Disruptive Innovation in the Middle Eastern FinTech Sector: Resource-Based View

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ABSTRACT

Building on prior suggestions concerning corporate resources as causes of disruptive innovation for increasing competitive advantage in developed economies, this research empirically re-investigated such assumptions in emerging markets. Through the theoretical lens of the resource-based perspective, the current research examined the perceived impacts of four different corporate resources (financial, human, organizational, and technological capital resources) on disruptive innovation that subsequently leads to increasing competitive advantage. A mixed-method design was utilized. The first study followed a quantitative approach (surveys; n= 154), whereas the second study followed a qualitative design (interviews; n= 16). Both studies targeted two different FinTech summits in the Middle East. This research delivered a new perspective and understanding concerning how Middle Eastern FinTechs perceive capital resources as causes of disruptive innovation for increasing competitive advantage.

KEYWORDS

Competitive Advantage, Corporate Resources, Mixed-Method Design, Performance Measurement

INTRODUCTION

In modern times, the financial service industry provides diverse functions of financial and economic activities (e.g., retail and commercial lending, mortgage banking, consultancy, asset management, equity finances, insurances, etc.). American and European surveys show that the financial service industry accounts for almost 8% GDP of the US economy and 5% GDP of the European economy (Eurostat, 2017; SelectUSA, 2017). Nevertheless, the industry has recently been introduced to numerous technological innovations and disruptions that have transformed the capabilities and resources involved in performing the demanded and operational tasks (Abhishek, Geng, Li, & Zhou, 2017). As a result, multiple sectors emerged, such as energy consumption, internet of things (IoT), virtual reality, and FinTechs.

This research focuses on the FinTech sector, which has emerged from the rapid integration of technology. FinTechs, technology-based financial services providers, are modernizing how banking and financial services are managed with minimal costs (Chuen, Lee, & Teo, 2015). Examples of
innovations incorporated within such financial services are blockchain technology, machine learning, trading platforms, and mobile payments (Philippon, 2016). Practically, the FinTech sector is grounded in the concept of innovation that involves three main pillars (i.e., availability of corporate capital/resources, direct involvement with the consumers through new technologies and services, and higher degrees of digital personalization based on data analytics) (Gozman, Liebenau, & Mangan, 2018). The first pillar is the interest of this research that comprises financial capital resources, human capital resources, organizational capital resources, and technological capital resources.

Technological innovation, as one of the three main aspects of the FinTech uprising and financial services operations, has become a critical element for organizational development, growth, and overall performance (Gomber, Kauffman, Parker, & Weber, 2018). Research conducted by the World Bank (2015) showed that most emerging markets have higher indicators for exploiting the concept of disruptive innovation than developed markets because of limited access to financial services, high barriers of entry, and low penetration rates. It is suggested by Diemers, Lamas, Salamat, & Steffens (2015) that disruptive innovation has more impact on emerging markets than developed markets. Despite a handful of studies investigating the impact of disruptive innovation in developed markets (e.g., Mills & McCarthy, 2017), there are limited findings in the context of emerging markets (e.g., Diemers et al., 2015; Zalan & Toufaily, 2017). Furthermore, studies related to emerging markets context, the relationship between capital resources and performance received much attention, whereas the relationship between capital resources and competitive advantage remained untested. To address such scarcities in the literature, the current research attempts to answer the following main research question:

**RQ:** In the Middle Eastern FinTech sector, are corporate resources perceived as significant causes of disruptive innovation for increasing competitive advantage?

Drawing on the resource-based theoretical perspective, the current research develops and tests a model consisting of four different corporate resources (financial capital resources, human capital resources, organizational capital resources, and technological capital resources) as antecedents, disruptive innovation as a mediator, and competitive advantage as an outcome with performance measurement as a moderator. For the testing of the six proposed hypotheses, a multi-method design (quantitative and qualitative) is utilized. Study 1 focuses on surveying 154 participants from a FinTech summit in the U.A.E., whereas Study 2 focuses on interviewing 16 participants from another FinTech event in Bahrain. Study 2 builds on the findings of Study 1. By doing so, an extended theoretical model is developed to address practical concerns existing in the Middle Eastern FinTech sector.

The importance and relevance of this research are twofold. First, FinTech is a nascent academic area that lacks sufficient theoretical foundation and empirical analyses to develop the literature (Zalan & Toufaily, 2017). Most studies so far have been led by consultants/banks, and the FinTech area has hardly been introduced to the research community despite the growing popularity and interest in such a topic (Zavalokina, Dolata, & Schwabe, 2016). Thus, this research addresses such calls in the literature. Second, the current research further contributes to developing an extended and useful theoretical model consisting of three emerging themes (talent/skill gap, automation, and uncertainty in legal-operational systems) that are held accountable for the unaddressed challenges currently being met by Middle Eastern FinTechs.

The rest of the research is structured as follows: the following section expands on the concepts of FinTech, disruptive innovation, and competitive advantage. Then, the authors present arguments for the proposed research model and the hypotheses development preceded by the resource-based theoretical perspective. These are followed by the methodology section. The research design, participants, and results of each study are discussed and analyzed independently. The authors then elaborate on the findings and conclude with a shared discussion for both studies.
BACKGROUND

FinTech

In literature, FinTech has multiple definitions and classifications that relate finance to technology and innovation. FinTech is referred to as a) the link between financial services and technology that focuses on innovating products and services by encouraging new market entries and start-ups into the industry (PwC, 2016); b) a movement towards digitization and decentralization of all financial activities (Catalini, Halaburda, King, & Vergne, 2017); c) innovative financial service or product provided by technology (Chen, 2015); and d) a technology-driven industry for arranging financial services at the lowest costs and highest levels of efficiency (Vasiljeva & Lukanova, 2016). FinTech is also defined as a combination of financial services and access to capital resources through the use of innovative technology (PwC, 2016). This research follows the last characterization of the concept of FinTech that seeks to disrupt the activities of traditional financial institutions.

FinTechs can take the form of either service-oriented, data-oriented, or process-oriented structures. Service-oriented activities focus on innovative financial services, such as payments, transfers, wealth management, investments, lending, foreign exchanges, and crowdfunding. Data-oriented activities deal with information collection-analyses and big data practices. Process-oriented activities focus on process automation and efficiency increase. This research investigates service-oriented FinTechs irrespective of the types of services provided.

Disruptive Innovation

The emergence of the FinTech revolution implicates three main aspects (i.e., technology innovation, process disruption, and services transformation) (Gomber et al., 2018). All of these forces have disruptive innovation as a common link. Technology innovation is defined as the main driver for economic growth and industrial transformation. Process disruption is referred to as the disruption caused by FinTech innovation in different operational processes. Services transformation is characterized by the observed changes in the financial services before and after FinTech innovation has been introduced.

Technology innovation is the focus of this study. In literature, there have been numerous characterizations of technology innovation, such as continuous and discontinuous technological changes (Porter, 1985); incremental and breakthrough innovation (Anderson & Tushman, 1990); conservative and radical innovations (Abernathy & Kimb, 1993); and sustaining and disruptive innovations (Bower & Christensen, 1995).

This research follows the technological innovation map, introduced by Pisano (2015), which identifies disruptive innovation as one of the four different kinds of FinTech innovations (i.e., routine innovation, radical innovation, disruptive innovation, and architectural innovation). Disruptive innovation deals with utilizing existing technical capabilities with a new business model.

Disruptive innovation is similar to the concept of disruptive technology; hence both are used interchangeably. However, there is still uncertainty in the literature for an accurate definition of disruptive innovation (Ciutiene & Thattakath, 2014). This research follows Danneels's (2004) definition that defines disruptive technology as a technology that affects performance metrics and competition.

Competitive Advantage

Competitive advantage is defined a) as the relative difference between willingness to pay and cost of production across competitors (Hoopes, Madsen, & Walker, 2003); b) as an indication of creating or capturing better economic value than competitors in the same market or industry (Peteraf & Barney, 2003); and c) in terms of superior economic contribution (value creation) and a sustainable market position (value capture) (Walker, 2004). Thus, competitive advantage seems to focus on either financial,
economic, or situational indicators (e.g., growth, quality, cost reduction, performance, profitability, productivity, and market share) (Esen & Uyar, 2012). Nevertheless, in literature, competitive advantage is considered a relative term that is dependent on the type of context being examined (Sachitra, 2017). Therefore, this research refers to competitive advantage as the ability gained through resources to outperform other competitors in the same industry or market (Chacarbaghi, 1999) or as the specific use of available resources to keep the company ahead of other rivals and to sustain growth and development (Sachitra & Chong, 2015).

RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

In FinTech research, most studies typically focused on specific managerial issues while overlooking theoretical and empirical emphases on the possible determinants and causes of disruptive innovation (Zalan & Toufaily, 2017). This research proceeded in the direction of a few papers (e.g., Mills & McCarthy, 2017; Iansiti & Lakhani, 2017) that were theoretically driven and showed empirical evidence for their findings and implications.

The resource-based view has developed to be one of the most prominent theoretical perspectives used to explain differences in firms’ performances (Barney & Griffin, 1992). The theory specifically focuses on a firm’s unique resources (tangible and intangible assets) and capabilities (way to accomplish tasks based on accessible resources) as ultimate sources of a firm’s sustainable competitive advantage, performance, and value creation (Fahy, 2002). After multiple systematic improvements on the resource-based framework, resources have been classified as technological (tangible/physical assets including unique innovation, patents, equipment, R&D) capital resources, human capital resources, organizational capital resources, and financial capital resources (intangible assets including equities or financial operating activities/services) (Silverman, 1999).

Capital Resources and Innovation Relationship

According to the resource-based view, all four resources are inclusive of capabilities, information, and knowledge aspects (Barney, 1991). From a general perspective, this research focuses on these four main drivers of innovation since earlier studies have suggested that innovation performance is fundamentally dependent on resources that are owned internally rather than externally (network resources) by firms (Wagner, Morton, Dainty, & Burns, 2011).

Based on knowledge and creativity management literature, intellectual capital is represented as a term for internal resources. Intellectual capital refers to the knowledge and capabilities of a certain organization, community, or practice (Nahapiet & Ghoshal, 1998). Such internal resources (along with social capital or financial capital) are considered as primary resources for innovation and are developed and owned by the firm to achieve innovation (Laosirihongthong, Prajogob, & Adebanjoc, 2014). In literature, there has been evidence to support a positive and direct association between intellectual capital (i.e., knowledge and capabilities resources) and the concept of innovation (e.g., Subramaniam & Youndt, 2005; Laosirihongthong et al., 2014).

Intellectual capital has also been linked with human capital (Wiig, 1997) since knowledge is found within innovation, and firms need to stimulate such knowledge through proper employee/staff education and training (Nonaka & Takeuchi, 1995). As a result, knowledge is recognized a) as an intellectual capital rooted in human capital (Laosirihongthong et al., 2014) that can be further developed into information sharing (technological aspect) and communication (interactions within the organization) (Yang, 2008); and b) as a main organizational capital required for innovation (Subramaniam & Youndt, 2005).

Furthermore, it is suggested that building internal resources in terms of intellectual capital can yield better levels of innovation (Laosirihongthong et al., 2014), and intellectual capital is a primary cause of innovation and competitive advantage (Karchegani, Sofian, & Amin, 2013). From a broad perspective and based on evidence found in the literature, the paths to innovation and gaining
competitive advantage often assume great financial resources, codified organizational resources, R&D functionality (technology), and manpower (human resources) (Hall, Lotti, & Mairesse, 2009). Therefore, the authors propose that all four corporate capital resources (i.e., internal resources/intellectual capital resources and social/financial capital resources) are positively related to disruptive innovation, which subsequently leads to increasing competitive advantage (see Figure 1).

Specifically, financial capital resources are crucial to conducting economic activities. These resources are defined as social resources that enable a company to rent human capital and buy organizational capital resources to create value and consequently lead to competitive advantage (Uzzi, 1999). Such financial opportunities are provided to clients and lenders. It is argued that financial institutions, such as banks and most recently FinTechs, depend on the distribution of financial capital resources, which in return contribute to innovation (Nawaz & Haniffa, 2017; Nawaz, 2018). Therefore, the research hypothesizes that:

**Hypothesis 1:** Financial capital resources positively relate to innovation.

The human capital (i.e., thinking capital) is defined as the human intellectuality that creates new innovative designs and solutions (Nawaz, 2017). It refers to employment, types of experiences, knowledge, skills, and individual characteristics available to design and implement strategies (Barney, 1991). Such individual attributes can be used, but not owned, by companies to create value (Edvinsson & Sullivan, 1996). It is argued that these resources are at the focal point of innovation in any industry, hence expected to contribute to disruptive innovation and eventually leading to higher firm value, performance, and profitability (Feng, Pan, Huang, & Chen, 2009; Nawaz, 2017). Accordingly, the research hypothesizes that:

**Hypothesis 2:** Human capital resources positively relate to innovation.

Organizational capital is referred to as the non-thinking and supporting capital, which consists of tangible and intangible assets owned by the company (e.g., equipment, copyrights, property rights, buildings, and software) (Nawaz, 2017). Organizational capital assists human capital to perform better, transform intangible concepts to actual products or services, and eventually create firm value (Subramaniam & Youndt, 2005; Nawaz & Haniffa, 2017). Hence, it is equally important as other resources have shown to contribute to the process of disruptive innovation (Nawaz, 2017). As such, the research hypothesizes that:

**Hypothesis 3:** Organizational capital resources positively relate to innovation.

Technological capital resources refer to an organization’s capability to develop innovations constantly to adapt to changing environments (Olsson, Wadell, Odenrick, & Bergendahl, 2010). Thus, these resources are directly concerned with the innovation aspects of an organization. Innovation is positioned at the center of the research and development (R&D) efforts. Empirical studies have focused on R&D as a measure of technological resources (Silverman, 1999). Thus, R&D resources have been a) defined as organizational capabilities involved in inventing, designing, implementing, and exploiting different technologies and technical knowledge for superior production outcomes (Cohen & Levinthal, 1989); and b) regarded as strategic and internal drivers for growth and technological developments (Romer, 1990).

Numerous studies showed positive relationships between R&D, growth, and productivity (e.g., Morbey, 1988; Romer, 1990; Lichtenberg, 1992). Thus, it is plausible to hypothesize a positive relationship between technological capital resources and innovation, especially since technology is
recognized as the most significant source of innovation (Farace & Mazzotta, 2015). Therefore, the research hypothesizes that:

**Hypothesis 4:** Technological capital resources positively relate to innovation.

**Disruptive Innovation and Competitive Advantage Relationship**

Innovation has been recognized as one of the primary sources of competitive advantage and sustainable economic growth (Bullinger, Auernhammer, & Gomeringer, 2004). Earlier studies have shown that innovation generates competitive advantages for firms (Dosi, 1988). Thus, innovation has been defined as a newly introduced idea that allows a certain company to gain a competitive advantage (Rogers, 1998). Based on the literature, it is evident that disruptive innovation leads to a competitive advantage. Therefore, the research hypothesizes that:

**Hypothesis 5:** Disruptive innovation positively relates to competitive advantage.

**Moderating Effect of Performance Measurement**

Performance measurement has an essential role in organizational management planning and control system (Bourne, Neely, Mills, & Platts, 2003). Measurement has been utilized as a tool for coordinating tasks between different organizational departments (Franco-Santos, Lucianetti, & Bourne, 2012), promoting innovative ideas (Cruz, Scapens, & Major, 2011), and developing innovation (Marginson, 2002). Thus, measurement facilitates the concept of innovation in organizations. The positive impact of such measurement (financial or non-financial aspects) on organizational performance has been examined extensively in multiple studies as a cause, mediator, and moderator (e.g., Kohlbacher & Gruenwald, 2011; Saunila, Pekkola, & Ukko, 2014).

Nevertheless, studies examining the buffering effects of performance measurement on competitive advantage have been missing in the literature. Based on the literature review presented earlier, competitive advantage is defined as the ability gained through resources to outperform other competitors in the same industry or market (Chacarbaghi, 1999). Overtaking other rivals means achieving an increase in organizational performance. Thus, competitive advantage leads to high levels of performance, which in return leads to competitive advantage (Powell, 2001). Thus, both variables are interrelated and dependent on the other. Thus, it would be plausible to assume that performance measurement will show a positive moderating effect on competitive advantage. Therefore, the research hypothesizes that:

**Hypothesis 6:** Performance measurement positively moderates disruptive innovation and competitive advantage relationship.

**RESEARCH METHODOLOGY**

The current research followed a sequential multi-method research design consisting of two related studies (Creswell & Clark, 2011). Study 1, which is quantitative in design, involved surveying 154 participants in a FinTech summit in the U.A.E, whereas Study 2, which is qualitative in design, involved interviewing 16 participants from a different FinTech summit in Bahrain. The purpose of Study 2 was to build on the findings of Study 1. This sequential and multi-method practice was adapted from the work of Stich, Tarafdar, Cooper, & Stacey (2017). Both summits are considered the most recognized FinTech events in the Middle East. FinTechs are fully operational in 12 Arab countries (e.g., Jordan, Oman, Lebanon, KSA, Kuwait, etc.) nevertheless,
the U.A.E. and Bahrain have established to be the most active countries in the FinTech sector and considered as main hubs in the Middle East (Chance, 2017; Mueller & Piwowar, 2019).

Survey – Study 1

The questionnaire was administered to participants who attended the FinTech Summit 2018-2019. The event took place in UAE on October 30, where more than 150 speakers and 5000 attendees were present. The attendees were mostly related to FinTech startups and organizations, but there were bankers, representatives, tech experts, entrepreneurs, and various financial institutions. The authors had permission to gather data for academic purposes by the event’s organizers. Participation in the survey was voluntary, and all respondents were assured anonymity and confidentiality. Each participant responded to a 29-item questionnaire (7-point Likert scale ranging from Strongly Disagree to Strongly Agree) by using various electronic tools that the researchers brought to the summit (e.g., laptops, tablets, and mobiles) to save time and collect as much data as possible. All constructs items are adapted from previously validated studies, thus, showed adequate internal consistency (see Table 1). 154 final responses were attained after eliminating incomplete and missing data from the initial 243 conducted surveys (see Table 2 for the demographics).

Interview – Study 2

The interviews were administered to participants who attended the 2018 Techstars Startup event. The event took place in Bahrain between November 15 and 17 (i.e., after two weeks from the first event). Sixteen participants were interviewed with prior informed approval. None of the participants were involved in Study 1. The selection of the participants was conducted randomly with all semi-structured interviews based on open-ended questions to give the participants creativity, freedom, and flexibility (Longhurst, 2016). Each interview lasted for 10 minutes and was conducted in the English language, therefore, no translation was needed that may negatively affect the accuracy of the answers or the intent of the respondents. All interviews were face-to-face and voice recorded with full anonymity. The interviews were transcribed from audio to transcripts by using the Zamzar software platform. The participants, 12 males and 4 females, had a mean age of 32 years. The types of employment had a frequency of 29% for lower management, 36% for middle management, 28% for upper management, and 7% for senior management. More than 70% had an education equivalent to Masters or DBA.

The analysis was developed through a 3-level coding (open, theoretical/axial, and selective). Open coding deals with the separation and classification of data. The axial involves coding clusters of the interactions and patterns, whereas the selective coding deals with a reduced set of higher-level clusters and elements. Furthermore, double-coding was conducted separately to develop inter-code reliability “number of agreements” divided by the “total number of agreements” + “total number of disagreements” (Miles & Huberman, 1994). Results showed 86% similarity (>70%), hence considered as satisfactory. The interview guide, initial codes list, and additional emerged codes were developed

![Figure 1. Proposed research model](image-url)
### Table 1. Questionnaire items

| Financial (social) capital resources* (Bontis, 1999; Johnson, 1999) | Cronbach’s alpha (0.761); Mean (3.02); St. Dev. (1.26) |
|---------------------------------------------------------------|--------------------------------------------------------|
| FCR 1 The FinTech has a wide range of networking and connections. |
| FCR 2 The FinTech is in good terms with the clients. |
| FCR 3 The FinTech is in good terms with the suppliers. |
| FCR 4 The FinTech works with other similar companies. |

| Human capital resources* (Brooking, 1996; Roos et al., 1998) | Cronbach’s alpha (0.875); Mean (5.56); St. Dev. (1.16) |
|-------------------------------------------------------------|---------------------------------------------------------|
| HCR 1 The staff is well trained and has enough knowledge and know-how. |
| HCR 2 The human resources sector is well developed. |
| HCR 3 The workforce attitude is well attained. |
| HCR 4 Employees have sufficient set of skills and abilities to perform tasks. |

| Organizational capital resources* (Stewart, 1997; Youndt, 1998) | Cronbach’s alpha (0.775); Mean (5.11); St. Dev. (1.04) |
|---------------------------------------------------------------|--------------------------------------------------------|
| OCR 1 The FinTech has internal institutionalized knowledge and codified experience stored inside. |
| OCR 2 The FinTech is well equipped with internal and administrative structure. |
| OCR 3 The FinTech has a developed Information Systems processes and cultural implications. |

| Technological capital resources* (Edvinsson & Malone, 1997; Bassi & Van Buren, 1999) | Cronbach’s alpha (0.916); Mean (2.36); St. Dev. (1.13) |
|-------------------------------------------------------------------------------------|--------------------------------------------------------|
| TCR 1 The FinTech uses high-tech and innovative platforms. |
| TCR 2 The FinTech has intellectual properties, patents, and copyrights. |
| TCR 3 The FinTech has technological abilities to keep on growing. |
| TCR 4 The FinTech invests heavily in R&D. |

| Disruptive innovation (Govindarajan & Kopalle, 2006) | Cronbach’s alpha (0.795); Mean (3.06); St. Dev. (1.28) |
|-------------------------------------------------------|--------------------------------------------------------|
| INV 1 The FinTech rarely introduces new technologies which are disruptive in nature. |
| INV 2 The FinTech lags behind in introducing disruptive innovations. |
| INV 3 New innovations that were introduced by this FinTech were very attractive to a different customer segment at the time of product introduction. |
| INV 4 New innovations that were introduced by this FinTech were those where the mainstream customers found the innovations attractive over time as they were able to satisfy the requirements of the mainstream market. |

| Performance measurement (Saunila et al., 2014) | Cronbach’s alpha (0.826); Mean (4.19); St. Dev. (1.07) |
|------------------------------------------------|--------------------------------------------------------|
| PM 1 The organization has measures for evaluating development. |
| PM 2 Multiple aspects of innovation are measured by the organization. |
| PM 3 Measurement information is used for developing the actions and operations of the Organization. |

| Competitive advantage** (Thatte, 2007) | Cronbach’s alpha (0.943); Mean (4.31); St. Dev. (1.23) |
|---------------------------------------|--------------------------------------------------------|
| CA 1 We offer competitive prices lower than our rivals. |
| CA 2 We offer high quality products/services. |
| CA 3 We offer highly reliable and durable products/services. |
| CA 4 Our transportation division delivers on time. |
| CA 5 We provide dependable delivery. |
| CA 6 We provide customized products to meet client needs. |
| CA 7 We are the first in the market to introduce new products with fast product development. |

*Items were derived from intellectual capital & social capital dimension; **Items based on price, quality, innovation, time, and delivery dimensions; ***Cronbach’s alphas > 0.70 (Nunnally, 1978), thus, showing good-to-excellent internal consistency
Based on the findings from Study 1. All data were separated into word segments and condensed phrases that reflect the meaning of each response (Holloway & Wheeler, 2010).

**RESULTS**

Data from Study 1 were analyzed by using SPSS 23.0 (regression analysis, common method variance, factor loading), AMOS 23.0 (model fit), and smartPLS 3.0 (moderation effects and convergent-discriminant validity). Each software delivers specific estimates on diverse aspects of testing. On the other hand, data from Study 2 were coded, text-mined, and analyzed through ATLAS TI software. To validate the extracted themes and confirm the findings, the same process was replicated by using the “R” software. Both software led to analogous results.

Before the regression analysis, common method bias was not found to be a major issue in Study 1 (see Table 5 in the Appendix for Harman’s one-factor test). Further, factor loadings showed significant correlations (see Table 6 in the Appendix). Moreover, convergent and discriminant validity showed satisfactory estimates (see Table 7 in the Appendix).

**Hypotheses Testing**

First, the analysis showed that OCR \( t=2.620; \beta=0.186; p<0.01 \); FCR \( t=3.153; \beta=0.222; p<0.01 \); and TCR \( t=6.135; \beta=0.429; p<0.01 \) significantly and positively relate to disruptive innovation. On the other hand, HCR showed no correlation with disruptive innovation \( t=-1.979; \beta=-0.141; p>0.05 \). Hence, H1, H3, and H4 were supported, whereas H2 was not supported. Second, disruptive innovation showed positive relationship with competitive advantage \( t=2.654; \beta=0.772; p<0.01 \) and the moderating effect of performance measurement showed a significant, but negative, interaction for the disruptive innovation-competitive advantage relationship \( t=-2.836; \beta=-0.903; p<0.01 \). As such, H5 was found to be supported, whereas H6 was not supported by the analysis (see Table 3).
Furthermore, a graphical representation of the moderating effects of performance measurement showed that performance measurement dampens (reduces) the positive relationship between innovation and competitive advantage (see Figure 2). Such findings are consistent with a recent study by Van der Kolk & Kaufmann (2018) that suggests that employee behavior can change when performance is being measured. Measuring performance can have different aspects. The first comes in the form of reviewing the performance level of the company for better outcomes, the second comes in the form of diagnosing problems and supporting innovation, whereas the third comes in the shape of monitoring and tracking of the employees through diverse technologies at work. The latter might have some damaging effects on the individual (e.g., lack of commitment, privacy concerns, getting penalized for incompletion of tasks) and on the organization (costs) if adopted. Thus, employee’s productivity/performance will decrease and long-term goals will not be met. Therefore, findings suggest that measuring productivity/performance/competitive advantage through performance metrics reduces rather than increases innovation, creativity, and risk-taking.

**Interview Analyses**

Study 1 attempted to answer “how” and “which” corporate resources may or may not influence disruptive innovation, thus leading to gaining competitive advantage. However, Study 1 was unable to explain “why” and “what” factors may be held accountable for the findings. Through this analysis,
sub-themes were outlined to interpret the units by comparing and classifying all similarities and differences extracted from the responses. Subsequently, three main themes emerged from the data (see Table 4). Few predetermined codes were dropped for adding no value. The open-ended questions consisted of: “What do you think is the reason for HCR not being as an important and significant resource to innovation and competitive advantage as the other capital resources?”, “What are possible solutions that you might suggest?”, “How do you explain the difference between the Western and

Table 4. Summary of qualitative analyses

| Theme: Talent / Skill Gap (Frequency of occurrence / Effect size / Intensity = 44%) |
|---|
| **Categories:** Education, Outsourcing of skills, Critical thinking, Know-how |
| **Codes:** lack of diversity, skill gap crises, experiences, target-oriented, inflexible policies, employer vs employee, personnel, disciplinary arrangement, principles, dissimilarities, culture, demanded skills vs actual skills, attitude, qualifications, proactive – reactive abilities |
| **Condensed quotes:** “Unemployment rate is increasing due to insufficient jobs”, “There is a huge skill gap”, “Organizations are demanding more skills which are unattainable by the newly graduated individuals”, “Certain administrative measures could be extreme”, “They focus on growth and profit optimization, so they request higher standards”, “Ineffective HR foundations”, “Diversity and seeking a balance between demanded and needed capabilities are absent”. |

| Theme: Automation (Frequency of occurrence / Effect size / Intensity = 36%) |
|---|
| **Categories:** Disruption, Technology, Innovation |
| **Codes:** technology complexities, technological revolution, new upgrades, replacement of employees |
| **Condensed quotes:** “Automation of most tasks demands have affected us”, “The complex integration of technology has replaced many tasks and employees”, “Introduction of new technologies at work are being rapidly implemented”, “New updates are frequently applied”, “New updates are difficult sometimes”, “Our organization utilizes high tech programs, but are hard to run”, “Investing in technology is a priority”, “Most of the jobs are being replaced by technology” |

| Theme: Uncertainty in legal-operational systems (Frequency of occurrence / Effect size / Intensity = 20%) |
|---|
| **Categories:** Uncertainty, Employee wellness, Employee engagement |
| **Codes:** Payroll systems, difficulty of engagement, regulatory regimes, rights and obligations, international policies, licensing |
| **Condensed quotes:** “Limited regulations and systems are implemented”, “Attempts to scale an existing FinTech business can be difficult”, “Difficulty in filling open positions”, “Better opportunities in the Western markets”, “High Skill requirements with minimal return”, “Culture and language are causes for such uncertainties”, “We always fall behind Western economies when it comes to implementing international standards”, “There are no specific programs to expand on the concept of enhancing employees and seeking their satisfaction”. |

*Effect sizes were extracted from “R” software
Middle Eastern FinTech markets?” Follow-up questions were added for the participants to elaborate concerning specific circumstances and events (e.g., “Can you describe that type of involvement?”; “What do you mean?”; “What motives do you have?”)

**DISCUSSION**

In Study 1, human capital resources showed insignificant effects, and performance measurement showed to have a negative rather than a positive moderating influence. In Study 2, three themes (talent/skill gap, automation, and uncertainty in legal-operational systems) emerged as leading factors for the unaddressed challenges currently being met by Middle Eastern FinTechs. The three emerging themes have shown to be directly related to the “human” element (see Figure 3).

The global rise of FinTech ecosystems led to growing demands for specific skill sets, knowledge, and experience. As a result, Middle Eastern FinTechs are unable to fill positions with specific skill sets to perform innovative and high-tech tasks (Mueller & Piwowar, 2019). Such concerns may be related to the disparity between existing skills (skills of the candidates/applicants) and demanded skills (skills requested by the FinTechs). If such issues remain unresolved, FinTechs will struggle to grow and innovate, thus, leading to reduced competitive advantage. The research suggests that FinTechs must either attract global/foreign talents (i.e., outsourcing) or stimulate internal development (e.g., enhancing the education sector or implementing intensive training programs). However, to attract or stimulate new talents, FinTechs must legislate legal and regulatory policies for easy entries of foreign organizations. Similarly, policymakers and regulators ought to start implementing innovative policies for more diverse and competitive economies in the Middle East region. By doing so, a supporting and sustainable ecosystem would emerge with an effective transfer of knowledge among the players in the Middle Eastern FinTech sector.

The Middle East region in general has always been a slow adopter of international policies and standards that revolutionize the legal and operational systems. As a result, uncertainties have arisen regarding issues related to obligations, privileges, and rights. In most cases, cultural, linguistic, and structural developments have also played roles in such ambiguities. Such international standards include payroll reforms, employee engagement, improved training, and expanding the concept of employee wellness. Thus, because of uncertainty in legal-operational systems, the human capital will be ineffective as a resource for innovation and increasing competitive advantage. To increase certainty in the legal-operational systems, the research calls for the urgent adoption of international policies.

Furthermore, the banking and financial sectors, in general, have been recently interested in AI-driven technologies (i.e., shifting to FinTechs) and have invested heavily in developing innovations.

**Figure 3. Extended-holistic theoretical model**
However, implementation of such technologies may reduce the need for employees, thus, replacing the human element with algorithms. As a result, bankers and financial employees are becoming obsolete with the integration of technology and automation. Despite their significance for growth, technologies, such as digitization of customer services, AI-powered chat bots, virtual assistants, algorithmic trading platforms, and robotic process automation have been replacing tellers, loan officers, back office, retail banking, and traders, etc. Banks and financial institutions in western economies (e.g., Bank of America, Citigroup) have recently announced aggressive strategies to invest in technologies (e.g., robotics, machine learning, AI, etc.) to reduce costs (e.g., decreasing the workforce).

Similarly, Middle Eastern FinTechs are following the same approach in investing more in technology and less in human capital. The dual-relation between human capital and technology can be understood that the domain of specific skills and knowledge is closely interrelated to the exploitation of innovation and technologies (Kang & Snell, 2009; O’Reilly & Tushman, 2004). As a result, higher levels of education and skills are needed to operate such technologies (i.e., organizations are shifting towards radical innovations and levels of demanded skills have increased), and, in parallel, the human workforce is much less needed. Therefore, an increase in technological investments is inevitably encountered with a decrease in human capital investments. To maintain a balance between the resources, FinTechs must start introducing changes to their funding requirements and financing support systems.

Limitations and Future Research Directions

Despite the significant findings of this research, several limitations are identified. First, the sample of each study consisted of participants from a single and specific event. Although both summits represent the most visited events in the Middle East, the current research may have overlooked other FinTechs that may have opposing views and perceptions. It would be fitting for future studies to collect data through online surveys to cover a wide range of participants and audiences. Second, both samples were small in size. Despite that collecting more data is practically unfeasible because of the under-developed FinTech ecosystem in the Middle East, a large scale investigation would be more appropriate in capturing better insights. Third, the current research examined the concept of intellectual capital as an internal resource rather than considering external resources as well (e.g., network resources). It is suggested that network resources are also significant for innovation and drivers of internal resource development (i.e., knowledge and creativity management) (e.g., Bunduchi, 2013; Laosirihongthong et al., 2014). Future studies may introduce such external resources for a better understanding of the Middle Eastern FinTech systems.

Practical Implications

Besides the modest contributions offered by this research, there is a noteworthy practical implication. Earlier financial reports estimated that the FinTech sector in the Middle East will reach 8% of the total financial services revenue by 2020-2021. Furthermore, in the Middle East, traditional banks are shifting to full-scale digital transformation to adapt to new technological changes. Nevertheless, recent reports show that while the developed economies have scored substantial gains in the FinTech sector, the Middle Eastern economies lagged in growth and development (Findex, 2018). Middle Eastern FinTechs have not yet addressed the challenges because of the absence of any scientific examination concerning what specific factors might be hindering their success. For that reason, the current research identified three themes (i.e., talent/skill gap, automation, and uncertainty in legal-operational systems) by developing an extended theoretical framework as a blueprint or map to guide a) managers in improving their internal capital resources; b) existing or new entrepreneurs in their investing decisions; and c) Middle Eastern FinTechs in further developing their ecosystems. By doing so, this research provides a rare opportunity for FinTechs to address the challenges by introducing new reforms to their capital structures, adopting new international systems, and enhancing the current employment laws (e.g., re-shaping of the human resources practices and policies).
CONCLUSION

This research attempted to answer two questions with theoretical and practical significance. “Are corporate resources perceived as causes to disruptive innovation for increased competitive advantage in Middle Eastern FinTechs?” and “What factors may be hindering their success?”. First, the research was able to empirically demonstrate that not all capital resources are perceived as significant contributors to disruptive innovation for increasing competitive advantage. Furthermore, the research showed that performance measurement serves as a negative rather than a positive metric for evaluating the level of performance if not implemented cautiously. Second, three extracted themes were identified as the main drivers for the unaddressed challenges currently being met by Middle Eastern FinTechs. To conclude, this research is not to be reflected upon as negative criticism or critique but, rather, as a constructive assessment for developing the FinTech sector in emerging markets.

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## APPENDIX: ADDITIONAL TABLES

### Table 5. Harman's One Factor Test

| Component | Total Variance Explained | Rotation Sums of Squared Loadings |
|-----------|--------------------------|----------------------------------|
|           | Initial Eigenvalues | Rotation Sums of Squared Loadings |
|           | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1         | 6.033  | 20.802       | 20.802       | 5.348  | 18.443       | 18.443       |
| 2         | 4.961  | 17.107       | 37.910       | 3.430  | 11.829       | 30.272       |
| 3         | 3.229  | 11.135       | 49.044       | 2.993  | 10.322       | 40.594       |
| 4         | 2.345  | 8.085        | 57.129       | 2.472  | 8.523        | 49.116       |
| 5         | 1.987  | 6.850        | 63.980       | 2.406  | 8.297        | 57.413       |
| 6         | 1.472  | 5.076        | 69.056       | 2.358  | 8.130        | 65.543       |
| 7*        | 1.153* | 3.974*       | 73.030*      | 2.171  | 7.487        | 73.030*      |
| 8         | .867   | 2.989        | 76.019       |        |              |              |

*Eigenvalues > 1.0; cumulative 73.030%; No single or general factor emerged for most of the variance

### Table 6. Factor loading

|       | 1    | 2    | 3    | 4    | 5    | 6    | 7    |
|-------|------|------|------|------|------|------|------|
| OCR1  | -.005| -.075| .064 | .048 | -.137| .087 | .854 |
| OCR2  | .111 | .045 | .261 | .064 | .022 | .028 | .760 |
| OCR3  | .038 | -.108| .055 | .060 | .010 | .026 | .823 |
| HCR1  | .146 | -.125| .752 | -.007| -.050| .084 | .228 |
| HCR2  | -.029| .013 | .833 | -.008| -.081| .026 | .005 |
| HCR3  | .086 | -.046| .880 | -.085| -.035| .034 | .162 |
| HCR4  | -.014| .046 | .884 | -.128| -.048| .142 | .025 |
| FCR1  | -.119| .087 | -.118| .185 | .749 | .182 | -.114|
| FCR2  | -.001| .182 | -.072| .093 | .785 | -.015| -.061|
| FCR3  | -.317| .095 | .044 | -.004| .599 | -.102| .119 |
| FCR4  | -.142| .015 | -.075| .186 | .786 | .140 | -.049|
| PM1   | .114 | .093 | .093 | .011 | .193 | .752 | .112 |
| PM2   | .017 | -.069| .108 | -.045| .041 | .904 | -.038|
| PM3   | .071 | .046 | .060 | -.129| -.044| .881 | .079 |
| TCR1  | .172 | .799 | .021 | .230 | .100 | .021 | -.086|
| TCR2  | .102 | .855 | -.017| .117 | .136 | .055 | -.061|
| TCR3  | .193 | .885 | -.058| .139 | .096 | .004 | -.039|
| TCR4  | .151 | .835 | -.046| .287 | .071 | -.001| -.015|
| INV1  | .000 | .468 | -.039| .673 | .053 | -.024| .092 |

*continued on following page*
Table 6. Continued

|    | 1   | 2    | 3    | 4    | 5    | 6    | 7    |
|----|-----|------|------|------|------|------|------|
| INV2| -.035| .147 | -.029| .797 | .038 | .048 | .053 |
| INV3| -.036| .136 | -.051| .743 | .192 | -.047| .034 |
| INV4| -.035| .198 | -.123| .701 | .187 | -.202| .042 |
| CA1 | .879 | -.023| .043 | .029 | -.129| .136 | .094 |
| CA2 | .840 | -.012| .054 | .058 | -.036| .108 | .095 |
| CA3 | .863 | -.012| .120 | .072 | -.101| .082 | .057 |
| CA4 | .886 | -.059| .064 | -.040| -.023| .022 | .027 |
| CA5 | .851 | .212 | -.053| -.083| -.097| -.055| .018 |
| CA6 | .809 | .252 | -.007| -.150| -.104| -.078| -.014|
| CA7 | .813 | .248 | -.002| -.040| -.104| .033 | -.080|

*Factor loading values exceeded 0.30 (Yusoff, Esa, Mat Pa, Mey, & Aziz, 2011)

Table 7. Convergent and Discriminant validity

|     | CR* | AVE* | MSV** | INV  | OCR  | HCR  | FCR  | PM   | TCR  | CA   |
|-----|-----|------|-------|------|------|------|------|------|------|------|
| INV | 0.795| 0.502| 0.328 | 0.703|      |      |      |      |      |      |
| OCR | 0.785| 0.550| 0.089 | 0.103| 0.741|      |      |      |      |      |
| HCR | 0.879| 0.649| 0.089 | -.180| 0.298| 0.805|      |      |      |      |
| FCR | 0.775| 0.509| 0.153 | 0.391| -0.149| -0.195| 0.687|      |      |      |
| PM  | 0.845| 0.650| 0.044 | -0.142| 0.103| 0.209| 0.135| 0.806|      |      |
| TCR | 0.918| 0.738| 0.328 | 0.573| -0.111| -0.084| 0.256| -0.021| 0.859|      |
| CA  | 0.943| 0.704| 0.082 | -0.022| 0.092| 0.109| -0.269| 0.099| 0.287| 0.839|

*CR > 0.70 & AVE > 0.50 (Fornell & Larcker, 1981); Convergent validity is satisfactory
**MSV < AVE (Fornell & Larcker, 1981; Discriminant validity is satisfactory)

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