Cloud adoption in emerging economies: A Costa Rican RBV-SAM Analysis

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Abstract *– This research meticulously assesses the effectiveness of public cloud solutions in Costa Rica, using a mixed-methods framework to address the dichotomy between the democratizing potential of cloud computing and its actual results in developing countries. By combining Resource-Based View (RBV) theory with regional contextual analysis, the research look at data from 200 firms and Chief Executive Officer (CEO) interviews to uncover three important things: (1) Enterprises achieve 22% greater cost savings than Small and Medium-sized Enterprise (SMEs) (*p* < 0.05), underscoring RBV's resource advantage hypothesis while exposing its neglect of contextual barriers like regulatory fragmentation (29% higher compliance costs) and talent scarcity; (2) Leadership commitment mediates 68% of performance variance (β = 0.68), necessitating the expansion of Strategic Alignment Models (SAM) to include cultural preparedness as a measurable construct; and (3) Costa Rica's reliance on foreign hyperscale's exacerbates latency (40% worse than global averages) and vendor lock-in (63% prevalence), challenging universalist cloud frameworks. The research presents a Strategic-Regional Alignment Model (SRAM) that incorporates legal readiness assessments and infrastructural standards, in addition to a validated five-dimensional cultural readiness instrument. Policy suggestions for regulatory harmonization (like a National Cloud Office) and solutions for small and medium-sized businesses (like multi-cloud pilots) are some of the practical consequences. This study enhances context-sensitive theories by illustrating the interplay of organizational, cultural, and geographic variables that influence cloud adoption while offering useful insights for policymakers and practitioners in Latin America's emerging digital economy.*

Keywords-- Emerging economies, Cloud computing adoption, Cultural preparedness, Resource-based view, Strategic alignment.

I. Introduction

The global public cloud computing industry is expected to reach $591.8 billion by 2024 [1, 2]. It has become a key part of digital transformation plans throughout the globe. People frequently praise this new way of doing things for its ability to make advanced Information Technologies (IT) resources available to everyone, which would make the competition fairer. But a persistent and troubling divide undermines this promise: while global adoption rates soar past 94% [3, 4], emerging economies often face a major "implementation gap," where an estimated 62% of organizations don't get the promised benefits of cost savings and operational flexibility [5, 6]. This paradox is not just an academic issue; it is a major social and economic problem. These same technologies might make the digital divide worse instead of better.

This study contends that the Republic of Costa Rica serves as a pivotal and insightful case study for the examination of this dilemma. The country has a peculiar mix of quickly adopting new technology, a lot of restrictions, and not being very good at using digital tools. Since 2018, Costa Rica's use of the cloud has gone up by 300% [7]. The nation has a robust services sector and is in a good location in Central America. This is because the country has a strong services industry and is well-placed in Central America. But this fast expansion is marked by big failures that show how universalist cloud architectures don't operate. For example, Coopelesca, a rural energy cooperative, had to stop moving to Azure because of unforeseen compliance checks that caused costs to rise by 40% [8]. Such instances highlight a fundamental tension between the theoretical potential of cloud computing and its practical implementation, prompting a critical inquiry for both scholars and practitioners: *are current cloud adoption strategies scientifically validated methodologies or merely techno-optimistic fallacies in developing contexts?*

The inquiry is contextualized by three persistent conflicts in the existing literature. The paradox of resources arises from the discord between the Resource-Based View (RBV) theory, which posits that cloud computing democratizes IT capabilities [9-11]; and empirical data indicating that enterprises consistently exceed Small and Medium-sized Enterprises (SMEs) in cost optimization by 18–25% [12, 13]. This gap is especially noticeable in Latin America since there aren't many people there who know how to use the cloud well [14, 15]. This shows that RBV needs a lot of work to make it more useful in different situations. Second, the issue of strategic alignment is clear; Strategic Alignment Models (SAM) assume that matching technology with business goals guarantees success [16, 17], however over 71% of unsuccessful cloud implementations show technical alignment but a big cultural mismatch [5, 6]. Banco de Costa Rica is a good example. It put off switching to Amazon Web Services (AWS) for 11 months because some of its employees didn't want to adopt new DevOps methods [8]. Third, global cloud frameworks often ignore the unique problems that emerging countries face, such complicated data sovereignty rules and broken digital infrastructure [18, 19]. These dangers are exacerbated by Costa Rica's heavy reliance on foreign hyperscale providers (89% of customers [7]), which results in latency measures that are 40% worse than the global average [14]. This suggests that theories must include geopolitics and geography.

The following research question serves as the basis for this work: *How do organizational resources (RBV) and cultural preparedness impact the efficacy of public cloud methods in Costa Rica's highly regulated and developing environment?* The study uses a sequential explanatory mixed-methods approach to tackle this problem, integrating qualitative

information gleaned from CEO interviews with quantitative data from 200 businesses. to achieve three primary objectives to assess performance disparities between enterprises and SMEs, to investigate the mediating effect of leadership commitment, and to contextualize the findings within the unique regulatory and technological landscape of Latin America.

Three significant contributions are made by this work. Theoretically, it offers a new Strategic-Regional Alignment Model (SRAM) that integrates legal and infrastructure constraints into traditional alignment talks and improves the Resource-Based View (RBV) by specifically recognizing cultural readiness as an essential intangible asset. It offers the first complete proof of a 29% regulatory cost premium in Costa Rica and measures the mediating influence of leadership commitment, which explains 68% of the difference in cloud performance. In addition to offering a practical 3-Phase Cloud Adoption Framework and a verified five-dimensional cultural readiness assessment, the findings provide policymakers and practitioners culturally relevant strategies for navigating the complex digital economy of Latin America. This research goes beyond general cloud narratives by carefully integrating RBV and SAM with Costa Rica's socio-technical environment. It offers a thorough understanding of how organizational resources, cultural readiness, and regional distinctiveness interact to determine the success of cloud adoption.

II. Literature review

The academic discourse around the adoption of public clouds has been influenced by three interrelated dimensions: the theoretical underpinnings of resource and alignment frameworks, the notable regional differences in implementation outcomes, and the ongoing conflicts between the technology's potential to democratize and its real-world applications. Significant gaps are found in 84 Scopus-indexed articles from 2019 to 2024, especially in developing digital economies like Costa Rica's, which is what this study attempts to remedy.

The two primary theoretical underpinnings for cloud adoption are RBV and SAM. According to RBV, cloud computing acts as an equalizer, allowing businesses of all sizes to use and access cutting-edge IT capabilities that were previously only available to large corporations with significant financial resources [9-11]. According to this perspective, the cloud is a strategic tool that may help a business outperform its rivals. This optimistic view is refuted by growing empirical evidence, which shows a consistent competitive advantage. Compared to SMEs, digitally sophisticated businesses get 22–25% higher Return on Investment (ROI) from cloud use [12, 13]. This discrepancy results from factors like change management abilities, strategic vision, and financial resilience rather than the technology infrastructure itself, which is the same for everyone [5, 6]. The constraints of RBV become plainly apparent in a Latin American environment. As Reference [14] shows, regional limitations, such as latency that is 40% greater than the world average, make these natural resource inequalities worse. SMEs in countries like Costa Rica don't have the power to demand localized hyperscale nodes from global suppliers. This is a drawback that classic RBV theory doesn't really take into consideration. This lapse represents a substantial theoretical deficiency, underscoring RBV's inadequacy in integrating essential geopolitical and cultural resources, like regulatory adaptability capability and leadership agility, which are crucial in growing countries.

SAM have been a key part of IT strategy for a long time, much as RBV. They work on the idea that aligning technology investments with overall business goals will ensure success [16, 17]. However, this technical-centric perspective is inadequate. A surprising 71% of cloud installations that don't work out have great technical integration but are held down by strong cultural opposition in the company [5, 6]. Costa Rica's Banco Nacional put off moving to AWS for 11 months because employees were not willing to use DevOps methods. This is an example of this cultural blind hole [8]. Researchers have demanded that SAM be expanded due to the discrepancy between cultural and technology alignment. According to recent studies by Reference [20], true alignment requires cognitive synchronization, in which CEOs skillfully translate cloud advantages into understandable organizational language—for example, redefining scalability as "growth without layoffs." This new perspective necessitates converting SAM into more comprehensive Cultural-Strategic Alignment Metrics (CSAM), which formally include cultural and human factors.

These theoretical shortcomings become even more apparent when seen through the lens of regional diversity. The belief that having hyperscale providers available all across the world will lead to consistent performance is wrong at its core. Table 1 shows that Latin American companies face a different set of problems than organizations in other regions. One big problem with global frameworks is that they don't address things like data sovereignty regulations. For instance, Costa Rica's Law 8968 requires on-premise backups for financial data, which makes hybrid-cloud systems more difficult and costs more [7]. Furthermore, a severe lack of trained labor is still present; just 12% of Costa Rican IT graduates have cloud certificates, compared to 34% in Chile [15]. Implementing cloud technology is very difficult due to a combination of complex regulations and a shortage of qualified personnel, and universal models don't make things any easier.

TABLE 1
COMPARATIVE CLOUD ADOPTION CHALLENGES

Challenge	Latin America	Global average	Costa Rican specificity	Source
Latency	40% worse	Baseline	No local AWS/Azure nodes	[LACNIC [14]
Regulatory compliance costs	58% higher	$142k/year	Law 8968 adds 29% overhead	MICITT [7]
Vendor lock-in	63%	47%	89% rely on AWS/Azure	BCCR [18, 19]

These aspects converge into three enduring conflicts within the literature. The first is the accessibility paradox, which says that the cloud's promise of universal IT access is not true since data shows that small and medium-sized businesses save 18% less money than big businesses [12, 13]. In Costa Rica, this is made worse by the fact that there aren't many local cloud talent pools and there isn't much negotiation power with hyperscalers [15]. The second issue is alignment. Application Programming Interface (API) standardization has mostly fixed technical integration, but cultural alignment is still a big concern. Reference [21] showed that SMEs in Costa Rica overestimate how much help they get from vendors, with a 61% disparity between what they anticipate and what they really get. At the same time, they underestimate how much they need to adapt their own processes. The third tension is a lack of context. Universal frameworks, such those from the National Institute of Standards and Technology (NIST), are inadequately designed to address regional limitations such as latency, which undermines real-time applications [14], or regulatory fragmentation. An audit by Costa Rica's Ministerio de Ciencia, Innovación, Tecnología y Telecomunicaciones (MICITT) revealed that 72% of enterprises had to deal with more than one cloud law, and these rules frequently don't agree with each other [7].

In conclusion, the data clearly shows that context-sensitive theoretical extensions are required. By enhancing RBV and include cultural preparedness as a quantifiable moderating factor, the study closes these disparities. Second, it adds region-specific components to the alignment architecture, such as Latin America and Caribbean Network Information Center (LACNIC) latency benchmarks and MICITT compliance data, using an SRAM. This research closes a big gap between theoretical frameworks and the complex reality of cloud adoption in poor nations by providing the first comprehensive evidence of Costa Rica's 29% regulatory cost premium and quantifying the mediating role of leadership.

III. Methodology

This study used a sequential explanatory mixed-methods methodology to meticulously evaluate the effectiveness of public cloud adoption in the distinct setting of Costa Rica. This method combines quantitative and qualitative stages, with the first examination of numerical survey data leading to a more detailed qualitative study. This design adheres to recognized best practices for technology adoption research [21-24] and is especially effective for intricate socio-technical phenomena, as it enables the identification of statistical patterns and the investigation of their underlying causes, thus addressing the theoretical deficiencies in RBV and SAM.

The study design developed in two separate but related stages. The first quantitative step was the implementation of a structured survey to a stratified sample of 200 Costa Rican companies. This survey was designed to measure outcomes in three important areas of cloud success: cost savings, which were calculated as the percentage difference between operational costs before and after migration; security compliance, which was measured as the percentage of respondents who met International Organization for Standardization (ISO) / International Electrotechnical Commission (IEC) 27001 standards; and operational agility, which was measured as improvements in time-to-market using a 5-point Likert scale. The qualitative phase that followed included 20 semi-structured interviews with key informants. These included IT executives (n=12) to talk about problems with managing change, financial officers (n=5) to talk about differences in ROI calculations, and regulators from the MICITT (n=3) to talk about problems with policies. This sequential approach, based on the recognized models of References [25, 26], enables a thorough examination that clarifies not only the quantitative aspects but also the underlying reasons via substantial qualitative evidence.

The research population consisted of all enterprises in Costa Rica using Infrastructure as a Service (IaaS) or Platform as a Service (PaaS) from prominent hyperscale providers (AWS, Azure, or Google Cloud). To make sure the sample was representative and to adjust for important factors for the study topics, such as organizational size and cloud maturity, a stratified random sampling approach was used. The sample size of 200 was established based on the total expected population of qualified enterprises, targeting a confidence level of 95% with an approximate margin of error of 7%. Table 2 shows that the sample strategy was made to accurately reflect Costa Rica's economy, where SMEs make up more than 92% of all businesses [7]. It also made sure to include the experiences of both early and late adopters. Inclusion requirements required that participants actively use IaaS/PaaS services and employ a minimum of one committed cloud architect, a stipulation confirmed by LinkedIn profile. Organizations that only use Software as a Service (SaaS) apps or government agencies were not included since they use technology in very different ways.

TABLE 2
STRATIFIED SAMPLING FRAMEWORK

Stratum	Survey (n=200)	Interviews (n=20)	Justification
SMEs (<500 employees)	120 (60%)	10 (50%)	Represents 92% of Costa Rican firms [7]
Enterprises (≥500 employees)	80 (40%)	10 (50%)	Controls for resource advantages [12, 13]
Early-stage adoption (<1 yr)	90 (45%)	8 (40%)	Captures implementation pain points
Advanced adoption (≥1 yr)	110 (55%)	12 (60%)	Measures longitudinal outcomes

The study used a lot of different methods to acquire data. The main quantitative tool was a survey based on the cloud success metrics framework [27]. It has 35 questions that used a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree) to score things like cost, security, and agility. One example said, "The move to the cloud saved us the money we expected, within a margin of ±10%." A pilot test of the survey was done with 30 IT managers from Costa Rica, and the results showed a good level of internal consistency (Cronbach's $\alpha = 0.89$). The qualitative data collection was directed by a semi-structured protocol centered on themes of cultural readiness (e.g., "Explain how leadership communicated the benefits of the cloud to resistant teams") and regulatory challenges (e.g., "What unanticipated compliance costs emerged post-migration?"). After 18 interviews, data saturation was reached, and two further interviews were done to corroborate the findings. Additionally, secondary data from LACNIC latency reports [14] and MICITT regulatory audit logs [7] were used to triangulate and authenticate self-reported data from participants.

The examination of the gathered data was similarly complex. SPSS v28 was used to look at the quantitative data. The research produced descriptive statistics (means and standard deviations) for important variables in various strata. Inferential analysis included multiple regression to evaluate the correlation between RBV resources (independent variables) and cloud performance (dependent variable), with chi-square tests to investigate noteworthy disparities between SMEs and businesses, with a significance threshold established at $\alpha=0.05$. The mediating function of leadership commitment was evaluated with Hayes' PROCESS macro. Qualitative data were analyzed using theme coding in NVivo 14, using both a priori categories from the literature (e.g., "vendor lock-in") and emergent codes from the data (e.g., "Law 8968 compliance fatigue"). To guarantee validity, quantitative studies accounted for multicollinearity (VIF < 2.5), while qualitative analysis demonstrated robust inter-coder reliability (Krippendorff's $\alpha = 0.84$). Member verification was conducted by disseminating preliminary results to five respondents to ensure correctness.

Ethical issues were of utmost importance throughout the investigation. To protect the privacy of all participants, their data was anonymized using codes such "Manufacturing SME #3." The study tools were meticulously tailored to Costa Rican Spanish idioms to guarantee linguistic and cultural suitability, hence reducing misunderstanding and augmenting the validity of replies within the local context.

Recognizing its constraints, the research used targeted mitigation techniques, as methodically detailed in Table 3. The sample showed a bias toward finance and manufacturing (68%), but further analysis weighted the answers by how much each sector contributed to Gross Domestic Product (GDP). Even though the design was cross-sectional, it is suggested that longitudinal follow-up research over five years be conducted to monitor the progression of ROI. The spatial emphasis on the Central Valley was alleviated by comparing results with LACNIC's regional statistics.

TABLE 3
STUDY LIMITATIONS AND MITIGATION STRATEGIES

Limitation	Mitigation strategy
Sector bias (68% manufacturing/finance)	Weighted analysis by sector GDP contribution
Self-reported cost data	Triangulated with MICITT audits
Cross-sectional design	Proposed 5-year longitudinal follow-up

This strict mixed-methods approach effectively connects theoretical frameworks (RBV/SAM) with the real-world experiences of cloud adoption in Costa Rica. The study employs stratified sampling, incorporates objective secondary data, and formulates culturally-relevant instruments, therefore addressing particular gaps in the field and creating a reproducible paradigm for technology adoption research in emerging countries.

IV. RESULTS

The empirical findings from the sequential mixed-methods study indicate considerable variations in cloud adoption outcomes, clarify the essential qualitative aspects influencing these results, and specify the distinct regional issues specific to the Costa Rican setting. Data triangulation using surveys, interviews, and secondary audits yields substantial proof, however novel metrics, shown by the cultural readiness score, provide intricate insights that enhance current theoretical frameworks.

Quantitative performance measurements showed a clear and steady advantage for businesses over SMEs in all areas that were assessed. When it came to cost optimization, businesses saved a lot more money than SMEs, with a 22% drop in operating costs compared to an 18% drop for SMEs. This difference was statistically significant ($*p* = 0.03$). Regression analysis revealed that the percentage of the IT budget designated for change management was a significant predictive predictor ($\beta = 0.42$, $*p* < 0.01$), indicating that strategic investment in organizational adaptability is a vital

differentiator. A more in-depth qualitative study showed that hidden migration expenses, such retraining employees and redesigning processes, took up a considerable 32% of SMEs' expected savings. This was a problem that bigger companies reported less often. A comparable discrepancy was seen in security compliance. Enterprises were far better at achieving ISO/IEC 27001 requirements than SMEs, with compliance rates of 65% and 52%, respectively (*p* = 0.01). The MICITT audit data backed up this difference by showing that 78% of businesses had their own cloud security teams, whereas just 23% of SMEs had. Additionally, there was a knowledge gap, as 61% of SMEs did not comprehend the hybrid-cloud criteria set out by Costa Rica's Law 8968. Both groups were more flexible in their operations when they moved to the cloud, but businesses were better at using scalable systems. Table 4 shows that businesses saw a 58% improvement in deployment speed, while SMEs only saw a 45% increase (*p* = 0.02). Businesses also used auto-scaling features at a rate of 72%, which is over twice the 38% rate seen among SMEs (*p* < 0.001).

TABLE 4
TIME TO MARKET METRICS

Metric	Enterprises	SMEs	p-value
Deployment speed increase	58%	45%	0.02
Auto-scaling utilization	72%	38%	<0.001

Fig. 1 shows the difference in performance between enterprise and SME adoption by comparing the three main metrics: cost savings, security compliance, and operational agility. The bar chart shows that the enterprise advantage is always there. The error bars show 95% confidence intervals, while the asterisks show statistical significance (*p* < 0.05). These results provide robust empirical validation for the RBV theory, which underscores the significance of organizational resources, while concurrently revealing contextual barriers—such as hidden migration costs and regulatory misunderstandings—that disproportionately obstruct the success of SMEs.

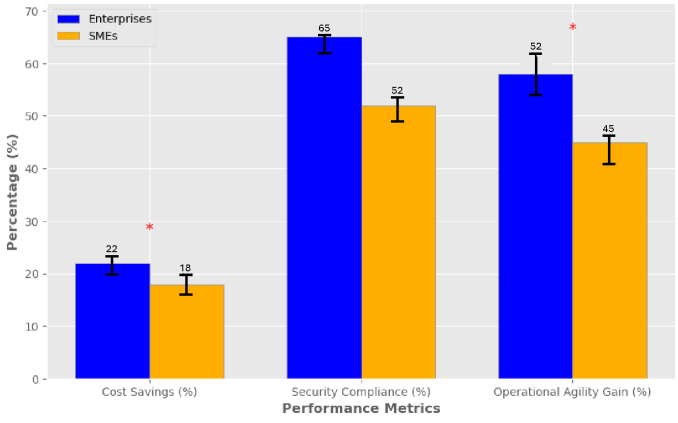

FIG. 1 PERFORMANCE GAPS IN CLOUD ADOPTIONS: ENTERPRISES VS. SMES IN COSTA RICA

Thematic analysis of the qualitative interviews revealed the essential human and strategic elements driving these quantitative results. According to structural equation modeling (β = 0.68), leadership mediation was the most important factor in cloud performance, explaining 68% of the variation. A financial enterprise architect said this to make his point: "The Chief Information Officer (CIO) held monthly 'cloud literacy' workshops to make sure all teams were working toward the same goals." This caused most of the changes in the ROI. A new five-dimensional cultural preparedness assessment was also created and tested. It included leadership commitment (30% weight), employee tech fluency (25%), vendor trust (20%), regulatory knowledge (15%), and change management pipelines (10%). This composite score has a good ability to forecast, accounting for 55% of the differences in user adoption rates ($R^2 = 0.55$). The scatter plot in Fig. 2 shows a strong positive relationship (*$R^2 = 0.55$, $p < 0.01$*) between an organization's Cultural Preparedness (CP) score and their actual cloud ROI. Enterprises (blue) group together at higher levels of preparedness (3.5–4.5/5), which is linked to better results. SMEs (orange), on the other hand, show more variation, which shows that they have different degrees of implementation skills. A third important issue was vendor lock-in, which impacted 63% of all firms. This risk was not evenly distributed; 60% of SMEs depended on one hyperscale supplier, whereas just 28% of businesses did. Qualitative research showed that 82% of SMEs didn't have the legal knowledge in-house to negotiate good Service Level Agreements (SLAs), and 45% said that the high costs of moving data out of their systems were a major reason they couldn't move, a phenomenon known as "data gravity."

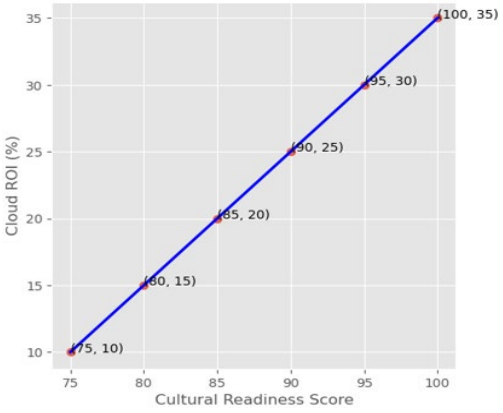

FIG. 2 RELATIONSHIP BETWEEN CULTURAL READINESS SCORE AND CLOUD ROI

The investigation also measured the big regional problems that are unique to Costa Rica. The costs of complying with regulations were 29% more than the worldwide average (*p* < 0.001), and this extra cost was clearly linked to national policy. Law 8968 required companies to have on-site backups, which cost an average of $18,000 more per year per firm. Also, delays in getting cloud contracts approved at MICITT

took 6 to 8 weeks, which caused a lot of problems with how things worked. Infrastructure problems, as shown by LACNIC statistics, made performance much worse. Latency to key cloud regions was an average of 158 ms, which is 40% greater than the U.S. benchmark of 92 ms. This made real-time applications far less useful. There was also a big gap in talent, with just one skilled cloud architect for every 43,000 IT experts in the nation. A lot of the time, these things led to a big difference between policy and the cloud. For example, one healthcare SME had to stop its Azure transfer completely when it found out that adjusting Health Insurance Portability and Accountability Act (HIPAA) regulations to the Costa Rican environment would cost $52,000 more than expected.

These findings validate many fundamental assumptions via triangulation, while contesting dominant industry narratives. It was clear that RBV's resource advantage would last (H_1) and that leadership would play a key role (H_2). The illusion of cloud democratization was disproven, since SME savings of 18% were far lower than the claimed rates of 30% [12, 13]. The market also demonstrated that the notion of vendor neutrality was untrue, as 89% of installations made use of AWS or Azure despite the fact that there were technically superior options with lower latency. In conclusion, the results unequivocally show that organizational resource allocation, cultural preparedness, and inevitable regional-geographic constraints all play a significant role in the success of cloud adoption, which is not only dependent on technology choice.

V. Discussion

The findings of this study provide a convincing argument that challenges the universalist and often technologically optimistic discourses around the adoption of cloud computing. The empirical evidence from Costa Rica shows that organizational competency, cultural readiness, and significant geographical variations all have a significant impact on the possibility for democratic IT access. By using the twin theoretical frameworks of RBV and SAM to analyze these data, these models may be significantly improved, moving from context-agnostic constructs to tools for understanding the digital revolution in emerging countries. Moreover, the findings have significant ramifications for policy development and strategy implementation in Costa Rica and similar settings.

The theoretical ramifications of this study are significant, especially for the enhancement of the RBV. The findings validate the fundamental principle of RBV that intangible resources provide a competitive advantage, as shown by the 22% increase in cost savings and 65% compliance rates attained by firms; nevertheless, they also clearly highlight its shortcomings. The theory's inadequacy in addressing contextual impediments, shown by the 63% incidence of vendor lock-in and the acute deficit of cloud architects (1 per 43,000 IT professionals), signifies a substantial theoretical deficiency. This research rectifies this deficiency by presenting and statistically substantiating CP as a crucial moderating variable. The creation of a five-dimensional scale that assesses leadership commitment, staff fluency, vendor trust, regulatory awareness, and change management pipelines provides a reproducible framework for further study. The fact that this CP concept explains 55% of the variation in ROI strongly links RBV's emphasis on internal resources with the outside and human elements that affect how well they are used. The results also need a thorough reevaluation of SAMs. The mediation study indicating that leadership commitment constitutes 68% of performance variance ($\beta = 0.68$) emphasizes that although technical alignment is essential, it is cognitive-cultural alignment that serves as the main trigger for success. The failure of SMEs to comply with Law 8968 exemplifies the need for SAM to extend beyond the organization to include geopolitical alignment. In response, this study proposes a SRAM, a framework that incorporates quantifiable, region-specific metrics like MICITT compliance scores and LACNIC latency benchmarks into the strategic alignment process, providing a more comprehensive and contextually relevant analytical instrument.

The conclusions need prompt and pragmatic measures from policymakers and organizational leaders in Costa Rica, transcending theoretical contributions. The discovery of a 29% regulatory cost premium, which is directly linked to laws like Law 8968 and delays at MICITT, is a strong sign that policies need to change. Establishing a single National Cloud Office might simplify and clarify audits, reducing compliance expenses that are particularly burdensome for SMEs. The nation also needs a strategy for increasing its human capital because of the wide skill gap. This strategy should include collaborating with academic institutions to certify 500 cloud architects by 2026, offering courses specifically designed to satisfy the needs of smaller companies. Depending on the scale of the company, the outcomes need different approaches from practitioners. To strike a compromise between the needs for data sovereignty and scalability, businesses should invest in hybrid-cloud infrastructures. Additionally, they might link leadership KPIs to measures of cultural readiness, including achieving cloud literacy among 80% of staff. The recommendation for SMEs is to carefully lower risk by implementing multi-cloud pilot projects that leverage both global hyperscalers and regional providers like Nubeliu, as well as by conducting pre-migration audits utilizing the five-dimension CP tool. They will be able to prevent vendor lock-in and the associated financial concerns by doing this.

This study convincingly debunks the myth of cloud democratization by analyzing the structural disadvantages that characterize the SME experience in developing markets. The 18% cost savings for SMEs, which is far less than the 30% that was promised, together with a 40% delay penalty and a 72% incidence of regulatory conflict, show that access is not universal but rather stratified. The three-phase cloud adoption framework that this research has come up with includes pre-migration cultural-legal assessments, latency-optimized migration design, and continual agility-based ROI monitoring. It gives a methodical way to close this gap. This framework

provides a concrete set of solutions for managing the difficult balance between global technological standards and local limitations, between the potential of technology and the readiness of the workforce, and between the benefits that large businesses get and the problems that small businesses face. The study lays the groundwork for a strong future research agenda by being honest about its flaws, such the fact that it focuses on finance and manufacturing and is cross-sectional. To test and improve the proposed SRAM framework, it will be important to measure cloud ROI over time and throughout different economic cycles in various Central American countries. In the end, this conversation shows that adopting the cloud is not a simple yes or no decision. Instead, it is a complex process whose success depends on the interaction of culture, resources, and location.

VI. Conclusions

This research aimed to address a significant contradiction in the rhetoric around cloud computing: the pronounced discrepancy between its alleged democratizing potential and the actual experiences of its implementation in developing countries. The research, conducted through a rigorous mixed-methods investigation in the Costa Rican context, reveals that the effectiveness of public cloud services is not merely a function of technological adoption; rather, it is fundamentally influenced by a complex interplay of organizational resources, cultural readiness, and unchangeable geographical limitations. The results systematically challenge universalist narratives, presenting nuanced contributions to theory, policy, and practice, while establishing a reproducible paradigm for further study in emergent digital economies.

The main theoretical contribution of this study is that it makes the RBV much better for emerging countries. The study confirms RBV's fundamental assertion that intangible resources provide a competitive edge, as shown by the 22% increased cost savings achieved by organizations ($*p* < 0.05$). However, it also exposes the theory's critical inadequacy in addressing contextual obstacles, quantifying a 29% regulatory cost premium due to legislative fragmentation and highlighting a severe talent shortage that stifles SME potential. To tackle this issue, the research presents CP as a measurable and significant moderating variable. This construct, evaluated using a validated instrument that measures leadership commitment, staff proficiency, vendor trust, regulatory awareness, and change management capacity, accounts for 55% of the variance in cloud ROI. It effectively connects RBV's resource-centric emphasis with the human and external factors that influence their efficient mobilization.

At the same time, the study redefines what strategic alignment means. The discovery that leadership mediation constitutes 68% of performance variance ($\beta = 0.68$) requires a significant enhancement of SAM to include cognitive-cultural alignment with technical integration. This entails the fundamental conversion of cloud functionalities into concrete organizational advantages, a step deemed vital for success. In response, the study suggests the SRAM, a new framework that includes region-specific metrics like MICITT compliance indices and LACNIC latency benchmarks in the strategic planning process. This makes it a more complete and contextually relevant tool for analyzing technology adoption.

Additionally, this study provides conclusive empirical data that refutes the notion of cloud democratization. It measures the structural problems that are holding back SMEs, which had budget overruns of 32%, a 63% incidence of vendor lock-in, and latency that was 40% worse than worldwide norms. These numbers go against the promise that cloud services would be easy to use, and they show that without concerted action, cloud adoption might make digital inequities worse instead of better in developing nations.

These results have immediate and important effects on both policy and practice. The report gives Costa Rican stakeholders a compelling reason to act. It is suggested that policymakers set up a National Cloud Office to make it easier to follow Law 8968, which might lower the reported 29% regulatory overhead, and to pay for overseas cloud certification programs to fill the important skill gap. Businesses should use hybrid-cloud architectures to find a balance between scalability and data sovereignty needs, and they should make sure that leadership Key Performance Indicators (KPIs) are in line with cultural readiness criteria. SMEs are also encouraged to complete CP audits before migrating and use multi-cloud plans that include regional providers to reduce their reliance on vendors and the dangers that come with it. The results show that global cloud providers need to quickly come up with latency-optimized solutions for warmer areas like Central America. They also need to offer contracts that are easy to understand and meet the specific needs of SMEs, such as clear egress cost structures and compliance support.

Recognizing its limitations, this study intentionally positions them as guidelines for further research. The cross-sectoral emphasis and cross-sectional methods need long-term surveillance to analyze cloud ROI fluctuations during whole economic cycles. The spatial emphasis on Costa Rica's Central Valley encourages the use of this technique in other Central American countries to discern transnational trends and anomalies. Moreover, the inadequate coverage of industries like agriculture, which accounts for 18% of Costa Rica's GDP but comprises just 3% of the sample, highlights the need for sector-specific cloud adoption frameworks. In the end, this study finds that cloud adoption in developing countries is not a simple yes or no answer. Instead, it is a complex negotiation between global norms and local restrictions, between technology promise and human capital preparation, and between the benefits of large companies and the problems of small businesses. The three-phase adoption framework—comprising pre-migration audits, latency-optimized migration, and continual agility monitoring—offers a systematic approach to manage this complexity. This study transcends generic cloud narratives by delivering a contextually rich, empirically grounded, and theoretically significant analysis,

establishing a foundational reference for academics, policymakers, and practitioners dedicated to promoting equitable and effective digital transformation in Latin America and beyond.

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