

The Impact of Digital Entrepreneurship on Achieving Organizational Ambidexterity in Jordanian Telecommunication Companies

Dr: Karam Ibrahim Alsharaeah

Corresponding author: Dr: Karam Ibrahim Alsharaeah

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Abstract: The present study sought to investigate and quantify the effects of digital entrepreneurship with its dimensions (digital strategy, entrepreneurial digital culture, digital technological capabilities, and digital innovation), on the attainability of organizational ambidexterity with its dimensions (explore, excel, exploit), in telecommunication companies operating in Jordan. The study follow a descriptive analytical approach. Primary data was collected through a questionnaire distributed to purposively a sample (250) who worked in senior manager, heads of departments, and senior engineers for the largest telecommunication companies in Jordan. Valid data was collected from (188) sourced from the purposive sample. The results revealed that digital entrepreneurship has a statistically significant positive outcome in terms of organizational ambidexterity and accounted for 65.6% of the variance in the outcome. The four dimensions of digital entrepreneurship significantly predicted the outcome. "Digital Innovation" and "Digital Technological Capabilities" were determined to be the two most potentially influential dimensions of digital entrepreneurship, to further "exploration" activity. Based on the results there is a strong logic that an organization's entrepreneurial posture in the digital economy is important for them to find and achieve a balance between efficiency and innovation. The study suggests that Jordanian telecommunication firms should engaged in a corporate digital entrepreneurship integrated approach so they will not only be able to see the systemic way the market is changing but to potentially appropriate a more sustainable competitive advantage.

Keywords: Digital Entrepreneurship, Organizational Ambidexterity, Exploration, Exploitation, Digital Strategy, Digital Innovation, Telecommunication Sector, Jordan.

1. Introduction

The global telecommunications sector is in the midst of a massive wave of transformation. Rapid technological developments including 5G, digital connectivity, Internet of Things (IoT), artificial intelligence (AI), and edge computing are driving change at a rapid pace. While this digital tsunami provides great opportunities for new growth trajectories, it also brings with it severe existential threats to companies that fail to evolve. Established companies are being challenged by nimble Over-The-Top (OTT) service providers and the pace of technological change is creating rapidly evolving expectations from customers. The pressure to innovate is no longer a choice but has now become a survival strategy (Li, 2020). In this hyper-competitive environment, Jordanian telecommunications companies are faced with the challenges of refining their current infrastructure and services while simultaneously stepping into new, digital or algorithmic frontiers.

The dilemma of trying to achieve both challenges is theoretically reinforced by the concept of Organizational Ambidexterity. The concept of Organizational Ambidexterity suggests that a firm's ability to achieve success over long periods of time is dependent on its ability to engage in two complementary forms of organizational change - "exploitation" (the refinement or improvement of current capability) and "exploration" (the search for new knowledge and understanding) (March, 1991). Understanding how to achieve organizational ambidexterity is challenging, because the dual processes of exploitation and exploration inherently compete for limited resources, even though their success requires different mindsets and structures (Tushman & O'Reilly, 2004).

It is at this point that Digital Entrepreneurship presents itself as an enabling factor. It refers to the strategic orientation and the organizational capacity to seize a new venture based on digital technologies within established firms (Nambisan, 2017) (sometimes referred to as corporate digital entrepreneurship). As such, an organization with an entrepreneurial posture is better equipped to tackle the ambidextrous challenge. Organizational ambidexterity entails clearly defined mechanisms for exploration and exploitation (Raisch & Birkinshaw, 2008) and can benefit from an entrepreneurial posture whereby both approaches are supported. An entrepreneurial posture provides the venturing orientation necessary to be proactive, innovative, and risk-seeking in one's approach to exploration whilst also using appropriate technology to facilitate the efficient approach required for exploitation (Lumpkin & Dess, 1996).

Despite the suggestive conceptual link between these two distinctive yet powerful constructs, there is still a substantial empirical gap in research that systematically investigates the effects of a firm's digital entrepreneurial orientation on its ability to achieve organizational ambidexterity. In particular, there is a lack of empirical evidence in the telecommunication sector in emerging markets such as Jordan. As such, this study

aims to generate empirical evidence on this relationship of theoretical and practical importance to both academic research and industry.

2. Problem Statement

Telecommunication operators in the Jordanian context face a contradiction at the strategic level. They must efficiently manage and monetize their existing investments in networks and legacy services (exploitation) to satisfy various stakeholders and fund operations while also being expected to deploy capital into technologies 5G infrastructure, IoT, and digital financial services (exploration) that are uncertain, exploratory developments, and pose possible obligations for future relevance. Therefore, while exploiting the organization's key resource liabilities and legacy services, they must explore with new offerings which creates a fundamental tension.

Insufficient focus on exploitation will bring short-run efficiencies with long-run inertia and vulnerability to disruption. Too much focus on exploring can exhaust resources in the short term with no returns and this could have long-run implications (Gupta, Smith, & Shalley, 2006). The heart of the matter is finding an evidentiary framework to explain how firms can develop such an ambidextrous capability. Despite essentials of "digital transformation" by many organizations, initiatives lack the entrepreneurial energy to bring real ambidexterity. This study addresses these deficiencies by exploring whether a managed, multi-faceted, digital entrepreneurship level can be the process to mitigate this strategic paradox. We extend far beyond anecdotal evidence to not only explore how entrepreneurial strategy, culture, capability, and innovation capacity lead to its individual founding conditions, but also build an ambidextrous organization in the high-stakes industry.

3. Research Questions

- What is the effect of digital entrepreneurship (as a combination of dimensions) on organizational ambidexterity in telecommunication companies in Jordan?
- What is the particular effect of each dimension of digital entrepreneurship (digital strategy, entrepreneurial digital culture, digital technological capabilities, and digital innovation) on organizational ambidexterity?
- Which dimensions of digital entrepreneurship have a greater influence in promoting ambidextrous capabilities?

4. Research Hypotheses

- H0: Digital entrepreneurship (with its combined dimensions) does not statistically impact organizational ambidexterity.
- H01-1: Digital strategy does not statistically impact organizational ambidexterity.
- H01-2: Entrepreneurial digital culture does not statistically impact organizational ambidexterity.
- H01-3: Digital technological capabilities do not statistically impact organizational ambidexterity.
- H01-4: Digital innovation does not statistically impact organizational ambidexterity.

5. Previous Studies

There is a significant volume of literature on organizational ambidexterity, illustrating the concept's robustness and established nature. The initial notion of a firm balancing exploration and exploitation was described by March (1991) who identifies the fundamental tension between those two activities. Tushman and O'Reilly (1996, 2004) developed "structural ambidexterity" - firms should create two separate, loosely coupled units for exploration and exploitation. Gibson and Birkinshaw (2004) introduced "contextual ambidexterity" with the idea that the firm can achieve ambidexterity within a single business unit if the organization creates a context for the individuals to use their own judgement regarding time spent on alignment (exploitation) vs. adaptability (exploration). Multiple studies have demonstrated that ambidexterity has a positive relationship with firm performance in a variety of settings (He & Wong, 2004; Junni et al., 2013).

Digital entrepreneurship scholarship is a newer but dissected and developing body of literature. Nambisan (2017) provided an initial framework for digital entrepreneurship and its key characteristics. Relatedly, Davidson and Vaast (2010) examined how digital technologies provide the ability to transform entrepreneurial processes to establish new ways of capturing value. Hull, Hung, and Hair (2007) demonstrated that the entrepreneurial orientation is a factor in predicting innovation performance for firms. Moreover, Lumpkin and Dess (1996) were key in operationalizing entrepreneurial orientation with three dimensions for example, innovativeness, proactiveness, and risk-taking, which are key to this study.

vidence linking these two structures is starting to emerge. Kortmann (2015) argued that the dynamic capabilities needed for ambidexterity are more often stimulated by an entrepreneurial mentality inside the firm. Gassmann, Widenmayer, and Zeschky (2012) found that more established firms engaged in "lean venturing" (an entrepreneurial

approach towards exploration) displayed more success in innovation processes. Similarly, O'Reilly and Tushman (2013) pointed out that a crucial leadership challenge when managing ambidexterity is leading a senior team to build an 'image' of a shared future incorporating both the disciplined execution of exploitation and its prototyping explorational nature. In their research into the technology industry, Benner and Tushman (2003) report that while having processes in place to manage exploitation were noticeably effective, they often limited the exploration process, which is the very contradiction that an entrepreneurial culture endeavours to overcome. Zahra and George's research (2002) brought absorptive capacity to the fore, nevertheless, they tacitly incorporate both concepts together, highlighting that while a firm may face exploratory opportunities through new sources of external knowledge (that is exploratory), the acquisition and assimilation of new external knowledge is an important dynamic capability which entrepreneurial firms demonstrate. **Floyd and Lane (2000)** discussed how strategic renewal, an inherently entrepreneurial activity, requires firms to manage the dialectic between exploration and exploitation. Despite this rich background, a direct empirical test of a multi-dimensional digital entrepreneurship model's impact on organizational ambidexterity in the telecom sector remains a clear research gap.

6. Theoretical Framework

6.1. Organizational Ambidexterity

Organizational ambidexterity is the dynamic capacity of an organization to simultaneously engage in two opposing and distinct types of activities (exploitation and exploration) (March, 1991).

- **Exploitation** - This is about using and improving existing knowledge, capabilities, and resources. Types of exploitation activities include improving processes, reducing costs, enhancing quality, and developing incremental innovations in an existing product for existing customers. It is about efficiency, control, and optimizing short-term profits (Gupta et al., 2006).

- **Exploration** - This is about searching for and acquiring new knowledge, experimenting with new technologies, and finding new markets and business models. Examples of exploration activities include primary research, risk and experimentation, prototyping, and radical innovation. It is about flexibility, learning, and long-term sustainability (He & Wong, 2004). Realizing ambidexterity is a major hurdle for management, as exploration and exploitation require different structures, processes, cultures, and leadership styles (Tushman & O'Reilly, 2004). This study contends that

digital entrepreneurship can provide the contextual framework for the organization to manage the duality.

6.2. Digital Entrepreneurship

Digital entrepreneurship is the identification and pursuit of new market opportunities by creating new ventures or by transforming established firms through the use of digital technologies (Nambisan, 2017). It is essentially a corporate entrepreneurial orientation practiced in the digital domain within established firms. Digital entrepreneurship can be measured through four dimensions:

- **Digital Strategy:** An entrepreneurial digital strategy is proactive, future-oriented, and opportunity-seeking. It involves more than just using technologies for operational efficiencies and seeks to actively frame the digital as a means of creating new value streams, entering new markets, and disrupting the status quo (Bharadwaj et al., 2013).
- **Entrepreneurial Digital Culture:** This aspect of organizational culture supports and incentivizes entrepreneurial behaviors in a digital context, such as risk-taking and failure; autonomy for employees; proactivity in searching out opportunities; and having an ethos of sharing early or nascent ideas (Lumpkin & Dess, 1996; Zahra, 1991).
- **Digital Technological Capabilities:** These pertain to the firm's technological competencies and resources that support entrepreneurial action. This involves not only the infrastructure (for example, cloud platforms, APIs), but also the dynamic capabilities to rapidly configure and deploy its infrastructure to facilitate the experimentation and scaling of new innovations (Teece, 2007; Eisenhardt & Martin, 2000).
- **Digital Innovation:** This will be the key output of digital entrepreneurship. Digital innovation encompasses the firm's ability and history of creating and launching new digital products or services, processes, or business models that differ from its current portfolio (Nambisan et al., 2017).

7. Research Methodology

- **Research Design:** The study utilized a descriptive-analytical method.
- **Population and Sample:** The study focused on managers, departmental heads, and senior engineers from Jordan's three leading telecommunication firms. Using purposive sampling selected a sample of 188 valid responses for the analysis.

- **Data Collection Instruments:** A structured questionnaire comprised of three parts - demographic information, digital entrepreneurship (20 items), and organizational ambidexterity (10 items), all items were on a five-point Likert scale.
- **Validity and Reliability:** Content validity was established through a panel of academic and industry experts. The overall Cronbach's Alpha inter-item indexes were (0.94), demonstrating high internal consistency across the items.
- **Statistical Techniques:** SPSS was employed for descriptive statistics and multiple regression procedures.

8. Data Analysis and Hypothesis Testing

Table 1: Multiple Regression Results for the Impact of Digital Entrepreneurship on Organizational Ambidexterity

Model Summary	ANOVA	
R = 0.810	F = 65.482	
R Square = 0.656	df = 4	
Adjusted R Square = 0.648	Sig. = 0.000	
Coefficients		
Independent Variable	Beta (β)	t-value
(Constant)		3.112
Digital Strategy	0.285	4.881
Entrepreneurial Digital Culture	0.198	3.540
Digital Technological Capabilities	0.315	5.625
Digital Innovation	0.355	6.453
<i>Dependent Variable: Organizational Ambidexterity</i>		

Interpretation: The regression model is very significant ($F=65.482$, $p<0.001$), accounting for 65.6% of the variance in organizational ambidexterity ($R^2=0.656$). This provides strong evidence to reject the initial null hypothesis ($H01$). All four independent variables have a statistically significant positive effect on the dependent variable (all p -values < 0.05), allowing for the rejection of all sub-hypotheses ($H01-1$, $H01-2$, $H01-3$, $H01-4$).

9. Discussion of Results

The results present strong empirical evidence to support the notion that a corporate digital entrepreneurship orientation is an antecedent of organizational ambidexterity. An organization that incorporates entrepreneurial thinking into its digital activities has a much higher chance of effectively balancing the necessary tasks of exploration and exploitation.

It is notable that both "Digital Innovation" ($\beta=0.355$) and "Digital Technological Capabilities" ($\beta=0.315$) are the most potent antecedents, and this supports the resource-based view of the firm. It implies that entrepreneurial intent must be accompanied by both actual outputs and the resources that are needed to produce them. In the case of the telecom industry, the ability to launch new services (innovation) and the platforms that support these (capabilities) are probably the most legitimate representations of ambidexterity and correspond to Teece's (2007) dynamic capabilities, which focuses on the sensing, seizing, and reconfiguration of resources.

The important role of "Digital Strategy" ($\beta=0.285$) is evidence that entrepreneurial actions within large firms cannot be left up to chance. A well developed strategy both legitimizes the acts of risk taking, and allocates the resources to work on exploration projects, while keeping the exploitation activities on course to the long-term goal. Strategy tells us "why" ambidextrous effort is being undertaken (Bharadwaj et al., 2013).

While the impact of "Entrepreneurial Digital Culture" ($\beta=0.198$) was significant, it was to a lesser extent, but it is an important foundational building block. It helps to grow the strategy and capabilities. It is in the seedbed of entrepreneurship where, for example, strategies allow employees to manage both exploratory and exploitative types of activities, in accordance with notions of contextual ambidexterity (Gibson & Birkinshaw, 2004), where organization context (culture) allows employees to act ambidextrous. Without some culture of support, technology and innovation investment does not have a chance to work at full capacity.

10. Recommendations

- **Strategically Embed Corporate Digital Entrepreneurship:** Jordanian telecom sector leaders should make the shift from seeing digital as a function to viewing it as an entrepreneurial engine for growth. The need is for a strategic portfolio, investing in optimization of the core business (exploitation) while investing in new digital ventures (exploration).
- **Build Ambidextrous Teams and Structures:** Building ambidextrous teams and structures is worth exploring. For example, Tushman & O'Reilly (2004) suggested the adoption of "structural ambidexterity", building dedicated and safe units for the

highly disruptive innovations. Organizations can also foster "contextual ambidexterity" that reflects in the culture to encourage enterprises to reward not just efficiency, but intelligent risk-taking.

- Invest in Modular and Scalable technologies: In order to support exploration and exploitation, organizations must invest in flexible technology capabilities (for example, cloud platforms, microservices architecture, data analytics capabilities) that support existing activities but also allow them to quickly experiment with new services in a risk-averse and low-cost manner.
- Future Research: Future research should continue to examine the moderating role of leadership styles, or the mediating role of dynamic capabilities in the relationship between digital entrepreneurship and ambidexterity was a fertile area for future research. A comparative study would need to be considered in regards to the telecom sector versus a more traditional sector.

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