

Creating Business Value and Undertaking Strategic Transformations with Enterprise Systems: Towards a Framework

Prithvi Jyoti Bhattacharya
University of Melbourne

Peter B. Seddon
University of Melbourne

ABSTRACT

The last few decades have seen the widespread adoption of large-scale integrated packaged software suites collectively called Enterprise Systems. This paper is a work-in progress that looks at the adoption of these systems to go beyond being a mere IT platform: to analyze their potential for creating business value and enabling strategic transformations in the firms that implement them. The paper introduces what these systems are and the importance of their role in large organizations. The discussion moves into proposing a holistic framework to explain the aforementioned phenomenon. In doing so, a two-part framework, with a process model and a variance model, is presented. This paper then suggests how this framework is intended to be validated with empirical evidence and the expected contributions of the research to academia and industry. The paper concludes with the discussion of a preliminary study carried out as a part of validating the framework as per the research plan.

INTRODUCTION

Information Technology has become an integral and indispensable part of the modern corporate world and a variant of such technology, called 'Enterprise Systems', have recently made waves in large local and multinational firms and increasingly so in small to medium scale businesses. Enterprise Systems (ES) can be defined as large-scale, packaged, software systems that can be used to streamline and integrate all the business processes of a firm and dramatically improve information and knowledge levels within the firm as well as with its supply chain partners and other stakeholders. In modern times, the phrase includes a number of systems like Enterprise Resource Planning (ERP), Customer Relationship Management (CRM) Supply Chain Management (SCM) and so on. However, for the purpose of this research, the application of the term 'Enterprise Systems' is limited to Enterprise Resource Planning (ERP) and/or Customer Relationship Management (CRM), with built-in Business Intelligence technologies associated with them. This choice is made because of their clear dominance, in both the scope of operations as well as the number of adopting organizations, over their counterparts in the market. These systems have been reported to enable error reduction, faster transaction processing, access to timely, better quality information for the adopting firms, when implemented effectively (Davenport 2000)

However, putting these systems in place involve investments of millions of dollars and significant periods of time and human effort. As a result, firms look ahead to getting more out of these systems than merely being an Information Technology tool: to help them create business value. Given that the bulk of Global Fortune 500 companies currently have such Enterprise Systems in place, we have reached a point where it seems redundant to question the credibility of Enterprise Systems as the chosen IT platform for most large organizations. In other words, the focus is moving from 'how to get Enterprise Systems up and running as an IT platform' to 'how to realize the promised benefits from these systems after adoption'.

This focus has been amplified by the aggressive and dynamic business environment of the modern world, which has required the managers of great organizations to fortify their organizations on one hand and to recognize weaknesses of their contenders to arrive at fresh opportunities on the other. Creating business value and gaining competitive advantage has been proposed to be a function of two factors: (a) opportunity cost of providing goods and services and (b) customers willingness-to-pay for these (Ghemawat and Rivkin 2006). Firms need to minimize the first factor or and maximize the second factor, or both to succeed. These requirements have led to the notion of 'business transformation': to align people, processes and technology intimately to the strategy of the organization, and to develop new strategies. It involves continual reinvention leading to emergence of new strategy, structure, processes and practices, enabling an organization to ensure long-term survival and create business value by a substantial change in the markets and customers a firm caters to and the products / services it offers to them, as well as in internal aspects such as structure, systems (Parker 1996; Laszlo and Laugel 2000; Stockport 2000).

Technology, and esp. Information Technology, has the potential to play a significant role in such initiatives. Adopting Enterprise Systems to enable business value creation and exploiting these systems for business transformation initiatives have recently become an option for adopting firms. This has led to the growth of a number of large, multi-national, blue chip 'Consulting' firms that claim to carry out 'business transformation' for their clients enabled by the adoption of Enterprise Systems. Also, almost every vendor of Enterprise Systems claims to enhance and equip their software to meet business objectives and enable these systems to play a strategic role to aid the adopting organizations contend better in the

marketplace (Seddon 2005). But in spite of the tall claims by vendors and consultants, there is very limited research that concentrates on the business value created by the use of Enterprise Systems and even less (if any) on the role of Enterprise Systems as an enabler of strategic business transformations from a client organization perspective. So it is not easy to get a balanced picture of what Enterprise Systems have truly done (and can potentially keep on doing) to create business value for the adopters. Also, there's little (if any) material on the process whereby investments in Enterprise Systems lead to actualizing the strategic goals of the adopting firms or reframing their strategy, as warranted by business transformation efforts. This leads to the research question:

How can the adoption of Enterprise Systems in large organizations

a) enable creation of business value and

b) facilitate strategic business transformations?

These questions are to be studied from the outlook of the middle or top level management of large firms with at least annual revenue of \$500 mln or so, in any industry in any part of the world. These firms should have had successful 'go-live' of a significant part (e.g. a major release) of Enterprise Systems and should be past the 'shakedown' period, as defined by Markus and Tanis (2000).

The remaining of the paper proposes a holistic framework, as an attempt to answer the above issue. This framework is based on logic and study of past literature. The paper next discusses the expected contributions of the study once completed, and concludes with a clear plan of how the study is designed to be carried out.

PROPOSED FRAMEWORK

A holistic framework is proposed to explain the role of Enterprise Systems in creating business value and enabling strategic business transformations in large organizations. This is done by synthesizing and extending frameworks on Enterprise Systems and Strategic Role of IT in general by prior researchers. (Holland and Light 2001; Shang and Seddon 2002; Davenport et al 2004; Weill and Ross 2009). This framework comprises of two models:

- A Process Model: to discuss the process or the 'how' of the above phenomenon
- A Variance Model: to establish a relationship between the Enterprise Systems adoption and business value creation

Part A. A Process Model

This part of the framework looks at the adoption of Enterprise Systems as an ongoing process, and not a one-off project. This process is explained with the help of Figure 1 as below using Event driven Process Chain (EPC). This notation is one of the de facto standards for modeling processes especially, in the area of Enterprise Systems. In this notation, a hexagon denotes a state/event, a rectangle denotes a function and the operators have their usual meanings as in Boolean logic.

[a] The process described in the framework can be said to begin with a clearly defined corporate/ business strategy for an organization. The underlying functional-level strategies that are of key importance here are the Operational, Marketing and Growth Strategy of the organization .

[b]The strategy drives (among other investments) the adoption of Enterprise Systems. There can, and almost always will be, initiatives other than the adoption of Enterprise Systems that are driven by the strategy, such as employee development and rewards restructuring, building organizational culture and so on. These are considered to be outside the scope of the study.

[c]The process shows that investment in Enterprise Systems leads to the Enterprise System being set up in the organization and this could be as a result of initial implementation, enhancements, additional components, upgrades and so on.

[d] With the Enterprise Systems in place, the organizations should use this System as a platform to do the following:

- Integrate: harmonize the data and processes (both the business logic and user interface) within the organization as well as beyond the boundaries, extending to customers, suppliers and other stakeholders
- Optimize: standardize the processes(both front-end/ customer facing and back end/ administrative) by aligning them with best practices or modify/ enhance processes to meet the strategic needs of the organizations that yield competitive advantage
- Informate: provide access to real time data and the capability to analyse the internal organizational performance and the behaviour of external stakeholders like customers and suppliers; and aid decision making at different levels of management including at corporate/ business strategic levels.

TheSe constructs (Optimize, Informate, Integrate) were originally suggested by Davenport et al. (2004) as the drivers of benefits from Enterprise Systems and empirically tested with a large number of firms.

Creating Business Value using Enterprise System: Operational Excellence, Innovation, Harnessing new Strategic Opportunities

The process suggests that Optimizing, Integrating and Informating, using Enterprise Systems post the 'shakedown' period leads to a platform that can be utilized for creating business value by the organization. Enterprise Systems enabled Business Value can be created in one or more of the three ways: Operational Excellence, Innovation, Harnessing new Strategic Opportunities. This approach is in part aligned to a model proposed by Weill and Ross (2009) wherein they propose that Information Technology in general could open up business opportunity in the following ways: Operational performance improvement, Accelerated product/ service innovation, Integration of merger and acquisition and reorganizing towards customer centricity. This proposed framework extends this to the special case of IT, i.e., Enterprise Systems.

[e]Operational excellence enabled by adopting Enterprise Systems

The framework shows that using Enterprise Systems, the adopting organizations Optimise, Integrate, Informate and enabled by this platform, the organization can run their operations/ business to achieve operational excellence. Operational excellence is achieved by organizations via benefits that fall in one or more of the following types:

- Core Operational Benefits: benefits such as Reduction in Cycle Time, Cost Reduction, Quality Improvement, Customer satisfaction, lower inventory levels
- Infrastructural Benefits.: benefits such as IT maintenance costs reduction, reduction in data entry errors, flexible IT infrastructure, cheaper upgrades

- **Managerial Benefits:** better control on operating processes and hence making better decisions, thus increasing operating margins. These by themselves are **not** strategic benefits for the firm

These categories of benefits are comparable to the Operational, IT Infrastructural and Managerial Benefits respectively in the work done by Shang and Seddon (2002) on classification of benefits from Enterprise Systems

It can be argued that Optimise, Integrate, Informate enable operational excellence, as discussed earlier. For instance, better streamlined business processes, i.e., Optimise remove bottlenecks and improve operations which lead to reduction of time in carrying out processes, reduction in costs of inventory and administrative expenses like printing and reduction of errors (Davenport 2000 ; Al-Mashari 2003; Spathis and Constantinides 2003 ; Siau and Messersmith 2003; Botta-Genoulaz and Millet 2005; Chand et al. 2005; Rikhardsson and Krammergaard 2006). Again, getting timely credible information, i.e., Informate helps in getting overall process view across functional areas and enables better allocation of resources by the operational managers. (Davenport 2000; Spathis and Constantinides 2003; Botta-Genoulaz and Millet 2005; Rikhardsson and Krammergaard 2006; Harley and Wright 2006) Also, having one set of common data, i.e., Integrate reduces time for data entry and retrieval and costs associated for joining different legacy systems to get information, thus allocating resources for the 'real' business processes and thus increasing productivity (Davenport 2000; Al-Mashari 2003; Grant 2003; Spathis and Constantinides 2003; Utecht & Hayes 2004; Volkoff et al. 2005; Karimi et al. 2007).

[f]Innovation enabled by adopting Enterprise Systems

The process in the framework attempts to address how the adoption of Enterprise Systems can also enable 'innovation' along different dimensions. Innovation is something that adds unique value for the customers, enables competitive advantage and generates value for shareholders (Snyder and Duarte 2003). The adoption of Enterprise Systems enables the firm to innovate along the following dimensions (Bhattacharya and Seddon 2009):

- **Product/Service:** This can be accomplished by introducing a new Product/Service or revamping an existing product/service by a) using information and analytics gained from ERP/CRM Systems, i.e., by Informate (b) integrating the organization with the partners of its value chain, backward or forward using ERP based EAI tools ,i.e., by Integrate.
- **Process:** This can be accomplished by creating new processes/wholly redesigning existing processes, i.e., by Optimize. This can be in the following fields a) operational/back-end processes by using the so-called 'best practices' of the Reference Models in such ERP Systems, (b) front-end/customer-service processes by implementing the marketing-sales-service cycle of CRM systems.
- **Market:** It can be done by (a) Market penetration, i.e., selling additional quantities of existing products/services or cross-selling to existing customers by the use of the customer analytics capabilities of CRM systems, i.e., by Informate (b) Market development, i.e., selling existing products/services to new/prospective customers or market retention in times of threats by rivals/ new entrants by improved marketing processes like campaign management using CRM systems, i.e., Optimize.
- **Alliances:** This can be accomplished by the means of mergers, acquisitions, consolidations, joint ventures for strategic purposes enabled by integration of data and process frameworks enabled by ERP between the acquirer and the acquired ,i.e., by Integrate

Studies in business management have proposed the dimensions along which an organization can undertake innovation as product, process and marketing, (Williams 1999; Govindarajan and Trimble 2005; Andriopolulos and Dawson 2009; O'Sullivan and Dooley 2009. This proposed framework adds the construct of 'Alliances' as a dimension of innovation. The concept of Innovating with Packaged Software with an emphasis of 'when' and 'why' was proposed by Swanson and Pang (2005) This proposed framework explores all of the aforementioned dimensions of Innovation in the distinct context of Enterprise Systems to see 'In what way' can they enable innovation.

[g] New Strategic Opportunities enabled by Enterprise Systems: The framework also suggests that the optimized, integrated and informing platform of Enterprise Systems also support identification and assessment of new opportunities available to the adopting organization. This activity will lead to reconsideration, reframing or revisions of the existing business strategy. The adoption of Enterprise Systems enable identification of new strategic opportunities in the following ways: determine profit drivers , grouped by business units, to come up with a new corporate strategy; leverage a base platform with built-in processes for multi-country accounting and reporting to frame growth strategy by going global; Shifting to a low-price strategy enabled by dramatic improvement in process efficiency from an optimised platform; leverage an integrated data and process framework to grow by merger and acquisitions; shift to product/ service differentiation strategy from the data plus analytics available from the informing platform and so on. To asses such opportunities, Specialized tools for strategic management activities are also provided within most ERP systems, like SAP's Business Planning and Simulation (BPS), Corporate Performance Monitoring (CPM), Business Consolidation (BCS) and the like which incorporate both optimising the strategic management process and providing information for strategic analysis.

[h],[i], [j], [k] The process next shows that with the execution of ES-enabled operations and ES- enabled Innovation, Operational Excellence is achieved and Innovation is undertaken by the organization.

[l] The process then shows that whatever the path taken (i.e. operational excellence and/or innovation), the organization needs to continue the execution of that path for a given timeframe. This is essentially executing the existing strategy of the organization enabled by the adoption of the systems This is done with an aim to realize the existing strategy of the organization.

[n] On the other hand, identification of new strategic opportunities can be done with the capability provided by the ES platform

Transforming the business: Strategy Realized or Strategy Reshaped

This process next delves into the proposition that the adoption of Enterprise Systems enables strategic business transformation: by either realizing the existing strategy or reshaping the strategy of the adopting organization. The use of Enterprise Systems by organizations for strategic purposes have been strongly proposed in some recent studies (Holland and Light 2001; Teo et. al. 2006).

However, it is acknowledged that there could be several other factors that have to be favourable for successful realization of the strategy or reshaping it. These could be range from business/economic cycles, legislation changes, political situations/stability, and responses by competitors. These most definitely affect the strategic transformations of organizations but are beyond the control of the firm. These are labeled as Contextual Factors in this framework and are considered beyond the scope of the research and therefore not discussed at length.

As shown above as result of the preceding steps, the organization, through operational excellence and/or innovation enabled Enterprise Systems realizes its exiting strategy or through new Strategic Opportunities enabled by Enterprise Systems reshapes/ revises its strategy.

[m] Strategy is realized by the benefits that enable the firm to be in a position to compete better and grow as a firm, thus achieving the objectives of the transformation. For the purpose of our research they are: price leadership, product/ service differentiation, increase in market share, expansion/globalization and inorganic growth (though takeovers, mergers, partnerships etc).The process shows that the strategy is realized by executing the ES- enabled operations and/or innovation for a given period. Several organizations that have adopted such systems have achieved better market value, inorganic growth through mergers, management of key resources etc as found from evidences in prior studies.(Al-Mashari 2003; Bligh and Turk 2004; Buttle 2004;Chand et al. 2005;Ling and Zhao 2006; Mathis et al. 2006; Grainger and McKay 2007; Motiwalla and Thomson 2009).

[o]Strategy is dynamic in nature and developing new strategy is often a key exercise in business transformation. If the strategy is reshaped (as a result of the identification and assessment of new opportunities), the process feedbacks into itself to lead to more investments (like additional components, upgrades etc.) on the Enterprise System as well as other initiatives taken to execute this reshaped strategy. Since Information Technology has long been proposed to play a role in shaping/framing the corporate/ business strategy (Goldsmith 1991; Parker 1996; Robson 1997; Kearns and Lederer 2000), this framework attempts to identify the role of Enterprise Systems as a particular form of information technology in shaping the corporate/ business strategy with Enterprise Systems-enabled innovation as the driver.

The process mentioned above can be illustrated using the following scenarios. For example, a trading firm with a price leadership strategy may adopt Enterprise Systems (say ERP).They could take advantage of the integration of data and processes, i.e., ‘Integrate’ and enhance and streamline the processes, i.e., ‘Optimise’ using the ERP system to reduce the costs of doing business. These could result in: decrease in stock levels and cycle times which are ‘Core Operational Benefits’; and faster transaction processing i.e. ‘Infrastructural Benefits.’ It is also possible to create or fully redesign a process, i.e., undertake ‘Process Innovation’ by complex configuration settings with the built-in Enterprise Systems Best Practices. Such a configured/tailored process would be hard to copy by rivals and thus yields efficiency, thus decreasing costs much below the industry average. If these costs are significantly reduced, the firm can charge lower prices for their products and thus attain the ‘Strategic Benefit’ of price leadership in the market. As another illustration, a firm with a strategy of product/ service differentiation, could use the Information and analytical tools of Enterprise Systems (say CRM), i.e., ‘Informate’ for analyzing the real requirements of prospective and existing customers and create a novel product/ service, i.e. undertake ‘Innovation’. This would enable them to charge a higher premium and even expand their customer base, leading to increase in the revenues and market share. Also, seeking what segments of customers are most profitable assisted by such analytical capability will help the organization to retain its most ‘precious’ customers in times of threats by rivals. Another approach is that integrated data and processes of the system would be a real boon in merger and acquisition of firms, i.e., Alliance Innovation to increase market share, provided any or both the acquirer and the acquired had Enterprise Systems in place.

PART B. A Variance Model

In addition to the process mentioned above, an underlying variance relationship can be observed as shown in Figure 2. This seeks to explain the causal relationship between some of the constructs of the framework.

The discussion in the process model above also leads to the development of the following hypothesis:

Hypothesis A. The more that adopting firms have used their Enterprise Systems to integrate, the greater the level of operational excellence

Hypothesis B. The more that adopting firms have used their Enterprise Systems to, optimise, the greater the level of operational excellence

Hypothesis C. The more that adopting firms have used their Enterprise Systems to informate, the greater the level of operational excellence

Hypothesis D. The more that adopting firms have used their Enterprise Systems to integrate, the greater their capability to undertake Innovation

Hypothesis E. The more that adopting firms have used their Enterprise Systems to optimise, the greater their capability to undertake Innovation

Hypothesis F. The more that adopting firms have used their Enterprise Systems to informate, the greater their capability to undertake Innovation

The framework proposes the different possibilities organizations can avail by adopting Enterprise Systems to achieve business benefits and to transform themselves, with a goal to better execute their existing strategy or reshape their strategies for success. The framework has been separated out into two components: the process and factor/ variance model as suggested by Newman and Robey (2002). These two models are distinct from each other,; however they complement each other in explaining the complex phenomenon of how Enterprise Systems can be exploited to realize business benefits and enable strategic transformations

EXPECTED CONTRIBUTIONS OF THE PROPOSED STUDY

Results of this study will be of significant relevance to the management of large organizations who have adopted or contemplating to adopt Enterprise Systems, to appreciate how they can create business value and 'transform' their business by investing in Enterprise Systems. It would also be of significance to academics in the area of Management and Information Systems to validate the claimed potential of Enterprise Systems in enabling firms to compete better in the market. In particular the expected contributions can be listed as follows:

- Provide a new holistic theoretical framework on how the adoption of Enterprise Systems can enable business value creation and strategic business transformation in large firms
- Provide additional evidence of whether the adoption of Enterprise Systems enable firms with
 - a. capability to 'optimise', 'informate', 'integrate'
 - b. operational excellence

- Provide evidence of whether the adoption of Enterprise Systems enables
 - a. Innovation in the adopting firm, along one or more of the four dimensions
 - b. Harnessing new strategic opportunities for the firms to pursue
 - c. Business transformations by realizing strategy and/or revising or shaping of the strategy of the firm

To the best of our knowledge, there has been no other study that researched the same phenomenon as mentioned in the above section and, given the importance of the area to both academia and industry, it would be worth attempting to explore the proposed question.

PROPOSED RESEARCH DESIGN

The proposed study aims to find the role of a specialized type of Information Systems in managing organizations and how to use them effectively to attain organizational objectives in the contemporary world. The dimensions of the research are explained as follows. From the perspective of the nature of the research, this research aims to study the effective use of technology for the improvement of the organizations, which is a part of society. So it can be called applied research, and not basic/scientific research. From the perspective of the use of the research, this study attempts to take a managerial approach to technology about how to effectively use a particular technology in achieving organizational mission. It aims to draw on the existing ideas in the field and describe the 'how-to' part of the phenomenon. So it can be said to be 'descriptive' in nature (Neuman 2003). The main purpose of the study is to find solutions (from a senior management standpoint) for better utilization of Information Technology in organizations for gaining higher business benefits, both within the firm and in the wider market/industry. It can be concluded that the study is essentially a research in the area of management of technology. Therefore concepts, methods tools and techniques used in Management Research, as a specialized field of research, would be appropriate to conduct the study. Furthermore, this study aims to seek a solution to issues relating to middle and upper level management. Hence it is crucial to base this study on this target audience.

As with previous researches conducted in similar areas, it seems rational to follow a combination of quantitative and qualitative techniques for the study. The study can be undertaken with the help of various components for the two distinct models: process and variance.

Validating Both Process and Variance Models : Archival Study of Client Success Stories

Analysis of several success stories of firms that claim to have enabled business transformation using ERP/ CRM Systems is planned. These are available online as customer success stories from the leading vendor, SAP, and so the credibility of this information may be questioned. Nevertheless, the fact that these success stories have been endorsed by the client firms and includes all contacts and references, makes them more reliable as a source of data. Archival Study is selected for the ease of access and because the data necessary for the study is readily found. This is mainly to validate the process

This component can be split into two parts:

- analysis of detailed case studies of 12 firms or so by analysis of text. This will help to understand the underlying phenomenon better and help refine the framework.
- a survey –like study of short cases of 100+ firms by scoring the evidence of the constructs of the framework on a predetermined scale. This will help to validate the framework and apply to a reasonably large number of firms.

Validating the Process Model: Case Study

Primary case studies of a few (3-4) firms adopting ERP/CRM systems using detailed interviews are planned. The firms will be contacted and interviews arranged with the relevant people to study their journey with Enterprise Systems. Next, these interviews and any additional data collected will be analysed for the proposed constructs. This will help refine the framework and is expected to provide primary evidence to support the phenomenon described in the framework.

Validating the Variance Model: Survey

A survey of a number of firms (including those who claim to undertake business transformation) adopting ERP/ CRM Systems from leading vendor SAP is planned. This is proposed to be done using data from the SAP User Group Australia, which is a voluntary, non profit organization of customer firms who have implemented SAP products. So it is expected to be an independent body that discusses all aspects of such implementations and the after effects, with little or no bias towards or against the vendor. This component will help in validating the framework against a reasonably large sample of primary data. The survey is planned to done using a questionnaire with a 4-point scale asking the respondents to rate the statements relating to the research question. Survey is chosen as a research method to extend the findings to a reasonably large set of organizations.

Using this combination of components, it is expected that the study will result in the following:

- A comprehensive refined framework of creating business value and transforming businesses enabled by Enterprise Systems
- An explanation of the 'how to' of the phenomenon explained by the framework
- Evidences of the relationships between the constructs proposed in the framework.
- Applicability to a broad set of situations

Choice of Sites

The Selection criteria to be used for choosing the organizations to study in all components for the research would be as follows:

- Large firms with at least \$500 million plus annual revenue
- Successfully 'gone-live' with ERP and/or CRM from any leading vendor namely SAP, Oracle.
- Post shakedown phase i.e. 6-12 months after a major release
- Any industry in any part of the world.

Choice of Subjects

The Selection criteria to be used for choosing the respondents in the organizations for the survey component would be as follows:

- Business Managers from functional areas such as Operations, Marketing, Human Resources
- Technology Managers, Project Managers , CIO associated with the ERP and or CRM implementation

For the archival study, we are not in a position to choose the interviewees as the data is secondary and already collected. However, the excerpts provided are essentially from employees in roles as mentioned above. So we can see that we can apply the same criteria to choose subjects for both the components of the research.

CONCLUSION

The paper discussed a key topic of interest to both the contemporary business world as well as academia in the fields of IT and management. The work introduces a new perspective into how business value can be created using a technology called Enterprise Systems and how this technology can be used to enable strategic transformation of the organization.

To this end, a holistic framework was developed to understand the capabilities of Enterprise Systems and how these can be better utilised by the adopting organizations to achieve their mission. However, this is a research in progress and the intention is to validate this idea in the near future through rigorous research initiatives through close collaboration with the commercial world.

APPENDICES

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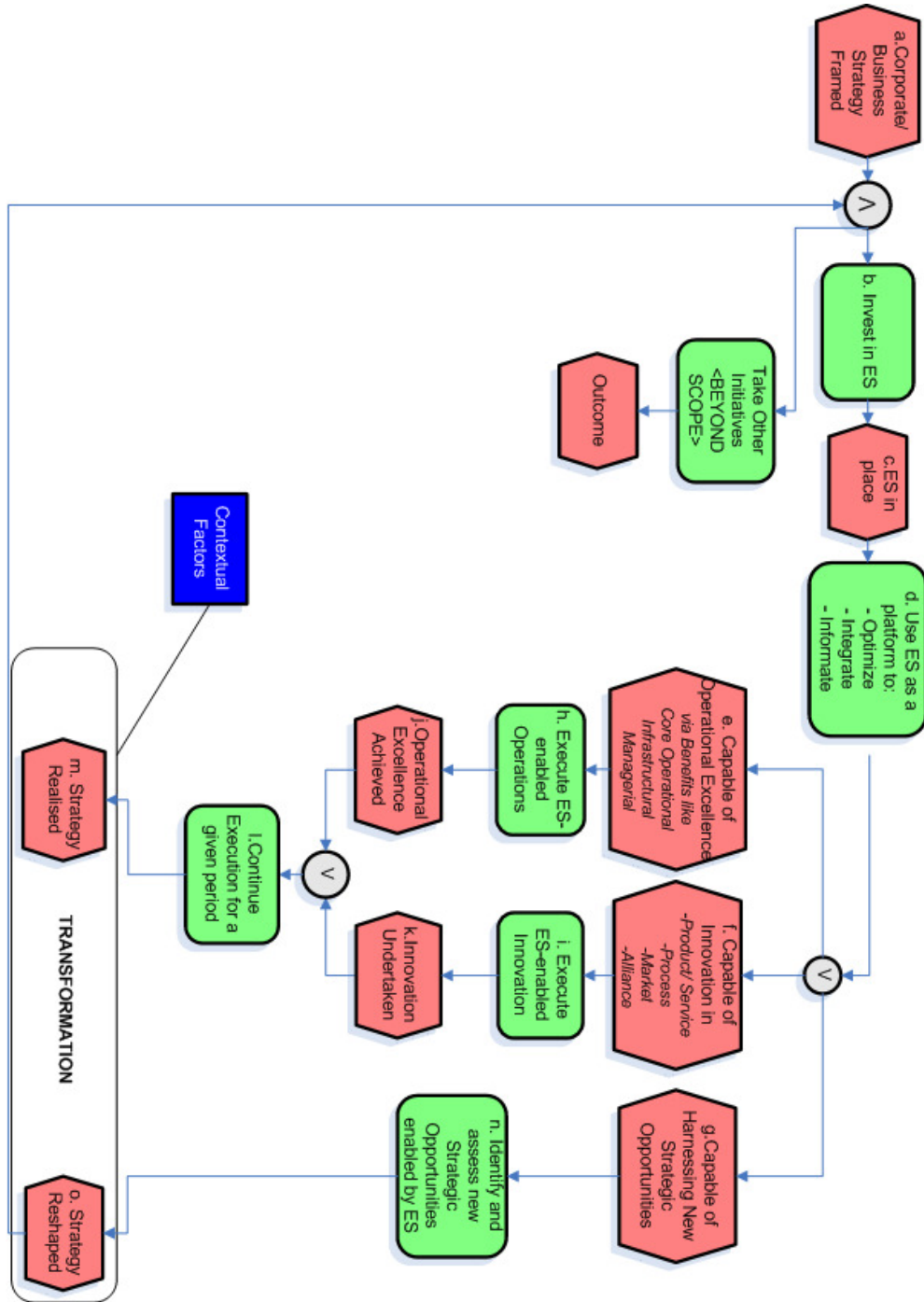
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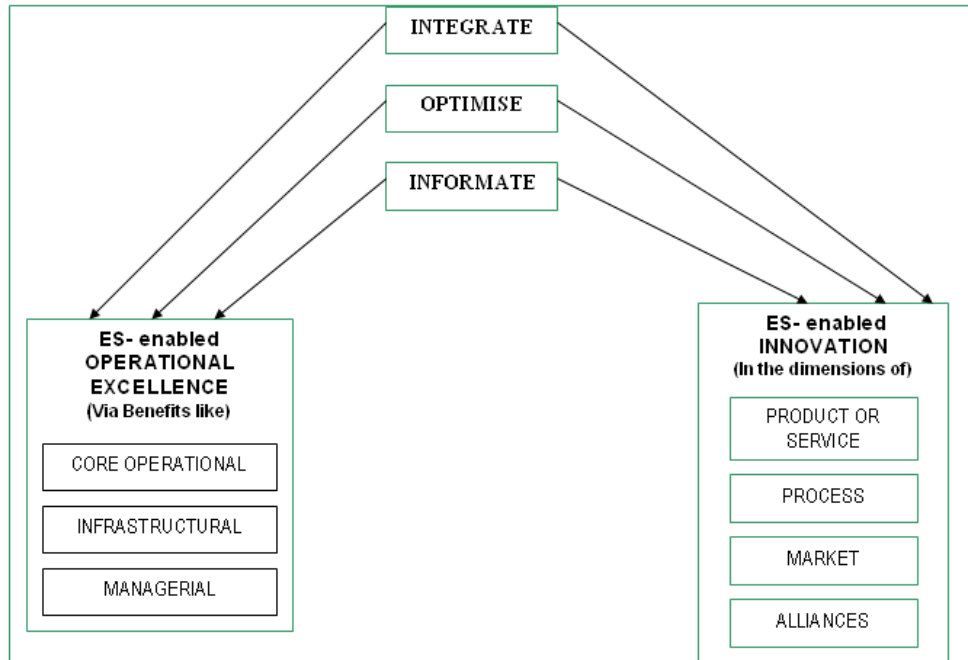
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FIGURES

PROCESS MODEL



VARIANCE MODEL



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