

Applying a Technological Integration Decision Framework to Innovation Governance

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Innovation is the process of transforming an idea or concept into a functional and marketable value proposition reflecting creative opportunity.¹ Moreover, innovation is a total process of interrelated subprocesses.² Thus, innovation includes the creation of an idea or concept and subsequent implementation of the idea or concept as a perceived new product, process, service³ or strategy.⁴ Continually developing innovations could aid an organization in sustaining or acquiring a competitive advantage.⁵ However, enterprises often need an innovation framework to support organizational innovation governance.

Business leaders who seek to manage innovation must ensure that personal repositories of knowledge are accessible and available for collaborative efforts.⁶ "In order to benefit most from different types of partners, firms need to optimize external search strategies^{7,8} and adopt appropriate partnership governance systems."⁹ Knowledge sharing positively affects innovation performance and accidental knowledge leakage negatively moderates relationships.¹⁰ Consequently, organizations must balance the inevitable trade-off between knowledge sharing and governance mechanisms.¹¹ A contextual discussion will take place in the following sections concerning the framing of supply chain innovation strategies supporting innovation governance for

selecting appropriate knowledge sharing and governance mechanisms.

Sustaining Innovation Using a Technological Integration Framework

There are stakeholders and societies that assert that organizations have a responsibility to support environmental and social sustainability efforts in a financially responsible manner.¹² As a result, enterprise innovations may necessitate generating socially acceptable benefits and value appropriation. The implication of this is that organizations without sustainable business practices will face dwindling value propositions (and dwindling competitive advantage, by extension). In other words, innovation sustainability necessitates a technological integration selection framework to ensure effective innovation governance.

Regarding social responsibility integration, a powerful linkage exists between environmental compliance and green new product developments (NPDs).¹³ Nonetheless, there are problems associated with constructing sustainable supply chain capabilities in the era of global complexity.¹⁴ In response, enterprises have deployed processes to obtain competitive advantages through sustainable business practices—enhancing stakeholder perceptions of corporate citizenship and green technology during various product life cycle stages.

Supporting this perspective, it is worthwhile to consider the manufacturing of automatic teller machines (ATMs) through the product life cycle assessment (LCA) lens. The purpose of the assessment is to determine the overall impact the product has on the environment in support of environmental management and sustainability strategy development. Therefore, an LCA traces an ATM from resource extraction to disposal and incorporates associated byproducts in its evaluation.

National Cash Register Corporation (NCR) was pursuing competitive advantage through differentiation using a customer relationship strategy

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that employed global supply chain management using the product LCA lens. NCR gave funding priority to sustainability research and development programs creating new products and improving the manufacturing process. For instance, based on the LCA of ATMs, NCR was extracting energy in the ATM product construction process and creating various byproducts. Thus, NCR's ATM waste products were minimized by incorporating biodegradable materials wherever possible in the production process. Additionally, NCR also used recyclable packaging and packing materials. Last, non-biodegradable materials were becoming a part of NCR's recycling initiative.

Suppliers have a role in enhancing the manufacturer's ability to realize a successful green innovation in product development.¹⁵ Buyer management power assertion can occur through procurement tactics and coordination with the suppliers. Specifically, through leveraging buyer power applied to suppliers, management can influence energy consumption, renewable resource use, pollution, byproduct toxicity and final product component waste. As a compliance requirement, through logics management, organizations can ban suppliers that do not produce sustainable products from the authorized vendors list.

“APPLYING A TECHNOLOGICAL INTEGRATION DECISION FRAMEWORK ENABLES APPROPRIATE PLATFORM SELECTION FOR GOVERNING INNOVATION.”

Principal suppliers in green NPD for environmentally demanding customers and markets can bring environmental and commercial success.¹⁶ Moreover, a strategically close relationship of environmental collaboration between suppliers and the buying firm through technological integration play a role in NPD.¹⁷ Therefore, aligning the organization's



sustainability and business strategies and aligning the organization's management systems and environment performance strategies are critical to implementing effective innovation processes.

Affecting the business strategy is strategic intent directed toward the pursuit of innovation and imagining future endeavors that may lead to redefining an organization's core strategies and related industries.¹⁸ Core value chain activities typically influence business strategy through assessed capabilities.^{19, 20, 21} Cross-boundary industry disruptions may, in turn, change value networks to multisided markets.²² With the increased global competitiveness, development of platforms for IT disruptive advantage and sustainability is a top strategic issue for business leaders.²³

Selecting an Innovation Platform

Applying a technological integration decision framework enables appropriate platform selection for governing innovation. Platforms are technologies, products or services furnishing crucial resources, enabling the capability to build complementary technologies, products or services.²⁴ Multisided platforms (MSPs) encompass technologies, products or services connecting different types of customers to one another. An MSP is both a platform and a market intermediary.²⁵ For technologies, the IT architecture of a platform refers to technology priorities and choices allowing applications, software, networks, hardware and data management integration into a cohesive configuration.²⁶ As a business formation, organizations are market intermediaries when

employees engage in minimizing search and transaction costs for more than one group of players.²⁷

A few necessary steps can assist manager-leaders in setting a platform strategy. First, manager-leaders should decide whether to use an existing MSP, build their own platform, or do both. If the manager-leaders conclude that a third-party MSP can benefit the business, the manager-leaders must determine how many the firm should join. Once manager-leaders know which MSPs are appropriate for the organization, selection or rejection of features or services should occur to enable sustaining a competitive advantage. The enterprise that controls the MSP manages the interface between players and end users and dictates the rules of engagement.²⁸ Contextually, business formations can address disruptive IT from three abstraction levels employing the technological integration decision framework:

- Defender
- Prospector
- Analyzer²⁹

new.³² Recent theoretical and empirical research suggests organizations can simultaneously pursue efficiency and innovative adaptation through a process of ambidexterity.³³ Other strategy theorists suggest there are two strategic business alternatives besides adaptation when confronting a disruptive technology: racing or retreating.³⁴

However, organizational transformations can occur with the pursuit of two different efforts in parallel. An enterprise can reposition core business through adapting the current business model to meet customer needs in the altered market and simultaneously create a separate envisioned disruptive IT innovation that will enable future growth.³⁵ Beneficially, the dual transformation business strategy allows enterprises to harness disruptions repeatedly to build sustainability.

Three themes to guide business strategy development of platforms when addressing disruption are:³⁶

- Embrace disruption
- Build shared value
- Dare to be open

Prospector Strategy

Prospectors are change and uncertainty creators that require their competitors to respond, almost continuously seek market opportunities and possess flexible technologies.³⁷ Innovation intermediaries provide a filtering process for potentially disruptive technologies. Within the intermediary classifications, an often overlooked middle option between unvetted ideas and market-ready products are market-ready ideas developed by the innovation capitalist. Innovation capitalists pursue and evaluate product concepts in the inventor community, develop and refine those concepts, and market the results to organizations. Even so, many large organizations have traditionally acquired single-product enterprises to source innovation externally, particularly within the consumer products and technology sectors.³⁸

In contrast, some enterprises have sought market-ready products or businesses without the

“ CONTEXTUALLY, BUSINESS FORMATIONS CAN ADDRESS DISRUPTIVE IT FROM THREE ABSTRACTION LEVELS EMPLOYING THE TECHNOLOGICAL INTEGRATION DECISION FRAMEWORK. ”

Defender Strategy

It is common for disruptive IT to produce a response from the industries serving the same market.³⁰ Defender organizations pursue narrow product market domains and rarely make adjustments in their operational technology, structure or methods. They devote primary attention to enhancing efficiency.³¹ Some strategy theorists recommend that firms take an aggressive transformation approach by redesigning the business into something entirely

assistance of intermediaries. These enterprises typically provide a platform and the resources for start-ups or independent innovators to develop and sell their product ideas.³⁹ Beneficially, these firms can attract and carefully examine an innovative concept or businesses they might want to acquire through creating captive marketplaces or offering in-house incubation services for external ventures⁴⁰ by which radical changes in IT platforms have resulted in revolutionary and pervasive innovations in software development organizations across three innovation types:⁴¹

- Adopted base technologies
- Produced services
- Selected processes

“DISRUPTIVE IT BUSINESS STRATEGIES FOR COMPETITIVE ADVANTAGE AFFECT BUSINESS STRATEGIES AND ORGANIZATION PERFORMANCE.”

Analyzer Strategy

Analyzers function in two marketplace or product domain types, one stable and the other morphing. The analyzers behave like defenders in stable areas and like prospectors in morphing areas.⁴² As applied to IT, the business shaping strategy platforms provide leverage for participants, thereby reducing their risk. Beneficially, shaping platforms allow participants to do more with less. The shaping strategy platform transparently defines standards and practices to guide the activities of large numbers of participants. Additionally, the shaping business strategy fosters specialization among participants. Last, the shaping business strategy for disruptive IT enables increases in value and functionality as more participants join.⁴³

The IT industry commonly deploys an *ad-hocracy* organizational structure. Whereby, a primary *ad-hocracy* goal is fostering adaptability, flexibility, and creativity where uncertainty, ambiguity or information overload is typical. A significant challenge for these organizations is producing innovative products and services and rapidly adapting to new opportunities. A strong emphasis is placed on individuality, and risk taking and anticipating the future endure since almost everyone in the organizational *ad-hocracy* takes an interest in every functional aspect of the firm.⁴⁴ Given that NCR employees operate under a clan culture, management should deploy innovation governance using an MSP analyzer strategy to obtain a competitive advantage.

Conclusion

Disruptive IT business strategies for competitive advantage affect business strategies and organization performance. IT systems, processes, activities and tasks represent the critical support structure for effective information and communication configurations. Almost every organizational formation aspires to use technology for integrating information, achieving process efficiencies and transforming service delivery into a paragon of effectiveness.⁴⁵ However, most organizational formations have come to realize that emphasizing technologies and enterprise-centric solutions will not produce the desired results and a holistic approach is required.^{46, 47}

NCR's mission reflects a multisector organization with a second-to-none leadership position in each of their products and services, thereby exceeding the expectations of customers, employees and the community. NCR's vision of quality products and sustained services to every customer and user helps to align the organization's strategy for sustainability. NCR reduced costs by controlling waste and using the waste to generate byproduct products. NCR also has a strong organizational principle to maintain a pollution-free organization. However, NCR can create immediate value by reducing the level of raw material consumption for its principal products by using modern technologies. The presented technological integration decision framework can aid NCR in placing

organizational activities in perspective. Moreover, applying a technological integration decision framework to innovation governance can work toward creating and maintaining value and simplicity in strategy decision-making.

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