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THE ROLE OF INTERNET OF THINGS IN FINTECH ADOPTION WITHIN BANKING SECTOR:THE MODERATING ROLE OF DIGITAL TRANSFORMATION CAPABILITY

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Abstract:
The increasing tendency toward digital transformation on the part of banks has been driving up the stakes for fintech adoption as a strategic counterpoint. Banks are facilitated with (IOT) internet of things capabilities to interact even more closer with customer behavior and decisioning process, not confined only for operational risk. Research objectives This study will seek to understand the influence of Internet of things (IOT) on diffusion of fintech in banking and further to explore the moderating impact of Digital Transformation Capability (DTC) on the relationship between Internet of things (IOT) and the adoption of fintech. Based upon a quantitative deductive approach, we collect data from a sample of 300 out of 616 employees of commercial and Islamic banks in Jordan through a structured questionnaire. Relations were tested using PLS-SEM. Results The results of the study show that IoT has a general positive impact on fintech adoption when it comes to customer-centric services, operation-effective, and risk management. Moderation effect of Digital Transformation Capability was identified in the relationship, as it facilitated system integration and speeding up adoption and promoting datadriven decisions. These associations were statistically significant highlighting technology readiness in leveraging BDA for workforce fintech adoption in Saudi Arabia. The cross border comparative research and future research, such as analyzing blockchain-empowered analytics in fintech ecosystems are the methodological restrictions and future research phases.

Keywords: Data Management Capability, Analytical Capability, Infrastructure Capability, fintech adoption, Digital Transformation Capability

1.Intorduction

The use of Financial Technology (fintech) has been increasing in recent years as a disruptive solution to meet changing demand in the global banking industry (Farrukh et al., 2024). Fintech is disrupting the traditional process of financial services based on decentralization and technology to provide efficient, easy, and innovative banking practices (Ryu, 2021). Fintech solutions have particular relevance in a context where traditional banking services are challenged by issues like branch network reach, high costs of operations, and regulatory complications (Al-Khasawneh, 2023). Fintech adoption is predicted to grow annually by more than 15% concentration02-212024 from 2025 to 2030 and uptakes will rise due to high demand for digital

financial service, growing trends in data-driven technology (Allahham & Maqbool, 2024). Internet of things (IOT) has become a key facilitator of this revolution, enabling banks to benefit from the use of large and varied data sets for better decision-making, customer targeting, and risk management (Sharabati, Mayyas, Masa'deh, & Aldalaien, 2024a). Big Data improves the detection of fraud, the scoring of credit, and the personalization of banks' services, through predictive modeling, machine learning and real time analytics, and as a result, it also promotes the adoption of the fintech sector (Almajali et al., 2023). Also, data-driven insights help to ensure trust, from a customer's perspective of security, efficiency, and responsiveness, with which they would interact with the bank system (Shehadeh et al., 2024a). Yet, despite these advancements, cooperation the introduction of Internet of things (IOT) into banking operations is difficult, as it is in developing countries where resource constraints, systems silos, and organizational resistance can impede fintech penetration.The majority of readings in the field have focused on general advantages of Big Data in financial services in developed countries (Arasti et al., 2012). Yet, little is known empirically about how Internet of things (IOT) impacts on fintech adoption in rising banking environments due mainly to variations that exist in the extent of digital architecture and organizational readiness (Sharabati et al., 2023a). Furthermore, limited research has examined the moderation effect of Digital Transformation Capability, which involves before mentioned infrastructure, skills and cultural accommodation for digital transformation in banks (Atiyeh et al., 2024a). Another fundamental factor for Internet of things (IOT) as an enabler for meaning fintech adoption is Digital Transformation Capability as it encompasses compatibility, reliability, and responsiveness of the systems for data driven innovations (Atiyeh et al., 2024b). Overshadowed by the focus on innovation success, however, is the fact that success in an analytics-driven fintech world requires technology readiness.Thus, understanding the influence of the combined interaction between Internet of things (IOT) and Digital Transformation Capability on fintech usage in the banking industry is imperative (Almaqtari, 2024). The purpose of this paper is to investigate the role of Internet of things (IOT) on the adoption of fintech, and examine the moderating effect of Digital Transformation Capability in enhancing the relationship. The study deals with banking sector in Jordan; the initiative's digital finance is growing, however, it is still facing infrastructural, integration and customer acceptance challenges. For this purpose, a systematic quantification strategy is used (Arshad et al., 2023). The research applies Partial Least Squares Structural Equation Modeling (PLS-SEM) to validate the proposed relationships between Big Data capabilities, Digital Transformation Capability, and fintech adoption results. The data were gathered from a total of 287 bank professionals who are involved in banking and digital finance projects within normal Jordanian and Islamic (Atiyeh et al., 2024b).This paper is organized as follows: Section II contains the seven sections. Review of Literature The second section to consider is the review of literature, while third section focuses on methodology and framework of the study. Empirical results and findings from data analysis will be presented in Section 4. Theoretical and management implications are discussed in Section 5, while the study's conclusions are included in Section 6. Section 7 concludes, discusses the limitations, and provides suggestions for future research.

2. Literature Review

2.1 Data Management Capability

Big Data in banks is linked to its capacity for data management, which is the ability to gather, store and handle huge amounts of structured and unstructured data collected from multiple

sources (Garmaki et al., 2020). This ability helps financial institutions to ensure the quality, consistency, and accessibility of data necessary for fintech adoption. According to Wamba et al. (2020) powerful data management solutions support customer profiling, transaction monitoring, and compliance reporting – all indispensable in a regulated segment like banking.

2.2 Analytical Capability

Analytical capacity is defined as the capacity of individuals or organisations to systematically gather and interpret information so that they can make informed decisions and solve problems in an effective manner. Analytical thinking – it is about critical thinking, logical reasoning, recognizing patterns, and the usage of both quantitative and qualitative methodologies to identify insights. Quick and nimble analysis enables an individual to break down trouble to its manageable parts, show cause and effect, and see a few moves ahead. At the institutional level, possessing this capacity is critical for strategic planning, process optimization, creative thinking, and agility in changing environments, for it turns data into the knowledge needed to control and to compete(Mikalef et al., 2020).

2.3 Infrastructure Capability

Infrastructural capability includes IT infrastructures for implementing Internet of things (IOT) (Sun et al., 2018), which are the technical infrastructure tools (e.g. cloud computing, distributed architectures, high performance computing systems) to support Internet of things (IOT) capability. In the banking sector, banks turn to such infrastructures to provide the scalability and processing power to process real-time financial data and to underlie fintech applications (Kraus et al., 2021). Banks are also able to integrate and combine fintech platforms and applications with cloud infrastructures - hence less cost and faster service launches (Bhimani & Willcocks, 2014). Infrastructure capacity is also a fundamental constituent of cybersecurity, and this assurance is also an important motivator for customers in their use of 'digital finance' (Mikalef et al., 2019). It was also concluded by Gupta and George (2016) that the full value of Internet of things (IOT) is impossible to be gained without strong infrastructure capability, since lack of appropriate systems would affect negatively the pace, reliability and security of adoption by fintech.

2.4 Fintech Adoption

Adoption of fintech involves incorporation and use of technology-based innovative financial services (e.g., mobile banking, digital wallets, blockchain systems and peer-to-peer lending platforms) in the finance industry (Venkatesh et al., 2012). Studies have revealed that the use of finTech boosts financial inclusion, transactions and cost reduction, as well as improving customer experiences (Lee & Shin, 2018). The spread of fintech throughout the traditional banking industry is closely correlated with its adoption of Big Data Analysis for better understanding the customer and improving operation (Ozili, 2020). Specifically, fintech implementation is facilitated in circumstances of coexistence of digital trust, regulatory climate and technological innovation –in the context of an innovative ecosystem (Arner et al., 2016). Research has already found that the level of fintech adoption is contigent in economies to inittuition readiness, infrastructure maturity and customers' digital literacy (Gomber et al., 2018).

2.5 Moderating Role of Digital Transformation Capability

Will influence of internet of things (IOT) in fintech adoption is moderated through the technology readiness (Parasuraman, 2000). It brings to focus the infrastructure, digital culture and employee competences of banking entities to adopt technological innovations (Lu et al., 2019). Empirical research demonstrates that more technologically prepared banks are more likely

to turn Big Data signals into actionable fintech products (Trope and Raghavan 2021). The relationship is reduced in the presence of incremental Digital Transformation Capability, that is, a situation in which the local ICT infrastructure and the computer skills of the community do not permit fintech to be effective (Mikalef et al., 2020). According to Kraus et al. (2022), tech-readiness also fosters organizational agility, a capability to quickly fit them with new fintech ecosystems and change customer preferences. This moderating role is most pronounced in emerging markets, where divergent infrastructure investment and digital preparedness drive the speed and efficacy of fintech adoption.

2.6 Research Gaps and Contribution of the Study

Despite that Internet of things (IOT) and Digital Transformation have been largely discussed, there is insufficient empirical evidence to substantiate how the dimensions: data management capability, analytic capability and infrastructure capability collectively influence the fintech adoption in banking sector (George et al., 2016).

Moreover, few studies have directly investigated the moderating effect of Digital Transformation Capability in such relationship, especially in the case of development countries like Jordan. Current literature is frequently restricted to developed economies or non-financial sectors, and therefore inadequate for analyzing the especially sui generis circumstances of banking organizations operating under weak legal and infrastructural conditions (Ozili, 2020). This research enriches the existing literature through an empirical exploration of the Internet of things (IOT) impact on fintech adoption in Jordanian banking sector and the moderating effect of Digital Transformation Capability. Focusing on these gaps, the paper contributes to both the academic and policy discourse while offering policy and managerial implications for banking managers, policy-makers and fintech developers in their quest to increase the adoption of digital finance in the emerging markets.

2.7 Hypothesis Development

2.7.1 Analytical Ability and the Adoption of Fintech

Analytical ability is the fundamental dimension of internet of things (IOT) which helps banks to process raw financial data into valuable insights by the development of predictive models, machine learning and advanced statistical techniques. Past studies show that higher performance appraisal is vital in enhancing the power of fraud detection, customers' behavior prediction and reliability of credit assessment for fintech use (Akter et al., 2016). Analytical power With concise insights, analytical capability improves the personalisation and effectiveness of the fintech application, which adds more customer acceptance and organizational readiness to accept innovations.

H1: Financial analytics have a significant effect on fintech acceptance through better decision-making, risk anticipation, and customer driven innovation.

2.7.2DMC and Fintech Usage

The capacity for managing data to collate, merge, and compress tremendous amounts of structured and unstructured data across banking systems. Moreover, robust data management has been found to improve data quality and accessibility which is essential for the adoption of fintech solutions (Wamba et al., 2020). Poor data management, however, can become obstacles to the adoption of fintech in the face of disparities, security issues or privacy. Well-established data management systems for fintech deployment will therefore become key in ensuring dependable data use and compliance.

H2: Data management capability has a positive impact on fintech adoption through increasing the quality, completeness, and protection of the data.

2.7.3 Infrastructure capacity and fintech diffusion

Infrastructure capacity is the technocratic spine — cloud computing, high-performance server networks, and cybersecurity systems — that underpins advanced analytics and digital financial services. According to studies, the adaptation of fintech in banks, to a greater extent, depends on the existence of scalable and secure infrastructure that encourage real-time data processing and smooth integration of fintech platforms (Gupta & George, 2016). Fintech adoption is not easy when you operate with limited infrastructure – systems cannot be efficient (banks are risk averse).

H3: Infrastructure capacity has a significant effect on fintech adoption by presenting a scale, real-time analytics, and security digital platforms.

2.7.4 Technology Readiness and Adoption of Fintech

Readiness for technology constitutes readiness wherein the banks are ready to implement and accept technology, it includes digital culture technology, skills, and the adaptability of organization change technology (Parasuraman, 2000). Banks which are more technologically ready are ready to make use of Internet of things (IOT) for fintech adoption. On the other hand, a limited readiness may compromise the adoption process because of a decreased usage of analytics-based applications.

H4: Digital Transformation Capability has a significant impact on fintech adoption through digital readiness and organizational flexibility.

2.7.5 The Moderating Effect of Digital Transformation Capability on the Analytics–Fintech

The impact of analytical power on fintech adoption may be contingent on the maturity of banking systems in terms of technology adoption. With ready technology, banks can more easily inject analytical insights into fintech solutions to productize them and drive value and adoption.

H5: The relationship between AC and fintech adoption is moderated by tech readiness, such that the higher the level of tech readiness the stronger the relationship is.

2.7.6 The Moderating Role of Digital Transformation Capability in the Relationship between Data Management and Fintech

The foundation of fintech adoption is based on data management capability, yet its impact may be contingent on bank's technical preparedness. The impact of data management on fintech adoption is high when combined with the help of solid infrastructure, active professionals, and digital culture.

H6: The relationship between data management capability and fintech adoption is moderated by Digital Transformation Capability, and is stronger when Digital Transformation Capability is high.

2.7.7 Digital Transformation Capability as Moderator in the Infrastructure Fintech

Infrastructure readiness correlates significantly with fintech adoption, however, its impact is moderated by the general readiness of the bank to adopt and manage technology. It is also important to maintain high Digital Transformation Capability to amplify the use of the infrastructure built by investments and to accelerate and make more robust the fintech take-up.

H7: Digital Transformation Capability moderates the effect of infrastructure capability on the fintech adoption, such that the relationship becomes stronger when the Digital Transformation Capability is high.

3. Methodological Approach

3.1 Theoretical Framework

This research is based on the Resource-Based View (RBV) which suggests that sustainable organizational advantage stems from the ownership and the efficient utilization of valuable, rare inimitable and non-substitutable (VRIN) resources (Tang et al., 2021). In the banking industry, the components of big data analytic capabilities (data management, analytic and infrastructure) are identified as strategic asset to support firms' capability to set itself apart from its competitors by offering superior services or quality and to fend off Competitive Pressure that challenges its businesses. When used appropriately, these resources can help drive the adoption of fintech in order to better the customer experience, drive operational efficiencies and support risk management.Digital Transformation Capability is perceived to be another internal capability that moderates the extent to which banks can better employ BDA for fintech adoption. Those organisations that enjoy strong Digital Transformation Capability can easily map their data-driven capabilities to fintech capabilities, while those without such readiness stand to under-achieve despite their having sophisticated analytics tools. Accordingly, RBV has provided theoretical approaches to explain how the combined impact of Internet of things (IOT) capabilities with Digital Transformation Capability can led to sustainable benefits of fintech adoption (Tariq et al., 2022).

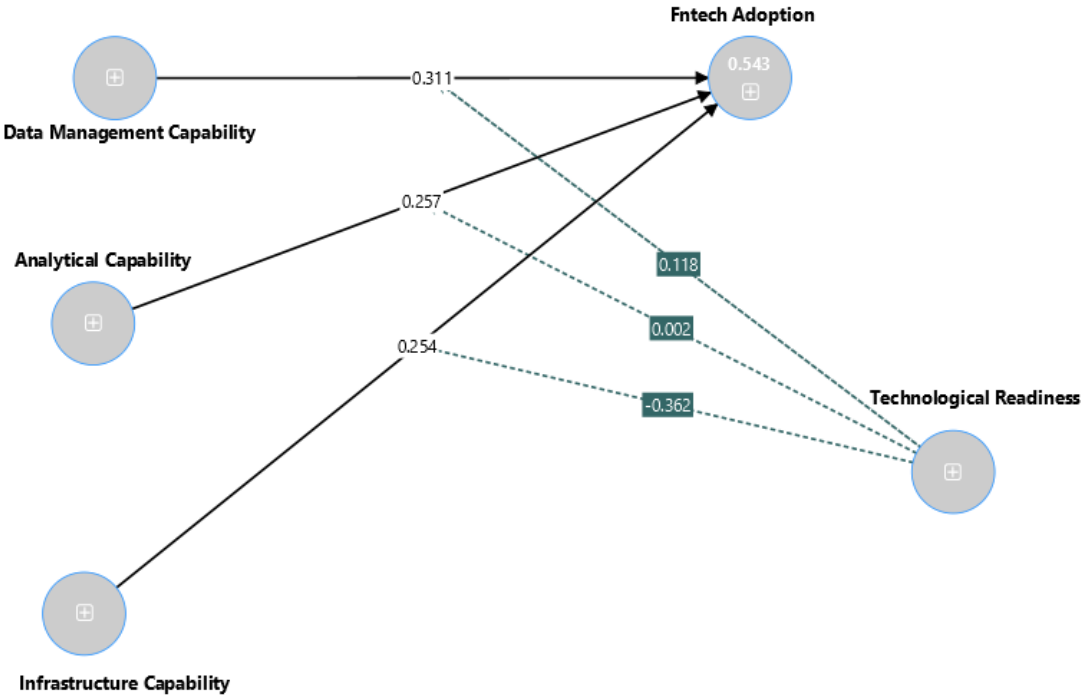

Figure 1 : Research Model

3.2 Research Design

The study used a cross-sectional quantitative research design to explore the association between Internet of things (IOT), Digital Transformation Capability and fintech adoption. A questionnaire was used to collect data from banking practitioners in commercial and Islamic banks of Jordan. Respondents For this project, the respondent list included IT managers, data analysts, fintech adoption experts, and business executives so as to maintain a balanced and experienced sample.All of the constructs were measured using items derived from previously validated scales and then customized to the fintech and banking domain. Each construct was measured using a five-point Likert scale from "strongly disagree" to "strongly agree". Reliability and validity of the measurement model was examined. Reliability (lic= individual reliability) The reliability of the measurements used in this study was checked using Cronbach's Alpha and Composite Reliability (CR) and the reliabilities met the criterion of 0.70. Convergent validity was supported by AVE values exceeding the recommended 0.50 threshold for all constructs. Construct distinctiveness was tested using both the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio for discriminant validity.

3.3 Data Analysis

The Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0 was performed for data analysis; a method appropriate for examining complex structural models including moderator effects. It offers the possibility to assess direct effects both at their plain level (Internet of things (IOT)→ Fintech Adoption; Digital Transformation Capability→ Fintech Adoption) and also moderating (Digital Transformation Capability×Internet of things (IOT) capabilities → Fintech Adoption).

3.4 Conceptual Framework and Hypotheses

Conceptual modelSource Adapted:shows the theoretical model (conceptualframework) of this research which shows the relationship between Internet of things (IOT) capabilities (analytical, data management, and infrastructure), Digital Transformation Capability and fintech adoption. The hypotheses are summarized in Table 1 each relationship is tied to the RBV and digital banking and analytics-driven innovation literature.

Table 1. *Summary of hypotheses and supporting literature.*

Hypothesis	Relationship Description	Supporting Literature
H1	Analytical Capability -> Fintech Adoption	[8]
H2	Data Management Capability -> Fintech Adoption	[9]
H3	Infrastructure Capability -> Fintech Adoption	[2]
H4	Digital Transformation Capability -> Fintech Adoption	[23]
H5	Digital Transformation Capabilityx Analytical Capability -> Fintech Adoption	[24]

H6	Digital Transformation Capabilityx Data Management Capability ->[15] Fintech Adoption	
H7	Digital Transformation Capabilityx Infrastructure Capability -> Fintech Adoption	[16]

3.3 Data Collection

A questionnaire was employed to collect quantitative data from 300 of the sample of practitioners in commercial and Islamic banking sectors in Jordan. Three hundred matched complete response sets were obtained and assumed as valid response rate for analysis. We selected the Jordanian banking sector as the primary context for this research due to its pivotal position in the national economy, its growing reliance on fintech instruments, combined with its vulnerability to technological and regulatory threats. This paper offers an intriguing perspective to analyse how Internet of things (IOT)' (BDA) effort to influence fintech adoption differs, but depends, on technology readiness. In studying hw BDA capabilities (with analytics capability, system infrastructure, data handling considered) affct h finance firm's understanding of the effects of fintech adptin, the researchers focused on hw the effects of fintech adptin are perceived by firms and the nature f these effects. In the following sections, a structured questionnaire respondent profile was developed to gather the information required to fa cilitate the above mentioned nuances: data management, analytics, infrastructure and technology readiness, and fintech usage. A qualitative stage of the interview was also carried out through 10 semi-structured interviews with banking managers, IT managers, and experts in fintech adoption. Participants were purposefully selected, they are experienced with bank digitalization, data science and financial technology integration. Interview topics--tech savviness, organizational culture and insurmountable operational barriers to the use of fintech analytics apps. These qualitative observations provided additional explanations regarding why the changes came about, in the organizational context and perceived impact, and deepened the quantitative results. Together such tiers have been crated to form a synergy in order to ease to a full perception of the bi-direction relationship between Internet of things (IOT), Digital Transformation Capability and BAFintech in the JBFI.

3.4 Data Analysis

Empirically assess the impact of BDA on fintech adoption in banking by estimating both direct and moderating effects. It tests in particular whether Digital Transformation Capability magnifies the implication of Internet of things (IOT) capabilities on fintech adoption performance. The modeling additionally permits the assessment of predictive validity and explanatory power of the framework for a common understanding on the contribution of internal technological resources on banking digitization.In addition to a quantitative approach, qualitative data were also collected and primarily relied on 10 semi- structured interviews that were performed with bank managers, IT managers, and fintech experts. Interviews The interviews were implemented in an open-ended, non-directive way and lasted between 30 to 45 min, seeking to explore the material resources which might have been contrary and supportive to Internet of things (IOT) integration in the process of fintech adoption, culture of digital innovation, and the technology readiness leading to change outcome. Subjective scores provided face validity to the scores and helped explaining factors of inhibitors and facilitators in the fintech adoption for the banking sector in

Jordan. With this in mind, and as we will endeavor to demonstrate, we may extend our knowledge of the extent to which Internet of things (IOT) capabilities moderated by Digital Transformation Capability are related to fintech adoption, by use of both qualitative and quantitative research strategies. Thus, a combined approach will enable us not only to verify theoretical assumptions, but also to analyze the actual form and practice of the digital transformation in banking.

3.5. Result

All item loadings were higher than the suggested limit of 0.70, showing reliability and sufficient representation of each construct.In the case of Analytical Capability, the factor loadings were also higher than the acceptable level (from 0.755 to 0.878). The reliability of the construct was high in terms of internal consistency with the Cronbach's Alpha 0.867, the Composite Reliability 0.904 and the AVE 0.653 (which supported the convergent validity).Data Management Capacity had factor loadings ranging from 0.810 to 0.912. The reliability and validity of the reported constructs were ruled out through the Cronbach Alpha (0.915), CR (0.935), and AVE (0.744).The loadings of the Fintech Adoption ranges from 0.809 to 0.869. The reliability of the construct was very high (Cronbach's Alpha = 0.898), Composite Reliability was strong (0.925), AVE = 0.710, indicating convergent validity.Infrastructure Capability indicated item loadings ranging from 0.748 to 0.865, which were well above the acceptable cut-off. The reliability of the construct was shown to be.885 using Cronbach's Alpha,.916 using CR, and.686 using AVE which is greater than the recommended values.Last, Digital Transformation Capability showed loadings from 0.822 to 0.908. The construct demonstrated a high internal consistency (Cronbach's Alpha value was 0.912), while achieving a high composite reliability of 0.934 and strong convergent validity with AVE = 0.739.In sum, the measurement model suggests that all of the constructs present strong reliability (Cronbach's Alpha > 0.70), acceptable internal consistency (CR > 0.70) and convergent validity (AVE > 0.50). These findings demonstrate that the composites used in this study are reliable, valid, and suitable to evaluate the structural relationships between the research model constructs.

Table 3. Factor loadings.

Constructs	Items	Factor Loadings	Cronbach's Alpha	C.R.	AVE
Analytical Capability	AC1	0.826	0.867	0.904	0.653
	AC2	0.755			
	AC3	0.775			
	AC4	0.801			
	AC5	0.878			
Data Management Capability	DMC1	0.864	0.915	0.935	0.744
	DMC2	0.86			
	DMC3	0.862			
	DMC4	0.81			
	DMC5	0.912			
Fintech Adoption	FA1	0.809	0.898	0.925	0.71
	FA2	0.849			
	FA3	0.851			
	FA4	0.835			
	FA5	0.869			

Infrastructure Capability	IC1	0.865	0.885	0.916	0.686
	IC2	0.838			
	IC3	0.748			
	IC4	0.848			
	IC5	0.838			
Digital Transformation Capability	RT1	0.839	0.912	0.934	0.739
	RT2	0.866			
	RT3	0.908			
	RT4	0.822			
	RT5	0.862			

Table 4. HTMT.

	Analytical Capability	Data Management Capability	Fintech Adoption	Infrastructure Capability	Digital Transformation Capability
Analytical Capability					
Data Management Capability	0.385				
Fintech Adoption	0.642	0.349			
Infrastructure Capability	0.5	0.306	0.561		
Digital Transformation Capability	0.427	0.406	0.382	0.399	

Table 4 present the Heterotrait–Monotrait Ratio (HTMT) values, results higher than the HTMT = 0.85 indicate the presence of discriminant validity. Discriminant validity is acceptable if the HTMT values are less than 0.90 as recommended.The HTMT of Analytical Capability with other constructs fall between 0.385 and 0.642, respectively, which are acceptable levels and indicate that it is different from the others. Data management capability has values ranging from 0.306 to 0.406 when compared with the other constructs and is also lower than the 0.90 cut-off, thus giving evidence for discriminant validity.In the context of Fintech Adoption, the HTMT links with the other constructs vary between 0.349 and 0.642, which indicates its enough distinction and meaningful correlations. On the other hand, Infrastructure Capability exhibits HTMT values of 0.306 and 0.561, indicating the discriminant validity of this construct. Finally, correlations of TR with other constructs are between 0.382 and 0.427 which are well below the cut off for discriminant validity. In general, all constructs in the model show HTMT values between 0.306 and 0.642, well below the threshold of 0.90. These results indicate that each construct is distinct and conceptually unrelated, which meets the criterion of discriminant validity. Furthermore, the Fornell–Larcker criterion and AVE values (all > 0.50 as shown above) support the convergent

and discriminant validity of the measurement model. In sum, the HTMT analysis, in addition to the variance accounted, enhances the model: Constructs—Analytical Capability, Data Management Capability, Infrastructure Capability, Digital Transformation Capability, and Fintech Adoption—are validly and distinctly measured.

Table 5 Fornell–Larcker.

	Analytical Capability	Data Management Capability	Fintech Adoption	Infrastructure Capability	Digital Transformation Capability
Analytical Capability	0.808				
Data Management Capability	0.358	0.862			
Fintech Adoption	0.58	0.33	0.843		
Infrastructure Capability	0.44	0.276	0.498	0.828	
Digital Transformation Capability	0.394	0.922	0.351	0.367	0.86

The results of the Fornell–Larcker criterion, which is a measure of the discriminant validity that compares the square root of the Average Variance Extracted (AVE) for each construct with its correlation with the other constructs, are shown in Table 5. The discriminant is achieved when the square root of AVE (In bold in the diagonal) is greater than the other correlations (non-diagonal) between the constructs.Footnote Exercise of scrupulous care to see if some construct has issue of FACTORS of the AVE.For Analytical Capability, the square root of AVE is 0.808, higher than its correlations with Data Management Capability (0.358), Fintech Adoption (0.580), Infrastructure Capability (0.440), and Digital Transformation Capability (0.394). This indicates evidence for discriminant validity of construct.DMC has a square root of AVE of 0.862, higher than the correlations with Analytical Capability (0.358), Fintech Adoption (0.330), Infrastructure Capability (0.276), and Digital Transformation Capability (0.922). While most are below the diagonal, the near unity between Digital Transformation Capability and them (0.922) suggests some risk of multicollinearity or content overlap, that is, that these two constructs are not completely orthogonal and must be interpreted cautiously.

4. Hypotheses Testing

The model for the testing the hypotheses in this study was assessed with path coefficients (the equivalents of beta weights in traditional regression analysis for PLS-SEM analysis) (Wandosell et al., 2021). Path coefficients are standardized and vary between -1 and + 1 and indicate the strength and the direction of the relationships among the latent constructs. Values at the ends of the scale tend to reflect more shared variance, and therefore more unity between the constructs. The strength of the coefficients, standard error, t-value, and p-value testing the significance of each were used. $p \leq 0.05$ was deemed to be appropriate for establishing support for the

hypothesized paths (Zhou et al., 2022). The results offer empirical evidence for the research model by indicating the research model significantly explains the variance in how Internet of things (IOT) capabilities leads to fintech adoption, this relationship is a function of Digital Transformation Capability. In particular, Analytical Capability, Data Management Capability and Infrastructure Capability were all found to have significantly positive effects on fintech adoption. In addition, TR was found as strong direct predicator to fintech adoption, This implies the impact of the critical variable in facilitating the transformation of banks SBUs to become fully digitalized. The supplementary test on the moderator found that the mediated moderating Digital Transformation Capability did have significant moderating effects on the paths of Analytical Capability to fintech adoption and Infrastructure Capability to fin-tech adoption. That means the more prepared a bank is, the more benefit it can derive from analytics-driven operations and digital architectures. Down the hierarchy, a weaker interaction of Digital Transformation Capability and Data Management Capability on fintech diffusion was observed, indicating that these constructs are potentially overlapping as also confirmed by the discriminant validity test. Overall findings from hypotheses testing support the main premise of the study that BDA capabilities are the key resources for fintech adoption in a banking industry and the ability of their influence will be strengthened if the organization have a high level of TR. The loadings factor (λ) and structural weight also added the robustness of the relation, which strengthened the RBV as the utilsed theory (Zulham, et al.,2024).Figure 2 displays the tested model with the direct and moderated effects. Taken together, the findings are consistent with RBV, and the evidence herein is from grounded empirical data of the Jordanian banking industry.

5. The Measurement Model of Researched Variables

Based on the RBV, the proposed research model highlights Internet of things (IOT) capabilities— i.e., analytical capability, data management capability, and infrastructure capability—as strategic resources that shape fintech adoption in the banking industry. They are meant to be VRIN (value, rare, inimitable and nonsubstitutable) resources designed to manage banks digital competitiveness and generation of customer centric innovations. In addition, technology readiness as an enabling indicator (æthe extent to which) this is ready for advanced data driven and analytical systems for innovate for banking.

In RBV terms, it incorporates direct and moderated relationships to explain how internal capabilities impact organizational outcomes. Analytical capability, data management capability, and infrastructure capability were expected to have direct positive impact on financial technology adoption. Digital Transformation Capability was also considered to be an independent force and a moderator as well, that magnified the influence of BDA capabilities on the adoption of fintech. The model as tested shows analytical capacity and infrastructure capacity have strong positive effects on fintech adoption, with some input from data management capacity, but this interaction is less pronounced than the interaction between it and Digital Transformation Capability. Figure 2 presents the structure relationships, showing direct effects of BDA capabilities, the direct contribution of Digital Transformation Capability, and the moderating influences between the paths

Table 7. Hypotheses testing estimates—path coefficient—direct.

Hypo	Relationships	Standardized Beta	Standard Error	T-Statistic	*p*-Values	Decision
H1	Analytical Capability -> Fintech Adoption	0.257	0.067	3.849	0	Supported
H2	Data Management Capability -> Fintech Adoption	0.311	0.125	2.484	0.013	Supported
H3	Infrastructure Capability -> Fintech Adoption	0.254	0.057	4.436	0	Supported
H4	Digital Transformation Capability -> Fintech Adoption	-0.115	0.126	0.916	0.36	Unsupported
H5	Digital Transformation Capabilityx Analytical Capability -> Fintech Adoption	0.002	0.075	0.022	0.983	Unsupported
H6	Digital Transformation Capabilityx Data Management Capability -> Fintech Adoption	0.118	0.057	2.085	0.037	Supported
H7	Digital Transformation Capabilityx Infrastructure Capability -> Fintech Adoption	-0.362	0.07	5.139	0	Supported

Table 7Overview of testing of hypotheses (Direct and moderation Fintech adoption factors) Analytical Capability (H1) had a strong positive impact (β = 0.257, t = 3.849, p < 0.001), suggesting that acquiring advanced analysis abilities increases the adoption of fintech. Data Management Capability (H2) also had a positive significant effect on FI integration (β = 0.311, t = 2.484, p = 0.013), indicating the importance of strong data governance for successful fintech integration, while Infrastructure Capability (H3) was also significant (β = 0.254, t = 4.436, p < 0.001), thus verified that secure and scalable infrastructures were indeed facilitating adoption. By contrast, Digital Transformation Capability (H4) had no direct effect (β = -0.115, t = 0.916, p = 0.360), indicating that readiness does not directly predict adoption. Regarding the moderation analyses, H5, Digital Transformation Capability × Analytical Capability, was not significant (β = 0.002, t = 0.022, p = 0.983), while H6, Digital Transformation Capability × Data Management Capability, was significant (β = 0.118, t = 2.085, p = 0.037), suggesting that readiness amplifies the role of data management in fintech adoption. Notable, Digital Transformation Capability × Infrastructure Capability (H7) showed a strong significant negative interaction effect (β = -0.362, t = 5.139, p < 0.001) which implies that the continued readiness may diminish marginal advantages associated with infrastructure related adoption perhaps because requisition or incompatibility with the integration necessities. To summaries, the results for H1, H2, H3, H6, H7 are consistent, whereas H4 and H5 are not supported which indicates that Internet of things (IOT) capabilities are indeed significant drivers of the fintech adoption, however that, this moderation effect of Digital Transformation Capability is mixed, strengthening some relations and weakening others.

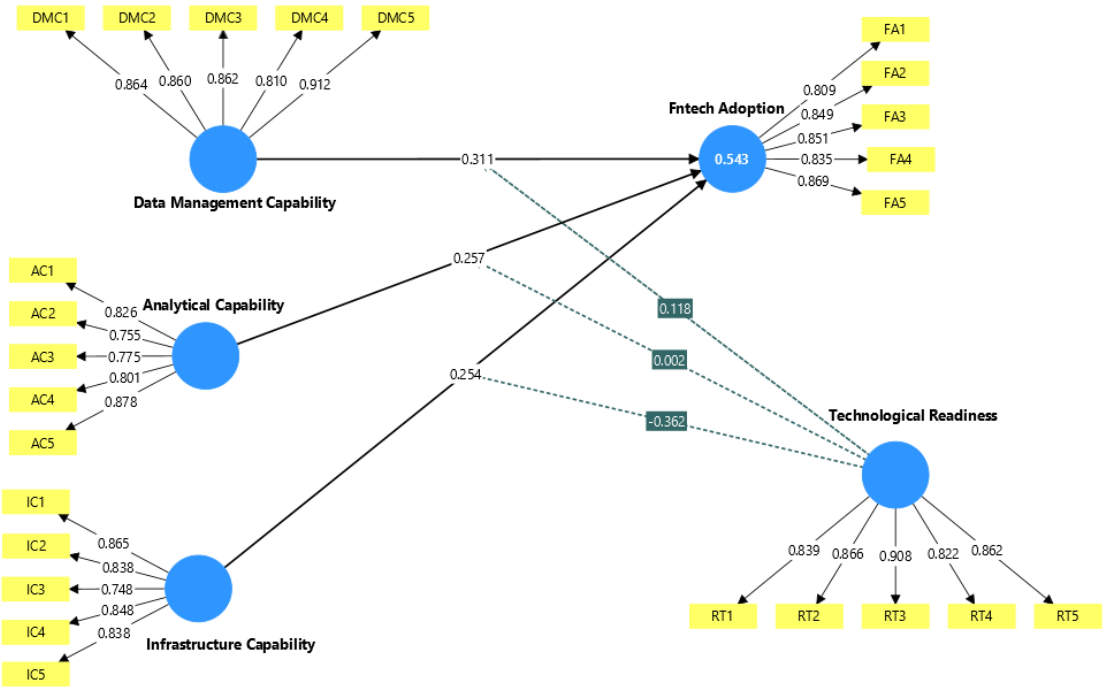

Figure 2 : Research Hypotheses Design

6. Discussion

The aim of this study was to investigate the influence of Big Data Analytic (BDA) capability comprising of analytical capability, data management capability, and infrastructure capability on fintech adoption in the banking sector and whether this is moderated by Digital Transformation Capability. Results verify that the proposed three dimensions of BDA exert a positive and significant impact on fintech adoption. This also corresponds with the logic of RBV, which claims that resources do not necessarily by implication results in advantage except when embedded in both contingencies and organisation. The moderator analysis of the summary analysis uncovered more nuance. Meanwhile, technology readiness indicated positive conditional moderation effect on data management capabilities and fintech adoption teem indicating that banks which had the intention to digital adopt with a good culture, infrastructure, and skills were more likely to use good data management practices in an effort to ease their adoption. Readiness did moderate the impact of analytic capability on adoption, but not as one might have expected (that the analytic capability would have a stronger influence on those who were less ready). This indicates potential users with existing resources of this type who can experience great benefit even if they are already relatively well-prepared. The most interesting observation was the moderation effect of negative direction between 'Digital Transformation Capability' and 'infrastructural capability' is noticed that functioning of high-readiness seems to significantly weaken the infrastructure in accepting fintech. This surprising finding might be due to redundancy: if a community over-invests in preparative mechanisms, then they may become amplified not in proportion (or even opposite to) the benefit from the infrastructure. The empirical results imply that Internet of things (IOT) capabilities are desirable resources that

induce the adoption of fintech, but Digital Transformation Capability is not a direct enabler, as its leverage impact of the resource might be enhanced and sometimes weakened. This is the realisation of the conditionality of financial service readiness as precondition required as well as interplay of resource constellations for banks in emerging economies not just "take" the benefit of fintech as competitive instrument.

6.1. Practical Implications

The results can be applied to advise on a banking institution in the developing world that is interested in strategically aggregate fintech adoption through Internet of things (IOT). Given that all the 3 resources (analytical capability, data management capability, and infrastructure capability) have a positive and very highly significant effect on fintech adoption, there is a danger for managers to believe consider all of them as the minimum condition to 'initiate' a digital transformationThat's a signal that banks should be cautious not to over-invest in workout exercises that create complexity or duplication. Theoretical and Practical Implications to Banking Top Management in Emerging Economies A) Implications to Banking Top Management It is evident from the results that Internet of things (IOT) is not a silver bullet to the banking business in emerging economies but it needs alignment to the organisation's strategy of the company.

6.2. Limitations and Avenues for Future Research

It is also proposed that AR is specifically a moderator in the n-model to relieve the theoretical problem) and the AR is an independent predictor and a moderator in the antecedents of the AC, DMC and IC. Although these are core to the concept of Internet of things (IOT) and Organizational Readiness, future research may extend the model by incorporating other constructs (e.g., digital leadership, innovation capability or strategic flexibility) into the model for a better model specification of the drivers of fintech adoption. Second, this study was confined to the Jordanian banking sector and thus the findings are not generalizable. Jordan is a good example for a DC but even institutions, regulation and technological infrastructure all in python, all over DC world are also very different. Lastly, this study extends the literature of BDAT by investigating the BDAT in the emerging market context and by integrating the BDAT with technology readiness and fintech adoption, but it recommends that future researchers should extend the attributions, a bigger and diverse dataset, and investigate new mediating and moderator in the models. It's an important driver in the acceleration of the banks/financial services industry digital transformation and the development of theory and operational policy practice.

7. Conclusions

This study contributes to current on-going debates in the literature on how internet of things (IOT) (BDA) capabilities, that is, analytic capability, data management capability, and infrastructure capability, are strategic antecedents for the diffusion of fintech in banking. It could even be argued that a readiness to employ it should not be considered separately from a resources game that must fit in with the culture, operational needs and strategic aims. Our findings thus complement those of the RBV when we show that the fintech adoption depends on whether banks can leverage their own resources in terms of positional readiness to achieve sustainable benefits. Theoretical and managerial implications the current study advances the literature from the BA and BIT perspective by identifying BDA capability as a driver to fintech adoption, and further refining our understanding of the paradoxical nature of readiness. The

practitioner's perspective of this is that srpies in analytics and SrP investments in analytics and preparedness aren't substitutes in a zero-sum (and wasteful) investment, that should become and investment in the value being created as a result of the investment. What is valuable from a research perspective are the other approaches to explore the mediating and moderating role of fintech adoption from the different institutional contexts.

8. Recommendations

Better data governance, integration and compliance systems will provide companies with which fintech's work greater certainty, after all, stronger data management practices help companies to make themselves more trustable, secure and resilient to regulators. Simultaneously, we must provide infrastructure capacity, security, and flexibility of cloud at scale so they build and take to market fintech apps quickly and at scale securely and in cloud. But the tunneling-through part of preparedness re-skilling workers, getting organizations to embrace a digital culture, bringing modern IT to them can't be single shots. not new new in the uttermost isolation - in fact, a thought-through push the value chain out as far as it's been pushed to and even take it further, out to the most value.Bank knowledge In integrating readiness in strategy, banks optimize BDA and the things which were previously only exclusive to fintech comes as mainstream to banks. We also make the case that Readiness must be intrinsically understood as cultivated adaptive and resilient input to the 'readiness system' capable of withstanding and enabling digital transformation. Investment not a scratch-the-itch tech upgrade that may work, may not But what if banks baked these into corporate strategy and weren't just governors of BDAs learning to ride them but wouldn't be caught without them any more than without any other durable competitive differentiator?

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