Enabling Bimodal IT: Practices for Improving Organizational Ambidexterity for Successful Innovation Integration

Completed Research

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Abstract

Practitioners and academics are introducing the concept of bimodal IT as a transformational approach for IT organizations to deal with rapid changing environments. Alignment and agility principles, long recognized as focal components of IT value, would need reframing in the context of the changing digital age. The study samples two cases in IT services companies. These companies have two customers (internal and external). We look into organizational enablement practices aiming to empower IT organizations to embrace innovations based on IT. We stipulate that IT organization in IT services companies, must sustain ambidexterity in their capabilities (exploration and exploitation), ambidexterity in their customer focus (externally and internally), and ambidexterity in organizational role whereby IT organizations are then able to lead business model innovation and become a welcome agent of change.

Keywords

Business model innovation, bimodal IT, ambidextrous organization, capabilities of exploration and exploitation, IT services.

Introduction

Today’s disruptive innovation technologies may outpace the firm’s ability to compete and/or manage the risk appropriately, without making significant changes to the business model. This issue is even more significant in the context of IT services companies that offer IT based services as both internally facing and customer facing services (Badr, 2015). Companies of IT services must tune their IT organization’s capabilities to the fast-paced technological change and react as much to the varying emerging technology landscape for the internal operation as to the ever-changing consumer requirements of the firms’ services (Miozzo and Grimshaw, 2011). Practitioners in IT organizations of IT services companies state challenges of prioritization and tension in resource allocation in face of the prevalent high risk of downtime in either customer facing or internal IT services when integrating technology innovation into the firm’s business model. Therefore, practitioners attribute a reluctance to integrate IT innovations in the operational infrastructure in part to the organizational ability to overcome the extant obstacles.

Recent research findings have suggested that an ambidextrous focus of the IT function is best suited to find a balance between opposing demands; Leonhardt et al (2107) have thus recalled the notion of organizational ambidexterity that enables IT organizations’ members to participate in business model innovation processes while simultaneously managing internal technology changes in the infrastructure (Tushman et al, 2010).

What practices would empower IT organizations in IT services companies in order to successfully integrate innovation?

This paper aims at further exploring practices for improving organizational ambidexterity for successful innovation integration, and further refining the conceptual bimodal IT construct (Horlach et al, 2016). Using learnings from two sites, our study explores practices by which IT organizations could leverage
their capabilities to transform themselves in a rapid changing environment and continue to provide value through innovation integration.

**Background**

Lately, practitioners and research have introduced the concept of bimodal IT in many forms, context and structures (Horlach et al, 2016). As a foundation, “Bimodal IT” was defined as the simultaneous existence of two modes of IT, “Traditional IT” vs. “Digital IT”, “Heavy IT” (databases) vs. “Light IT” (Mobile Apps), “Operational IT” (focused on security and stability of services) vs. “Innovative IT” (focused on business model innovation and digitalization). In a bimodal context, most of the attention in the literature to date, was given towards changing governance models, working methods and alignment mechanisms, in terms of agility and IT-business alignment (Haffke et al, 2017). Nevertheless, a strong connection was made between the transformative role of bimodal IT and the ability of the organization to balance exploitation and exploration capabilities in an ambidextrous approach to innovation integration (Haffke et al, 2017 a).

**IT Organizational Capabilities**

IT capability was conceived as the ability to enhance competitive agility by delivering IT-based products, services, and business applications increasing the firm’s capacity (Clark et al, 1997) and building sustainable competitive advantages (Bhatt and Grover, 2005). Closer to the technology implementation function, IT capability was described as the ability to diffuse or support a wide variety of hardware and software (Byrd and Turner, 2000). Competencies are built by combining such resources and capabilities (Grant, 1991) leading to the ability “to conceive, implement, and exploit valuable IT applications” (Mata et al., 1995, p. 491). Other references to IT capability, include the ability to respond to change and mobilize IT-based resources (Bharadwaj, 2000) in an industry leadership position (Teo and King, 1997); and the ability to effectively use IT tools and information to model, measure, and control business (Bharadwaj, 2000). For the background of this research, exploitation capabilities are operational level capabilities that reflect an ability to perform routine and required activities (Collis, 1994) within the IT function. Exploitation capabilities include fundamental processes of operation (i.e. key activities of change management, continual maintenance, release management, project management) with the required tools and key resources such as applications, information, infrastructure and people (Broadbent et al, 1999). Though both capabilities could be conceived as theories for learning (He and Wong, 2004), exploration capabilities are aimed at discovering new possibilities for innovation while capabilities of exploitation are intended to invest old knowledge (March, 1991) to realize operational effectiveness. Exploration capabilities are capabilities of learning and innovation (Lawson and Samson, 2001) reliant on information acquisition and transformation to collective knowledge assets (Legris and Collerette, 2006). Capabilities for innovation depend on organizational intelligence useful to manipulate information and reduce inherent uncertainty and ambiguity of innovation (Bocanet and Ponsiglione, 2012).

**Tackling the Dilemma of Ambidexterity**

Organizational ambidexterity is the ability for an organization to maintain alignment for current initiatives and be adaptive to change for future demands (Duncan, 1976). Organizational ambidexterity relates to the practice of maintaining a delicately punctuated equilibrium between the risk of wasting resources on solely explorative ideas and the failure to reach optimal levels of success by a strict focus on exploitation (Tushman and Romanelli, 1985). Successful ambidextrous organizations should be able to balance the hard elements (discipline and stretch) and the soft elements (support and trust) in their organizational contexts (Gibson and Birkinshaw, 2004). Ambidexterity is achieved by a continually learning organization that balances exploration and exploitation allowing for creativity and adaptability, while still relying on proven methods of business (March, 1991). From a structural ambidexterity’s view (depicting a dual function that integrates exploitation and exploration at the organizational unit level), organizations could solve the paradox by temporarily cycling through periods of exploitation and periods of exploration (McCarthy and Gordon, 2011) or even building multiunit organizations (Chebbi et al, 2015). Other approaches have suggested forming continuous innovation networks with members firms focusing on either exploitation or exploration that in total would achieve ambidexterity (Martini et al, 2013). Chandrasekaran et al (2012), studying 34 high technology organizations, showed that technology organizations’ ability to conduct simultaneous activities of exploration and exploitation was associated
with higher performance. Schreuders and Legesse (2012) describe five mechanisms that entrepreneurs can use to design and operate ambidextrous small technology firms. These mechanisms look into (1) attracting and adopting ambidextrous leadership, (2) leadership who could act as leaders, managers, and (3) attracting and retaining employees who can both explore and exploit, or (4) outsource one of the two functions, or lastly, (5) shifting resources across projects regardless of whether their goals are to explore or exploit. Such approaches are often unsuccessful, narrowly focused on specific organizational management concerns. In a similar approach, Pelagio Rodriguez et al, (2014) explore dimensions of organizational culture that foster greater innovation within teams in organizations (e.g. power distance in decision-making, collectivism as a measure of group cohesion). These organizational alignments could be ineffective, broad and context dependent (O’Reilly and Tushman, 2011).

**Organizational Ambidexterity and Innovation Management**

Paradoxes of innovation in contexts of strategic intent (profit-breakthroughs), customer orientation (tight-loose coupling), and personal drivers (discipline-passion), require an ambidexterity and place significant tensions on organizations for achieving exploitation and exploration (Andriopoulos and Lewis, 2009). Integration tactics (visions of synergies and purpose) and differentiation tactics (diversifying portfolios and different work modes) in the innovation creation help manage these interwoven paradoxes to fuel virtuous cycles of ambidexterity between exploration and exploitation (ibidem). In slow changing environments, there will be sufficient time to react to the radical changes by constructing dual structures and strategies (Raisch and Birkinshaw, 2008). This luxury fades in fast changing innovation contexts that require tighter alignment of internal organizational forces to integrate exploitative and explorative innovation activities as a means to generate higher levels of success (Agostini et al, 2016). Leaders must lead their team by increasing or reducing variance in their behavior and flexibly switching between those behaviors (Rosing et al, 2011) in support of innovation (Zacher and Rosing, 2015). They are to be watchful of the complexity and the pace of innovation (Ancona et al, 2001) meanwhile avoiding the spell of success traps that could shift the focus on their, historically successful, current business activities and stifle their innovation strategy (Walrave et al, 2011). Scarc literature on bimodal IT has summarized paradoxes of operation focused and innovation focused IT organizations offering descriptive organizational approaches to the IT function (Haffke et al, 2017). The next sections of the paper lay the foundation for a more prescriptive approach to bimodal IT. Then, based on concepts of ambidextrous organization capabilities, our study frames bimodal IT into three focuses of ambidexterity in organizational role, ambidexterity organizational function and ambidexterity in customer focus for innovation.

**Research Methodology**

The study is an in-depth case study research carried in two sites in line with similar work in IS case study research using two cases for a comparative study (Eisenhardt and Graebner, 2007). Both companies are hybrid B2B/B2C IT businesses offering IT based services as their customer facing services in the MENA region (MENA is a designation for the region of Middle East, Central Asia, Europe, North Africa and Lebanon). The two sites were purposefully selected to enrich the outcome of the study (Patton, 1990).

Explorations were conducted on location with IT organizations in Telecom Company A (established 1995), and in Application Hosting Services Company B (established 2006).

**Company A** extended their network delivering 3G/4G services to subscribers. New practices and processes had to be implemented in the IT organization (130+ employees with a 15-member organization) and the business adjusting the organizational and business model of sales, fulfillment and support to be able to leverage the application and support the newly offered services.

**Company B** (42 employees + outsourcing contracts) upgraded their data center technologies and support paradigms to provide a turnkey IT solution based on software as a service (SAAS). The IT management team with an organization of 12 employees, had to meet the trials of strict maintenance windows and space limitations with resource constraints, with a challenge to serve the internal IT needs and the needs of external customers, such as onsite support.
Both organizations have addressed reluctance issues with innovation integration, sparking an interest in this exploration. However there are some difference between both sites in the organizational size and the scope of integration which make it interesting to investigate potential cross-case findings. Company A and Company B differ in organizational size (Zmud, 1982) and maturity (Grover and Goslar, 1993). Though both companies were chosen to have similar characteristics in culture (Kwon, 1990) and international presence, in a preliminary exploration, these sites have presented variances into their approaches. In matter of scope of integration (Kwon and Zmud, 1987), Company B upgraded their customer facing services cloud computing technologies to provide a turnkey IT solution, whereas Company A adapted the way of doing business and changed the operational systems to support a new service provisioned to the client.

**Data Collection and Analysis**

Data collection activities combined interviews and brainstorming sessions (Hargadon and Sutton, 1997). Focus group workshops (Stewart et al, 2007) were conducted to gather collective knowledge on the topic and stimulate the organizational memory. Focus group topics and semi-structured interview questions were prepared in advance in an effort to reduce cognitive bias, maintain the reliability, stability, accuracy, and precision of the data collection process (Creswell and Miller, 2000). A case study protocol laid out a schedule of activities that started with a preparatory meeting with the site contact at each company, followed by a three stage data collection to capture the most information possible in a discovery workshop (stage 1), then triangulated collected data through semi-structured interviews with the management teams of each site (in stage 2). In total, 15 informants from each company contributed to the study including project managers, IT administrator, support analysts and technical team leaders. Finally, transcripts of collected data were validated in the final discussion workshop (in stage 3).

A research instrument prepared a list of questions. Questions asked were in direct connection with the research question:

- PrepQ1: What challenges does the IT organization face when supporting both internal and external customers?
- PrepQ2: What is the role of IT leadership in reducing the reluctance of your IT organization to integrate innovation?
- PrepQ3: What components of the IT Strategy have you considered in order to reduce the reluctance of the IT organization?
- PrepQ4: Can IT organizations be a lever rather than a barrier to innovation based on emerging technology in IT? How?
- PrepQ6: Can the IT organization be a lever rather than a barrier to radical innovation based on emerging technologies in IT? (same question asked in Stage 1 and Stage 2 for different audiences)

In the discovery workshop (stage 1), activities were structured into queries that ask the question in different ways in an attempt to capture the most detail possible. Applying the nominal group technique (Boddy, 2012), index cards were distributed. On these cards each participants recorded their own input to the questions. Group exercises concluded by collecting the cards and revealing the model “general categories” closely reading the text and identifying themes. The first round of data analysis followed an inductive approach to “establish clear links between the research objectives and the summary findings derived from the raw data and to develop a model about the underlying structure of experiences or processes that are evident in the text data” (Thomas, 2006; p.238). In the second stage, these general themes were refined through another round of interviews with the leadership team. Lastly, in the third stage, the final draft of the model was introduced in a discussion workshop with the participants to complete the proposed model. Case study transcripts were reviewed by the participants in a form of member checking (Lincoln and Guba, 2000); in order to establish trustworthiness of the outcome, and assess the truthfulness of the study as seen by the stakeholder participants, thus enriching the credibility (Yin, 1994) of the research.

Data analysis investigated potential data correlation through a predefined coding system (Miles and Huberman, 1994) in order to organize the data and provide a means to introduce the interpretations (Strauss and Corbin, 1990). A step by step 'Key Point’ coding technique was applied to the interview transcripts (Allan, 2003), and relevant concepts are identified. These concepts were categorized as “Key
Concepts” (i.e. Code). This coding techniques started with seed codes from the related literature relating bimodal IT to IT - Business alignment (Haffke et al, 2017), organizational transformation (Haffke et al, 2017a) and business model transformation; customer engagement (Den Hertog et al, 2010), and the required cross organizational communication (Cash et al, 2008) for successful innovation integration and business value creation.

**Research Findings and Discussion**

The concepts outlined in this study extend practices for an ambidextrous IT organization that could balance between exploration capabilities to learn and innovate and exploitation capabilities with and across organizations to implement and execute (Lavie et al, 2010) with a keen interest in maintaining IT service levels (Pasche and Schnappinger-Gerull, 2006). The concepts that were extracted from the empirical data are shown in tabular form (Table 1) and in flowchart form (Figures 1 and 2). Such representation is effective in integrating the themes in a form that would yield greater clarity with a succinct list of useful practices and correspondingly recognized benefits. The concepts shown are common to both companies. Though both companies have specifically identified customer engagement as enabler to successful innovation, Company B reported a higher emphasis on external customer engagement, this was attributed to the scope of disruption caused by the technology implementation (see Site Selection).

<table>
<thead>
<tr>
<th>Theme</th>
<th>Mechanisms &amp; Practices</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internally facing</td>
<td>Two way IT - Business Alignment (Haffke et al, 2017)</td>
<td>Training of IT in both technology and in the related business aspects</td>
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<td></td>
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<td>IT participation in the business decisions</td>
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<td></td>
<td></td>
<td>The IT organization took part in the strategic trend setting capacity of the organization</td>
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<tr>
<td>Organizational Transformation (Haffke et al, 2017a)</td>
<td>The opportunity to lead internally reportedly raised the “confidence” of the business in IT organizational capabilities and encourages the IT organization to embrace the new technology</td>
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<tr>
<td>Business model Transformation</td>
<td>IT team able to introduce process automation initiatives and be a leader in the company's business model innovation.</td>
<td>IT became an agent of change, elevating the value of IT in the organization and innovating the business.</td>
</tr>
<tr>
<td>Externally facing</td>
<td>Customer engagement as Stimulus (Den Hertog et al, 2010)</td>
<td>Reinforce the consultancy skills of the engineers towards the customer base.</td>
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<td></td>
<td></td>
<td>Workshops of information exchange with the customer increased the awareness about customer issues</td>
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<tr>
<td>Cross organizational communication (Cash et al, 2008)</td>
<td>A continual communication between internal facing and external facing IT teams - Use of knowledge management tools.</td>
<td>This was an incentive for the IT organization to handle innovation implementation with knowledge of the impacts it had on the customer.</td>
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<td></td>
<td>Deployment of Case management and monitoring tools</td>
<td>Provided feedback from the customer into the business planning</td>
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<td></td>
<td>IT shared lessons learned from solving customer issues with the business</td>
<td>Bringing forth recommendation to drive more business through new products and services.</td>
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<tr>
<td>Value creation</td>
<td>Expanding the innovative aspect of the service offerings to the customer</td>
<td>IT extends the value offering to the customer bolstering the competitive edge of the company</td>
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**Table 1. Practices that empower bimodal IT to successfully integrate innovation**

**Leading Internally**

When innovating a business model, IT organizations and their leadership, endure multi-dimensional challenges, especially in IT services companies. These IT organizations must participate in the success of their host companies in an effort to lead IT based innovation, internally and externally. The informants of the empirical study have delineated practices for transforming organizations to bimodal IT by emphasizing a two way IT - business alignment (1) as a motivator for IT organizations to shape their technical and analytical capability and become enablers of innovation and (2) as an opportunity to embed...
visionary and forward looking IT solutions into the firm’s business model. Cross organizational communication mechanisms are essential to transform information from the front line IT facing the customer, to the internal IT function, resulting in a capability to innovate the firm’s business model. This would lead to expanding the innovative aspect of the service offerings to the customer and bolstering the competitive edge of the company. Informants from our study explained how IT organizations became agents of change, elevating the value of IT in the organization and innovating the business (Figure 1).

**Figure 1: Leading Internally**

The case study has revealed that through training of IT in both technology and in the related business aspects, IT organizations in the IT services industry would be able to shape their technical and analytical capability (i.e. analysis of the business requirements and business value of technology) and become enablers of innovation. IT organizations integrated themselves in the business innovation process of the business. They previewed the business and technical benefits of potential solutions. This was an opportunity to embed visionary and forward looking IT solutions into the firm. The IT team was involved in all new systems introductions and the IT organization, in the case of the BPM implementation, was able to introduce process automation initiatives and be a leader in the company’s business model innovation. Through engagement at the level of the firm’s management team, the IT organization took part in the strategic trend setting capacity of the organization, which encouraged the members of the IT organization to embrace the new deployment. The opportunity to lead internally reportedly raised the “confidence” of the business in IT organizational capabilities and encourages the IT organization to embrace the new technology. IT became an agent of change, elevating the value of IT in the organization and innovating the business. The IT organization was then empowered to drive the next phases of the implementation of the IT based business innovation.

**Leading Externally**

Ambidextrous IT organizations bring forth recommendations to drive more business through product and services aligned with the market needs (Figure 2). They do that through a distinct focus on open service innovation approaches (Den Hertog et al, 2010) using customer engagement as a motivator. They exploit lessons learned from solving customer issues and formalize them with the use of knowledge management tools to strengthen the learning capability of the organization. Subsequently, effective cross-organizational communication practices diffuse the acquired knowledge internally expanding the innovative aspect of the service offerings to the customer. From the empirical findings, we learned that IT organizations focused on enhancing the consultancy skills of the engineers. Their exposure as a consultant
with the external customer motivated their creativity as they started driving the innovative ideas through to the business strategy.

![Leading Externally](image)

**Figure 1: Leading Externally**

On the operations side, and in close communication with the customer-facing support teams, the IT organization was aware about customer issues. Case management and monitoring tools provided feedback from the customer into the business planning to drive alignment of the objectives of the business. This was an incentive for members of the IT organization to handle the implementation of emerging technologies on IT with the knowledge of the impacts it had on the customer. The participants reported that the IT reluctance phenomena extending to their customers hindered their ability to provide their services to these customers. The task for the IT organization was then also to participate in learning workshops held with the customers. These workshops reduced the customer reluctance to adopt the technology. To close the loop, IT shared lessons learned from solving customer issues with the business as they brought forth recommendation to drive more business through new products and services. These practices stimulated the creativity of the IT team, as a motivation to start driving the innovative ideas through to the business strategy. IT leadership managed to push other concepts that were originally outside the scope of the current project, extending the value offering to the customer and expanding the innovative aspect of the solution, eventually driving a niche service offering to the market and bolstering the competitive edge of the company.

**Capability Transformation of an Ambidextrous Bimodal IT Organization**

Internally, through effective IT - Business communication, the IT organization gains awareness of business needs and priorities (Haffke et al, 2017) enabling it to deliver innovative business value beyond the initial expectations of the business model.

Externally, IT organizations have the propensity to embed visionary and forward-looking solutions business decisions through ideas for new products and services. IT organizations strive to get closer and collaborate with their external customers as well. This practice unlocks the prospect at some customers to push the business to offer the services provided by a specific technology providing customer engagement as a stimulus for innovation (Den Hertog et al, 2010). The IT organization is then motivated to scan for emerging technologies and evaluate them. The IT manager grips the new challenge and drives the process of integration of the emerging technology through feasibility studies, and small-scale proof of concepts implementations. The opportunity to lead through this external exposure and collaboration enabled IT to bring forth recommendations to drive more business through the innovation of the products and service platform. Nevertheless, in spite of the advantages of value creation through customer learning, issues of costs, customer readiness, degree of involvement and skills challenge such collaboration persist. Furthermore, the varying scope of disruption caused by different technology implementations is a factor in driving varied levels of external customer engagement.
Conclusion

Implications in Practice

When innovating a business model, IT leadership and IT organizations, endure multi-dimensional challenges, especially in IT services companies. These IT organizations must participate in the success of their host companies in an effort to lead IT based innovation, internally and externally. The findings of this research have the potential of transforming the IT organizations of IT services companies. We recognized key benefits from multiple modes of ambidexterity, one of which is focused on the role of an IT organization that is engaged in internal and external facing innovations, as explained by the IT leadership of both companies. IT organizations of IT services companies would need to become ambidextrous organizations, leading internally and externally as a lever of IT innovations, reconfiguring key activities and resources, and exploiting the tacit knowledge of their customers (internal and external). Practices suggested in this paper prepare the IT organizational settings in IT Services to lead the innovation direction in collaboration with the consumers of their companies’ products and services in order to drive effective digital transformation. The opportunity to lead internally reportedly raised the “confidence” of the business in IT organizational capabilities and encouraged the IT organization to embrace the new technology. This organizational transformation eases the realization of bimodal IT (Haffke et al, 2017a), improving organizational ambidexterity for successful innovation integration.

Contribution to Theory

Furthermore, findings of this study sharpen the lens of bimodal IT research (Horlach et al, 2016) to extend agility and alignment contexts into a multifocal ambidexterity construct. We stipulate that IT organization in IT services companies, must sustain ambidexterity in their capabilities (exploration and exploitation), ambidexterity in their customer focus (externally and internally), and ambidexterity in organizational role whereby IT organizations are then able to lead business model innovation and become a welcome agent of change.

Limitations

Essentially, the paper is part of a larger research effort exploring mechanisms of innovation integration employed by IT organizations (Badr, 2015; 2016). This paper addresses challenges in IT services companies. Case study limitations related to a two-case research and other contexts such as culture and industry can be recognized. Additional fieldwork would examine the applicability of the study in other cultural, organizational and other contexts, in order to strengthen the practice implications of the concepts introduced by this study (Rosemann and Vessey, 2008). Academic researchers in IT innovation, MIS, organizational dynamic capabilities and resource-based views would find the opportunity to exploit the findings through interesting quantitative and qualitative projects.

REFERENCES


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