Learning Using an Enterprise Design Conceptual Framework

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ABSTRACT

Providing a learning environment to achieve an operation transition for an enterprise architecture requires tools and techniques to provide the: design analysis; development analysis; implementation analysis; change management analysis; and fitness-for-purpose analysis. The Enterprise Design Conceptual Framework (EDCF) has proven to be a useful tool both for consulting and for learning pedagogy. Using this framework we can conceptualise an enterprise, build a model and differentiate it from its competitors or from other enterprise of the same or similar type. Because it is dynamic we can examine it at ‘points-in-time’ over time and note the changes. EDCF enables us to take and to teach a holistic view of an enterprise and to examine the contribution of each element to its performance both dependently and independently as to its “fitness for purpose”.

INTRODUCTION

As we view the development and redevelopment of business and organisations, due to the influence of information and communication technologies (ICT), we are struck by the difficulties that individuals have in visualising changes and the impact of change. This is no fault of the individuals, as complexity in business and organisations is today an axiom. Add to this the speed at which changes are occurring and it becomes problematic as to how to be anything but reactive and adaptive (i.e. strategically pragmatic) in business.

Studies have focused much effort upon business reengineering and evolution. However this is in essence a Darwinian philosophy of survival of the fittest and evolutionary adaptation precludes a proactive and innovative nature of humanity. However, as I have indicated the speed and ubiquitous nature of change most often forces individuals into an adaptive mould. We’re considering innovation to be in large part proactive and focused upon continual improvement.

The aspect of both adaptation and innovation that we consider absent in the ensuing change is that of design or purpose driven thinking. Purpose can underscore our thinking in that we can intentionally envision reengineered organisations and enterprise. Afuah and Tucci (2003: cover) provide a conceptual framework (Figure 1) for considering the impact of the Internet as a disruptive technology and how to consider process and performance relative to such a scenario.

We are taking this conceptual framework as a starting point and elaborating that for the purpose of a generalisable set of investigation, design and learning steps. This paper reintroduces the Enterprise Design Conceptual Framework (EDCF) (Calway, 2004) approach and discusses and application of the framework as a basis for learning and teaching.
AFUAH AND TUCCI MODEL

The following Figure is a representation of that chosen by Afuah and Tucci (2003: cover). Each of the component parts and interactions are considered.

![Diagram of Afuah and Tucci Model](image)

**Figure 1. (Afuah & Tucci 2003: cover)**

This model is performance driven therefore for the purpose of description of the components this will be our starting point. The following notes are a paraphrasing of Chapter One of Afuah and Tucci (2003: 3-10)

There are major determinants for business performance, business models, the environment in which businesses operate, and change. This performance model is where most businesses are in competitive relationships with others. Profit as a motivator reinforces a competitive nature and the use of business to adopt and adapt new technologies. Therefore performance is critical – what determines performance, and how this is formulated as a business model. There is any number of defining measures for performance (refer 2003: eg. profit, cash flow, earnings per share).

Business models as the first determinant, is the method by which a firm builds and uses its resources to offer value to a population of customers i.e. value that is better than its competitors. The model details a here-and-now strategy as well as the potential to strategise the longer term sustainability i.e. a model that enables a sustainable competitive advantage. The model can be conceptualised as a system made up of processes, data and linkages.

Environment is that which encapsulates the business model and can be expressed in many forms (eg. competitive environment, technology environment, economic environment). There is a local environment where the organisation competes and engages the supply/selling chain. Equally there is a global environment that has within it many local environments connected through infrastructure (eg. telecommunications, logistics, and information).

Change creates disruption and opportunity, and occurs both from within an organisation and outside organisations. Many changes are small but when considered in a cumulative way can be disabling in nature if not managed. Add to the many small changes that require adaptation, change that is ‘over-the-horizon’ can be significant as a disruption, positive or negative. The example given is the Internet that is a disruptive technology forcing many to rethink.

MODEL ELABORATION
Our starting point is not ‘performance’ but ‘purpose’, expressed through value propositions. It is when the purpose is expressed that we are then able to express performance metrics in a more objective way. To test the metrics they should be expressed in terms of fitness-for-purpose, and in turn fitness-for-purpose leads to quality assurance and continuous improvement. Fitness-for-purpose is a condition of being suitable relative to an anticipated outcome that is intended or that guides a planned action.

Having the fitness-purpose criteria then gives a basis for modelling value for the enterprise and consequently the systems that support that enterprise. We are using the term ‘architecture’ to represent the overall plan for the enterprise and this will include the business model, the metrics and purpose.

The enterprise architecture will require connection with the local and global environment and infrastructure. No enterprise exists in isolation, not having connection denies the interfaces with the many and often unknown influences. Analysis of intrinsic and extrinsic factors forms an imperative in an architectural representation of an enterprise – it should be reinforced that enterprise is a system of business endeavour within a particular environment.1

Environment and infrastructure provide the architectural connectivity for the business and act as inhibitors or enablers for enterprise. A further influence comes from ‘change’ and ‘agency’. Many changes and agents of change are inside a business and operate around the enterprise, however, significant change occurs outside of the organisation through natural forces and innovative forces (eg. 2005 Tsunami, Internet). There is a requirement for change management control metrics and procedures to be encapsulated as an enterprise architecture transition, indicating, and evaluating approaches and data both near and ‘over-the-horizon’.

The best way to exercise these ideas is to exercise a case that would be familiar with most. Most have been observers of a live performance in a theatre or similar, and this is the metaphor that is now used (Figure 2.).

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Figure 2. Enterprise design conceptual framework (EDCF)

1 www.ichnet.org/glossary.htm
EDCF as a Learning Environment

To achieve an operation transition for a enterprise architecture requires tools and techniques to provide the: design analysis; development analysis; implementation analysis; change management analysis; and fitness-for-purpose analysis. There is no limit to the type and use of tools and techniques available, and each business and organisation will require and use these differently. Systems thinking equally provides a holistic vehicle and tool set for defining and communicating the descriptions of the real-world view and the enterprise architecture (as a conceptual view). Within this tools include Soft Systems Methodology, Rich Pictures, etc.

The Enterprise Design Conceptual Framework has proven to be a useful tool both for consulting and for learning pedagogy. Using this framework we can conceptualise an enterprise, build a model and differentiate it from its competitors or from other enterprise of the same or similar type. Because it is dynamic we can examine it at 'points-in-time’ over time and note the changes. EDCF enables us to take a holistic view of an enterprise and to examine the contribution of each element to its performance both dependently and independently as to its "fitness for purpose".

The framework can be used at different levels. It can be used to develop models at a generic or industry level and also to model a particular enterprise within that industry sector. With EDCF we can model the extended enterprise, taking note of its links to partners, suppliers, customers and other key relationships within its environment. Both in consulting and in teaching this provides a means of exposing clients and students to the dynamics of, and the intrinsic complexity of the modern enterprise.

All too often the tools that we use to describe or model an enterprise focus on one or other of its elements. We can define its value proposition and develop a business model, a marketing strategy, a data model, an organisation structure and an IT architecture. EDCF enables us to assemble these components and together with their physical manifestation within the infrastructure, examine their fitness for purpose and interactivity. We can set them in the context of the environment in which the enterprise exists and the relationships it has.

No enterprise exists in isolation. EDCF allows us to include partnering and strategic alliances. Here the framework enables us not only to examine the intent or purpose of the relationship, but also to consider the fitness for purpose of the tools and infrastructural elements that give it effect. Collaboration along extended supply chains may well form part of the strategic intent of the enterprise, but unless the appropriate infrastructure is in place to provide for synchronicity in messaging, semantic alignment and platform complementation then the performance will fall short of the purpose.

Both in working with clients and in teaching the EDCF has been used in differing ways. In teaching, case studies have been an important component of the learning process, whilst in consulting EDCF has proven a useful means of providing a holistic view of an enterprise to its participants who frequently have only a partial view and who are not always able to see their own contribution in context. From a pedagogic point of view, case studies employing EDCF benefit from a multi-disciplinary approach that can consider the strategic, financial, human and technical aspects of the enterprise.

Because EDCF enables a 'snapshot in time' of the enterprise, it can be considered in its present, past and future states. This has proved to be useful in three distinct ways:

- First of all it allows us to gain an insight into the enterprise as it is today and to fully articulate its purpose and intent. We can consider its strategies, models and plans as well as its markets, partners and relationships. We can consider the environment,
macro and micro in which it operates, its competitors, complementors, the economic and regulatory climate, the available technology and the readiness for change. We can then take account of its extant infrastructure, its assets: physical, financial, technical and human, and consider the agencies and influences acting upon it. Essentially this will enable us to 'Baseline' the enterprise (Willcocks, Petherbridge and Olsen, 2002).

- Secondly we can select a point in time past and carry out a similar exercise, developing a framework we can use to compare with the present. This will enable us to reflect upon the transition that we observe from then to now and to search for answers that will inform the present, answering the question of how we arrived at this point. Have wise choices been made or has the enterprise been slow to meet the challenges of the competitive environment or new technology. Have there been unintended or unanticipated consequences that have arisen from the implementation of technical innovation or organisational change.

- Thirdly we can use EDCF plan for the future, developing frameworks for future scenarios and to determine what needs to be changed. In particular we can focus on describing how an innovative. e.g an eBusiness initiative can create significant new value or unlock latent value understanding, the necessary changes required in the business model and infrastructure. Students can speculate on possible short, medium and long-term scenarios for the implementation of new initiatives and the level of success that might be achieved providing 'snapshots' at one year, two to three years and five years forward that describe the scenarios and explore the risks and opportunities for success.

So the EDCF is far more than a diagram. It is a modelling approach that allows us to conceptualise and describe the design of an enterprise and by use of many analysis and design tools to detail the model we may examine how this design, its people and its infrastructure is 'fit-for-purpose' and how it is adapting to the change agencies acting upon it.

Some of the tools that we can use with the EDCF include the "generic business model"\(^2\) associated with Howard Dowding, the eBusiness taxonomy of business models\(^3\) developed by the Massachusetts Institute of Technology and the Soft Systems Methodology\(^4\) associated with Peter Checkland. Whilst there are many more we can make use of these analysis and design tools to detail the model. References for these are set out below.

### Conclusion

The ultimate goal for the EDCF approach is far more complex and ambitious as a learning environment than is portrayed in this paper, and would see it become a true interdisciplinary framework of complementary investigation and tools. Where complementary approaches are assumed in order to derive new and novel concepts, methods and theoretical frameworks through the melding of these concepts when coming from different disciplines. Different academic disciplines have different values and perceive relevance to an issue, change or technology independently. Interdisciplinary complementation and learning acknowledges that there are different pieces of evidence relating to something and that these can be obtained under different conditions and constraints, and may not necessarily be understood by a single model or view.

In concluding, the complexity of enterprise and diversity of learning approaches (including disciplinary boundaries) should be no excuse when considering the essential social

\(^2\) [http://www.howarddowding.com](http://www.howarddowding.com)
\(^3\) [http://process.mit.edu/info/emodels.asp](http://process.mit.edu/info/emodels.asp)
constructions and impacts of enterprise. Such impacts can be minimised or removed with considered interdisciplinary scholarship of fitness-for-purpose using the EDCF approach.

REFERENCES