Chapter 1.6
Conservation of Information and e-Business Success and Challenges: A Case Study

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ABSTRACT

Guided by the authors' theory of the (COI), which holds that the transformation pairs of information uncertainty between time and frequency remain constant (or alternately uncertainty for geospatial position and spatial frequency), they describe a case study on an international corporation based in Taiwan to demonstrate COI factors associated with the challenges and successes in the adoptions of e-business by the firm and by small and medium size enterprises in general.

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BACKGROUND

e-Business is business exchanges on the Internet which utilize information and communication technologies to support business activities and processes. Beside regular selling and buying transactions, web-based customer service and collaboration with business partners are central components of e-Business.

Web applications are the glue joining Information Technology (IT) infrastructure with the business processes that e-Business services deliver to constituents. Reviewing web applications over the past ten years, scholars agree that more features are offered every year, producing more complexity as web design methods and technologies advance (Kung, Tung & Case, 2007). However, a Standish Group (2002) survey on web applications development shows that 84 percent of development projects do not meet business needs, 56 percent do not have the required functionality, 79 percent are behind schedule, and 63 percent are over budget. These challenges are especially hard on small to medium sized businesses.

We will use theory and a case study to discuss the challenges and successes that e-Business organizations face from ever evolving technologies, different e-business process requirements, different e-platforms, and different e-infrastructures.

THEORY

We review the state of interdependence theory and the evidence in support of it. This section engages in mathematical modeling. Whenever possible, we will summarize the results to minimize the need by readers for mathematics to better understand the material. In fact, the conclusion to draw is that understanding is a byproduct of a strongly independent worldview; an interdependent worldview, should one exist, precludes the existence of a "single understanding" or "situational analysis". Instead, the conclusion is that in an interdependent world, single perspectives or worldviews reflect human and cultural tradeoffs coupled to a residual, irreducible level of uncertainty. A single perspective in isolation is static, but two together, existing in a state of interdependence ($\imath$), can produce a potent dynamic. What follows is our approach to a theory of $\imath$.

In sum, dynamics are the result of competitive behaviors represented by the existence of two mutually incommensurable view points (Republicans and Democrats; conservatives and liberals; market economists and socialists; etc.). These polar opposite views serve many key but seldomly appreciated functions in society: Under conflict, we learn better (Dietz et al., 2003); we make better political decisions (e.g., Coleman, 2003); and we make better economic decisions (Hayek, 1944). But how can this conflict be modeled? And what relationship can be established to winning and losing across social, political or market landscapes?

A Hilbert Space (HS) is an abstract space defined so that vector positions and angles permit the calculations of distance, reflection, rotation and geospatial measurements, or subspaces with local convergences where these measurements can occur. That would allow real-time determinations of the situated, shared situational awareness in localizing the center of a target organization, $\sigma_{x\text{-}COG}$, to represent the shared uncertainty in social-psychological-geospatial terms, and σ_k to similarly represent the spatial frequencies of an organization's patterns displayed across physical space (e.g., the mapping of social-psychological or organizational spaces to physical networks). It would establish an "oscillation" between two socio-psycho-geospatial operators $\boldsymbol{A}$ and $\boldsymbol{B}$ such that

$$[\boldsymbol{A},\boldsymbol{B}] = \boldsymbol{AB} - \boldsymbol{BA} = i\boldsymbol{C} \neq [\boldsymbol{B},\boldsymbol{A}]. \quad (1)$$

This type of an oscillation defines a social-psychological decision space within an organization. It is called an "oscillator" because decision-making