisfaction, internal processes, and the organization's innovation and improvement activities. These operational measures drive the organizational future financial performance [3]. Efficiency, quality, market share and penetration emerged as important measures and goals of business [4] that can be improved dramatically by Web-based software systems.

These influences have motivated corporations to integrate internet/intranet information systems in their businesses. This has necessitated the adoption of new management techniques to harness the Internet advantage and align it with the corporation structure. Thus, solutions that adopt and integrate Internet techniques became vital and essential. The Internet has also started to change the structure of the competitive landscape. Instant communications are transforming the relationship between businesses and their clients and the conversion from physical to digital is displacing the source of business value. Information technology plays a critical role in these changes happening in business by means of automation and innovation creating a wave of electronic transformations (or e-transformations) [5].

In this market, connectivity is paramount. Businesses can leverage existing strategies and then tie into new e-business opportunities to improve their value proposition and boost customer satisfaction. For business, it is crucial to align technology to support e-business goals and accommodate changes in today's networked economy.

Therefore, it is critical to achieve a scaleable infrastructure in business to influence and control the flow of information in an e-community and support change and business goals within an e-business strategy. To establish an effective framework for this infrastructure, it is crucial to assess enterprise's readiness to conduct business via the Internet and aligning e-business goals with required technology.

This paper assesses e-business readiness through a case study involving a major pharmaceutical company involving several of its departments. The assessment is conducted in terms of investigating the most influential factors anticipated to impact e-business readiness.

These factors can evolve to form a framework for reengineering traditional and legacy business infrastructures into businesses with effective web capabilities.

2- Importance of this study

E-business is not only an opportunity but also a serious challenge. It implies more than just placing old wines in new bottles. E-business involves dramatic changes in the infrastructures and strategic planning in organizations such as the ability to rely on networks technology, departing from the traditional hierarchal organizations in one of two alternatives: Network organization and cluster organization, long-term partnerships with other alliances and ability to outsource its functions to outside suppliers, and the reliance on teamwork for many of the critical projects and a relatively small size of staff [6]. Furthermore, in the E-business vision customers are the main driving force in business transformation via the Internet. Factors that characterize e-transformation are rapid transfer of knowledge, the participation of IT at every business dimension, the increased speed of decision-making process and people with willingness to engage in more creativity [5]. The e-business age is also distinguished by the tremendous emphasis on the competitive advantage in terms of unleashing applications defined as new goods or services that establish entirely a new category and, by being first, dominants it, returning several hundred percent on the initial investment [7].

The importance of reengineering businesses and business applications is to make radical improvements within organizations and across inter-organizational relationships (such as building channel partnerships) [8]. With the increasing importance of the global economy and worldwide impacts on organizations, upper management has realized the need for closely related systems that function towards aligning business strategies with vertical and horizontal integration. Reengineering attempts to break away from strict business guidelines by adopting new processes and methods that attain business goals with cost effectiveness and quality measures.

Convincing management to adopt empowering technological advances and incorporate these into customer and business marketing channels is not easy. Many corporations are concerned that the investments in high-tech systems will see little or no financial return and eventually become outdated. Many companies wish to implement business process reengineering (BPR), but are not

prepared to do away with legacy systems (i.e. mainframes). These companies feel that changing their existing systems to Web-based software will require intense overhead similar to the Y2K projects where companies engaged in costly upgrades of systems and applications [9].

3- Study objectives

This study aims to determine the factors impacting e-business readiness in enterprises and to identify any deficiencies in their preparation to achieving e-business success. The factors under consideration are informed by the reengineering literature to reflect the efficiency of reengineering businesses inn optimizing e-business readiness in organizations. A case study is created for this purpose where a field study is incorporated across different departments of a large organization. The questions we sough answers for are :Is the company considered in this case ready for the e-business? What are the most critical factors in its readiness? Can these results be replicated or generalized? Based on determining the factors influencing E-business readiness the role of business process reengineering method in e-business readiness is also examined.

Many industries have harnessed the advances in automation in such aspects as assembly-line production, banking, and credit transaction processing. Managers must accept the realization that one day every electronic device will be completely connected to a network and that device will communicate problems to manufacturers and customer service departments creating full automation. Also corporations will be forced to create partnerships to bring together all aspects of SCM, ERM, and "integrated logistics" [8]. Reengineering of applications requires identifying "critical success factors" [10] and implementing change in business processes towards E-Commerce evolution.

4- Problem Statement

E-Commerce technologies have created a new task for IT professionals and managers. Companies have attempted to grasp this new phenomenon by implementing corporate intranets and consumer websites but have met with failure because many have implemented such applications with legacy business process and methodologies. In order to attain successful E-Commerce applications, organizations need to focus on reengineering their business processes.

The objective of this study, is to answer the questions regarding the impact of IT team capabilities, scope and nature of existing legacy systems, availability of IT resources and strength of the relationship between the organization and its value chain on E-business readiness of business firms, taking into consideration that these companies vary in their management expertise and the quality of resources management in terms of internal enterprise resources and supply chain resources

5- Literature Survey

Tight integration of business processes with company strategies relies on IT infrastructures that employ E-Business technologies with advanced application support. These applications require IT and management to make important decisions regarding the importance of existing applications and their impact on the organization. An E-Business solution requires an understanding of operational requirements [11]. Each process has a specific affect on market strength (enhanced competitiveness), customer satisfaction, cost reduction, quality improvement, and strategic advantage. Implementing this solution to support specific business strategies [12] involves determining the risks involved with each process and the importance of these risks on business goals.

Many companies feel that the most important aspect of E-Commerce applications is the Web-Site interface [13]. For large percentage of the IT budget is allocated towards marketing and design, instead of integration of processes with strategies. IT-enabled processes are largely developed systems that only utilize the advances in communication to create channels to suppliers, distributors and logistic facilities. Another objective of this study is to elaborate on how E-Commerce applications could be improved to suit companies' strategies to achieve their business goals. Developing these applications requires key variables that will determine the success of the E-Commerce strategy. These variables along with the affected measure of e-business success will be discussed in more detail later in Theoretical Framework section.

Integration involves the communication between business functions, which is known as inter-functional and with external organizations, which is known as inter-organizational. Inter-organizational integration is regarded as having the most benefits when designing E-Commerce

applications from reengineering legacy business processes [8]. This will greatly impact the company's market growth and explore new possibilities into global markets with lower costs and new services and products [13]. Businesses need to perhaps better understand this new type of E-Commerce and strategize with key customers and suppliers regarding their future expectations of utilizing web-based software systems. These goals will lead companies to form vertical and horizontal integration and create synergy between each component of the inter-organizational process.

Once these partnerships are formed, businesses can concentrate on future goals and objectives for automating supply chain management (SCM) and enterprise resource management (ERM). E-Commerce will allow direct communication through all channels of distribution from the customer to the manufacturer, such as these business-to-consumer web-applications [14]. Cutting out these third parties is an example of reengineering the supply chain process through the implementation of web-driven capabilities. Moreover, utilizing the web-driven IT capabilities is enhancing business ability to create more affiliation with consumers, suppliers and manufacturers, which results in more market share

Surveying the literature on reengineering businesses in the e-business age involves many aspects that have significant importance on structuring this study. Some of these aspects are technically sophisticated and require knowledge of advanced business approaches that go beyond the scope of this paper. Aspects that show presence in reengineering businesses from a business prospective include top-down and bottom-up reengineering, distribution channels for product information marketing and transaction processing (including all aspects of accounting, finance, order processing, inventory and warehousing, and delivery logistics), and corporate strategies that determine key business goals. These variables are very industry specific and even vary between competing companies. E-commerce strengthens business processes and open businesses to new markets, promising opportunities and product awareness. This important application will allow businesses to have a competitive edge in the new-networked economy.

6- Theoretical Framework

The variable of primary interest to this research is the dependent variable of e-business readiness**.** Four independent variables are used in an attempt to explain the variance in e-business readiness in business firms. These four variables are Technology Team capabilities, scope and nature of legacy business applications, availability of IT resources (specifically Internet-based resources), and the relationship between key customers, suppliers, and distributors, also known as the value chain. . The theoretical framework is depicted in the following figure.

6.1 Theoretical Framework Model
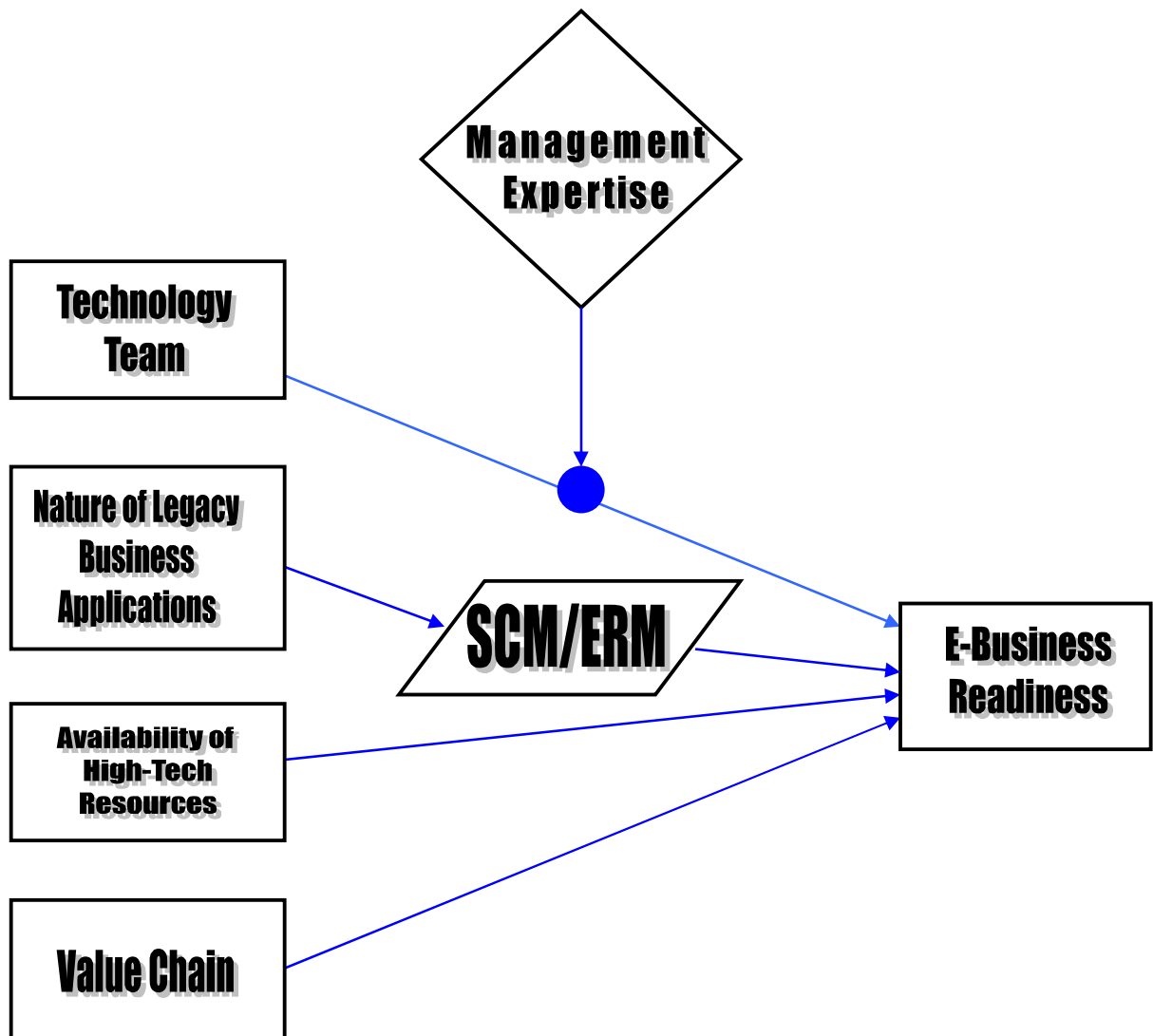
6.2 Variables Definition

The framework described in the model provides anticipated relationships between the different variables. The greater the capabilities are of the IT team, the higher is likely to be the e-business readiness in a business firm. When the organization has skillful and well-trained employees in the web-driven software development project, the level of performance of the e-business project is expected to be high. If , however , there is lack of skillful staff or no opportunities to enhance the capabilities of the IT team , especially for those web-driven projects that are mission critical , the competitive advantage cannot be effectively achieved. Similarly, if necessary web project technical, financial, human and time management resources are not sufficiently available, the IT staff will be less likely to meet business readiness standards and the organization won't be able to add a significant value in its web presence that makes feasible return on investment (ROI). However, in this study most of the focus was given to hi-tech IT resources.

Also, the nature of the existing legacy applications can have a significant impact on e-business readiness in any organization. Reengineering complex or conventional business processes to be aligned with the web technologies and requirement needs more time, effort and resources than making the transformation from simple business processes or partially automated business information systems .The scope and domain of business problems can also have different impacts of e-business requirements. The issue of the negative correlation between organizational complexity and the impact of technical change [15] is a disputable one, as it seems that the more complex are organizations the more ill structured are their problems [16]. Hence, their technical requirements in terms of information systems become more difficult to address, though information technology might enable a complex organization to redesign its business processes so that it can manage complexity more effectively [17].   Consistent with the proceeding arguments, value chain management has an influence on e-business readiness. E-business readiness is a reflection of the effectiveness of the e-commerce solution applied in an organization. These e-commerce solutions link customers, suppliers, partners, and inter-organizational departments in one or more unified value chains. If these links are nor well managed or efficiently aligned in

synchronized frameworks, delays will occur and costs will exceed any profit earned. Clearly, this will result on financial loss and customer disappointment.

Management expertise is considered a moderating variable in this study. The moderating variable is one that has a strong contingent effect on the independent variable –dependent variable relationship. Management expertise can make a considerable difference on the effect of the independent variables in this study on e-business readiness. IT staff capabilities, types of organizational resources, and value chain can be a way more efficient when well utilized by expert managers. In many cases software projects fail not due to lack of resources but because these resources were badly managed. Legacy systems that are characterized by their high degree of complexity and equivocality need more experience than simple systems that have clear requirements and more structured problems. When managers with high level of experience are involved, this can significantly expedite the transformation process from legacy systems to web-driven ones.

Some of the variables will not have a direct affect on the success of the E-Commerce application. In these cases the variables will affect other aspects of the business that will ultimately affect the measures of success. These variables are referred to as intervening variables and provide an accurate picture of the theoretical framework model. The intervening variables are supply chain management (SCM) and enterprise resource management (ERM); these variables help to explain the impact of the legacy business applications on the dependent variable. The better we can understand our customers and suppliers along with dissecting current business process and how they will affect the overall methods of supply chain and resource management, then the utilization of information technology to design reengineered business processes will be flexible and manageable [14].

On the basis of the above arguments, we theorize that there would be positive correlations between e-business readiness and each of the independent variables.

7- Study Hypothesis

From the theoretical framework discussed above, five hypotheses were developed for this research. These are as follows:

1- H0: There is no relationship between IT Team Capabilities and E-Business readiness.

   Ha: There is a relationship between IT Team Capabilities and E-Business readiness.

2- H0: There is no relationship between Legacy Business Process Applications and E-Business readiness.

   Ha: There is a relationship between Legacy Business Process Applications and E-Business readiness.

3- H0: There is no relationship between availability of Resources and E-Business readiness.

   Ha: There is a relationship between availability of Resources and E-Business readiness.

4- H0: There is no relationship between the Value Chain and E-Business readiness.

   Ha: There is a relationship between the Value Chain and E-Business Readiness.

5- H0: Management Expertise does not have an affect on the relationship between Technology Team Capabilities and E-Business readiness.

   Ha: Management Expertise has an affect on the relationship between Technology Team Capabilities and E-Business readiness.

8- Research Design Details

8.1 The Study

The purpose of this research is to determine the readiness for implementing E-Commerce by utilizing the software methodology of reengineering applications through business process reengineering. This study established the relationship between the independent variables of technology team capabilities, nature of legacy business applications, availability of high-tech resources, value-chain, management expertise, supply chain management and enterprise resource management, and the dependant variable of E-Business readiness.   The data for the study was collected over half a month period from the distribution of the questionnaires to the sample. Since the data was collected at approximately the same point in time and no prior data was used in the formulations of any hypotheses, this created a cross-sectional data representation.

Since this study emphasized the importance of inter-organizational relationships, the unit of analysis included individual employees from various departments (finance, information systems, global operations, sales operations, marketing, demand planning, and e-business) and different levels in the organizational pyramid (such as vice presidents, directors, senior managers, managers, specialists and administrative assistants).

9. Methods

The population of this study is drawn the employees from various departments within a large pharmaceutical company. There are approximately 300 employees in the company's business offices (this excludes all employees in the manufacturing plants, warehouses, and distribution channels) and they are distributed among the various departments.

The paper has adopted the *proportionate stratified random sampling methodology*, where the population was first divided into meaningful segments (departments in the organization) and the subjects were randomly drawn in proportion to their original numbers in the population. A questionnaire consisting of 29 items was distributed to the sample population of 50 employees. The reason for choosing this sampling methodology can be attributed to the importance of inter-organizational relationships, making the sample population frame for each segment essential. Also the stratified random sampling is the most efficient among all the probability designs.

The data collection method used was primarily observational. A questionnaire of 29 items was developed to cover all dimensions of the study variables and the questionnaires were distributed personally to each employee.

The number of respondents was 44 employees making the percent of the sample population respondents 88%. The different departments that were included in this study were Finance, Information Systems, Sales, Marketing, Global Operations, Demand Management, and E-Business. The employees were from various levels of the inter-organizational pyramid. The sample population included Vice-Presidents, Senior Directors, Directors, Senior Managers, Managers, Specialists, Analysts, Coordinators, and Administrative Assistants.

9.1 Variables and Measures

A 29-item questionnaire was composed of questions that tried to determine the affects of the independent variables of the dependant variable. The dependant variables were measured on a six-point interval adopting Likert scale method with the following numerical indicators: 1 – strongly disagree, 2 – disagree, 3 – slightly disagree, 4 – slightly agree, 5 – agree, 6 – strongly agree. Two other demographic measurements examined were department name and employee job level. 'Technology Team Capabilities' was tapped through five questions or statements that measured employees interactions with members of the IS department. A sample item is "A member of the IS department has been present at some of our meetings." 'Legacy Business Applications' was measured through five questions or statements that tried to determine how important the applications were towards the company's strategies and business goals. 'High-tech Resources' was tapped through four questions or statements regarding the current use of technology and the knowledge of available technology specifically towards an E-Business solution. Five questions or statements dealing with the relationships between internal departments, and the external relationships between customers, suppliers and distributors measured 'Value Chain'. 'Management Expertise' was measured with four questions or statements addressing such topics as leadership and team building. Five questions or statements that covered such topics as automation of business processes and the impact of real-time product and sales information measured 'E-Business Readiness'.

9.2 Statistical Methods

The SPSS software package was utilized to obtain statistical results. Frequency distributions, reliability analysis, Pearson's correlation matrix, means, standard deviations, ANOVA (Analysis of variance) test, hypothesis testing, and stepwise regression analysis will determine the impact of the independent variables of the dependant variable and will show which variables have the most significance and will influence the variance in the dependant variable. These tests will enable the researchers to determine whether the hypotheses were substantiated and if further studies should be conducted in this emerging area in business.

9.3 Reliability of Measurement Tools

The Cronbach's alpha coefficient was obtained for the five variable items and the twenty-nine questionnaire items. The reliability for the variable items was 73.67% and for the questionnaire items was 81.59%. Reliabilities less than 60% are generally considered to be poor], those in the 70% range, to be acceptable, and those over 80% to be good [18]. The closer the reliability coefficient gets to 1.0 (i.e.: 100%), the better. Therefore, the internal consistency of the measures used in this study can be considered to be good. Based on these reliabilities the researchers have concluded that the findings in the following statistical analysis are valid and accountable.

10. Results

10.1 Descriptive Analysis

10.1.1 Frequency Distributions

The frequencies were determined for each item in the questionnaire and for all the variables. This allowed the researchers to determine what percentage was above the mean and also the mode and median for each variable. The responses for Technology Team capabilities fell mostly under 4.20 and 4.40 (15.9% for each value), which is between slightly agree and agree. The responses for legacy applications also fell mostly under 4.40 (18.2%), for high-tech resources most of the responses were slightly agree (18.2%), for value chain most of the responses were 4.60 (22.7%), for management expertise most of the responses were 4.25 (25%), and for the independent variable, E-Business readiness most of the responses were 4.20 (18.2%).

10.1.2 Measures of Central Tendencies

The mean, standard deviation, minimum and maximum values obtained for the independent and dependant variables are shown in a descriptive statistics table below. All the variables have been tapped on a six-point Likert scale. One can see that the mean of all the variables is quite above the average. E-Business readiness had the lowest mean of 3.97 concluding that the colleagues of the company are fairly ready but perhaps need more improvements to enhance their readiness for business process changes and management changes toward E-Business. However all the independent variables had means above 4.00 concluding that

the sample subjects attributed E-Business readiness to these factors. The variance for the variables was $V(x) < 1$ indicating that most of the respondents were close to the mean on all the variables.

Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Technology Team Capabilities	44	2.40	5.60	4.3591	.71213
Legacy Applications (including current applications that are not Web-based or tailored to E-Business)	44	2.20	5.40	4.0932	.61800
High-Tech Resources	44	2.75	5.33	4.0095	.56953
Value Chain (Inter-Organizational relationships and Intra-Organizational relationships)	44	3.00	5.60	4.4682	.57850
Management Expertise	44	2.50	5.50	4.3466	.55828
E-Business Readiness (Colleagues of the company's readiness towards implementing an E-Business solution)	44	2.40	5.40	3.9727	.64785
Valid N (list wise)	44				

10.2 Inferential Analysis

Because the sample size, which equals 44, is greater than 30 we assumed a normal distribution. Level of confidence is set to 95%, which is the accepted level for most business research [18].

Assuming that the data follows the normal distribution, we have basically used regression test (F). Where the decision rule is:

Accepting Ho if: F (calculated) < F (tabulated)

10.2.1 Regression Analysis

Regression Analysis was done for each independent variable and the dependant variable. The calculated F-Value was obtained and the R^2 value was obtained from each of these tests.

10.2.2 Correlation Analysis

Correlation Analysis was done using Pearson's correlation matrix. These correlations show the relationship between the independent variables and the dependant variable. They also show the relationships between the moderating variable and its influence on the independent variable. The information concluded from this table is as follows:

- High-tech resources had the lowest Pearson correlation value (.330) with E-Business readiness and can be attributed to the fact that in order to implement an E-Commerce

Solution a company needs to utilize high-tech resource. Therefore if the company is not well prepared for an E-Business Solution then they are not prepared for high-tech resource usage.

- Management Expertise has the highest Pearson correlation value (.586) with E-Business readiness. This implies that in order to implement a successful E-Business solution, the experience of upper level management will be necessary. Also the senior manager's knowledge of the value chain will have a great impact on the company's readiness towards E-Business. This will be explained in greater detail below.

- Value Chain had the second highest Pearson correlation value (.573), which shows its importance in a company's readiness toward implementing an E-Business solution. Some professionals feel that the value chain is the driving force for E-Business applications and this can be seen in the regression analysis of variance (ANOVA) between value chain and E-Business readiness.

- The highest Pearson correlation value (.674) is between Technology Team Capabilities and Management Expertise. This important correlation shows the moderating affect that Management Expertise has on the Technology Team. The theoretical framework discussed previously helps to show the relationship between these to variables. Management will play a significant role on the development of E-Commerce systems. They will guide the analyst and developers toward aligning the solution with the company's existing strategies and goals.

- The lowest Pearson correlation value (.307) is between Value Chain and High-Tech Resources. This implies that there is not a direct relationship between a company's value chain and the technology utilized. This correlation make perfect sense because no matter what type of technology a company is using whether it is high-tech or mainframe, the relationships between supplier, distributors, and customers will remain the same.

10.2.3 Hypothesis Testing

The test used in this study for hypothesis testing is the F-Test. The calculated F value was drawn from the Analysis of Variance (ANOVA) .

10.2.3.1 Technology Team Capabilities and E-Business Readiness

Calculated Statistics for this hypothesis were the following:

F	Pearson correlation	R^2
6.435	0.364	0.133

The tabulated value for F was 4.072, F (calculated) > F (tabulated). This result implies that the alternative hypothesis is accepted and there is a relationship between technology team capabilities and E-Business readiness. The R^2 value explains that this variable could explain just 0.133 of the change in E-Business readiness. Since the F-calculated is only slightly larger than the F-tabulated, this needs to be supported by additional future research.

10.2.3.2 Legacy Applications and E-Business Readiness

Calculated Statistics for this hypothesis were the following:

F	Pearson correlation	R^2
7.823	0.396	0.157

The tabulated value for F was 4.072, F (calculated) > F (tabulated). This result implies that the alternative hypothesis is accepted and there is a relationship between legacy applications and E-Business readiness. The R^2 value explains that this variable could explain just 0.157 (15.7%) of the change in E-Business readiness. The F-calculated is also not significantly larger than the F-tabulated and thus additional research is planned here.

10.2.3.3 High-Tech Resources and E-Business Readiness

Calculated Statistics for this hypothesis were the following:

F	Pearson Correlation	R^2
5.116	0.330	0.109

The tabulated value for F was 4.072, F (calculated) > F (tabulated). This result implies that the alternative hypothesis is accepted and there is a relationship between high-tech resources and E-Business readiness. The R^2 value explains that this variable could explain just 0.109 (10.9%) of the change in E-Business readiness. Since the F-calculated is only slightly larger than the F-tabulated, this also needs to be supported by more research work in the future.

10.2.3.4 **Value Chain and E-Business Readiness**

Calculated Statistics for this hypothesis were the following:

F	Pearson Correlation	R^2
20.581	0.573	0.329

The tabulated value for F was 4.072, F (calculated) > F (tabulated) . This result implies that the alternative hypothesis is accepted and there is a relationship between high-tech resources and E-Business readiness. The R^2 value explains that this variable could explain just 0.329 (32.9%) of the change in E-Business readiness. Since the F-calculated is much larger than the F-tabulated the researchers feel that this hypothesis has been fully substantiated and that the results indicate that the independent variable, Value Chain, has a direct affect on the dependant variable, E-Business readiness.

5.2.3.5 **Management Expertise and E-Business Readiness**

Calculated Statistics for this hypothesis were the following:

F	Pearson Correlation	R^2
21.983	0.586	0.344

The tabulated value for F was 4.072, F (calculated) > F (tabulated). This result implies that the alternative hypothesis is accepted and there is a relationship between high-tech resources and E-Business readiness. The R^2 value explains that this variable could explain just 0.344 (34.4%) of the change in E-Business readiness. Since the F-calculated is much larger than the F-tabulated, this hypothesis is substantiated and the results indicate that the independent variable, Management Expertise, has a direct affect on the dependant variable, E-Business readiness.

10.2.4 Stepwise Regression Analysis

To create a clearer picture of the relationship between the independent variables and the dependent variable the researchers have created a stepwise regression analysis. This chart ranks the independent variables by the amount of influence they have on the dependent variable.

Rank	Independent Variables	R^2
1	Management Expertise	0.344
2	Value Chain	0.329
3	Legacy Applications	0.157
4	Technology Team Capabilities	0.133
5	High-Tech Resources	0.109

It is obvious that management expertise is the most explanatory variable in interpreting E-Business readiness. Also with more concentration concentrate on the variables with greater R^2 values it will be ensured that the implementation of an E-Commerce system will be successful.

The independent variables combined explain 0.477 (47.7%) of the change in E-Business readiness. These variables account for almost 50% of the change and therefore can be considered a reliable foundation for companies considering a rewarding implementation of an E-Commerce system.

11- Conclusions and Recommendations

11.1- Conclusions

Business can be changed through a reengineering process that dissects the current applications (through the use of reverse engineering) and creates new business processes that are aligned with the emerging E-Commerce technologies such as wireless connectivity and the rapid expansion of communication channels throughout the world. This broad vision of E-Business can be applied to almost every industry in the world. This 'new' technology and future technologies in communications and computing will require businesses to adopt new trends in supply chain management, enterprise resource planning, and sales force automation.

This study was conducted to uncover information that will help communicating the importance of implementing E-Business into an organization's operations and business processes. The results of this study clearly show that the employees of the company in this study may not be sufficiently ready to implement an E-business system. However this study revealed what variables are important for E-Business Readiness and what factors will influence a successful E-Commerce system.

According to the statistical results, the most important influential factor on E-Business readiness was management expertise. This includes managers of every department and how they communicate with other departments. Also a key factor is the experience of senior managers in the value chain and inter-organization. E-Business builds strong networks between each facet of the inter-organizational pyramid. It is the responsibility of management to enhance these relationships through team building, efficient utilization of resources and strong leadership.

Through the extensive review of literature the researchers have come across many professionals that stress the importance of automating the value chain between suppliers, distributors and customers. These relationships are the driving force for E-Commerce systems. Information System analyst and E-Commerce developers need to extract the core added-value components of legacy applications, eliminate the components that have no or little value and use this as a foundation in the reverse engineering process toward creating an effective E-Business solution. Although this analytical field study was conducted in a framework of one case study, results can be used to establish a foundation for a comprehensive study across business firms.

Clearly, all independent variables showed positive correlation with E-business readiness. This implies that each of the factors in our theoretical framework has a positive impact on E-business readiness. However, these correlations varied widely between these variables.

Furthermore, the independent variables as a whole explain (47.7%) of the E-business readiness. This degree of explanation could not be enough to judge the power of the independent variables in their degree of impact on the dependent variable. Hence, it could be a good idea to seek additional factors.

It can also be concluded that there is a *relatively low degree of correlation* between the independent variables with each other. The variance inflationary factor (VIF =1/1-r²) was 1.8 (based on the highest correlation number of .674 in Pearson correlation matrix). It is known that the minimum value to decide that a strong correlation between the independent variables exists according to the inflation variance factor is 5. This Multicollinearity test can indicate whether the independent variables are mutually exclusive. Consequently, with a value of 1.8 the independent variables are independent on each other, which excludes the necessity of re-designing the theoretical framework. However, more variables can be considered and accuracy of measurements instruments can be further re-assessed to assure content validity of the study. Additionally, those variables with relatively higher means along with low levels of explanation indicate that great efforts must be exerted to drive organizational concern in these aspects to achieve e-business readiness.

11.2- Recommendations

Since the importance of E-Business is growing rapidly in current business environments, it is ideal for every organization to create an E-Business Department that can concentrate in e-solutions research and development. The many factors influencing E-Business readiness and success can become overwhelming for each department to handle. A well-trained and carefully appointed E-Business Team can focus on implementing and preparing the company for the dramatic changes that might occur.

Based on the information gathered through this study, upper management needs to create synergy between the various department and organizational functions. Once the departments are working together it will enable analyst to determine the key process that can be automated through E-Business. Another important area of study for the E-Business Team is the value chain. Many of the process involved with logistics and inventory can be managed through an online intranet –based interface. This will create on demand information and allow different departments to access the same information.

The employees of the company in this study are well aware of the importance of E-Business and the many high-tech resources available. These resources need to be studied by the

Information Systems Department to measure their value towards the company's goals and strategies. It is the responsibility of IS department to introduce these new technologies into the business and to address business processes that should be changed through E-Commerce systems.

E-Commerce will grow exponentially in the near future and companies need to start implementing these systems into their existing business processes. The future may not look good for companies that are not having high degree of awareness of E-business an its consequences These companies that will delay their sufficient an adequate response will fall ultimately behind and eventually get lost in the highly competitive business world.

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