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RESEARCH PAPER

Exploring Cloud-Based Transformation Challenges and Counter Strategies: Case Study of Pakistani Fintech Company

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ABSTRACT

The purpose of research work is to assess the cloud-based transformation challenges as w as to review counter strategies of cloud-based transformation changes in the Finte industry. There are multiple reasons that encourage organizations to initiate cloud-bas digital transformation to introduce a major change in the organization. Successful implement and sustain such changes demands to explore the challenges comes with su changes as well as establish proactive countermeasures. For this purpose, an explorato case study was conducted in one of the top Fintech Company. This company successful implemented cloud based transformation project. The interviews of the officers involved the process of implementation of this process were conducted and transcribed.The findin of this study helps the top management to identify and understand challenges comes wi cloud transformation projects as well as to proactively develop strategies to address the challenges to successfully execute cloud-based changes.

KEYWORDS Virtual Remittance Gateway, Cloud Computing, Top Management

Introduction

A dynamic landscape puts pressure on both new and well-established businesses to boost their revenues while minimizing expenses by revamping their business processes with the help of new developing technologies such as cloud, Big Data, AI, and so on. Cloud computing has drawn more attention in Emerging Technology because businesses of all sizes and in all areas are using it extensively (Awan et Al; 2021). Traditional computing, which takes place on-premises, allows businesses to handle all of their IT on their own. However, this trend has shifted in recent years due to the development of the Internet; currently, the majority of computing products are rented and managed by cloud service providers (Suri & Mittal, 2012). Cloud technology enables companies to gain a competitive edge and concentrate on their primary operations (Creswell et al., 2022). The companies gains a competitive advantage by leveraging the cloud to effortlessly modify user capacity, allocate RAM, enhance CPU performance, customize internet bandwidth, customize server setup, choose operating systems, and manage application usage (Hashim et al., 2022). With cloud computing, businesses have more leeway in how they handle infrastructure management, can cut costs, and delegate tasks third-party provider (Ahmed et al., 2020). As a transformative technology and significant paradigm change, cloud technologies has not only dramatic impact on all aspects of our life, including work, commerce, and entertainment, but cloud technology will continue to revolutionize the way we manage, store, and exploit information, the business processes, giving open an array of possibilities in many aspects such as emerging data-intensive applications, the rise of multi-cloud deployment models, AI on cloud for individuals, organizations, businesses, and society as a whole (Morgan et al., 2017). Despite the fact that cloud-based business transformation has many benefits, but still many companies face substantial

challenges while moving from on-premises to cloud-based models (Azmir and Wijayanti, 2022). However, several studies have looked at the challenges of implementing cloud computing in the recent literature (Alsharari, et al., 2020). But the literature reviews shows that mostly research studies are focused on technological aspects of cloud-based transformation where other aspects including: people, processes, as well as culture received less attention from researchers (Sadoughi et al., 2020). Businesses operating in developing countries are more likely to face a number of challenges compared to companies in developed countries while implementing cloud-based transformation (Bounfour et al., 2022). According to (Sharma et al., 2023), there is still considerable space for research to study the challenges associated with cloud-based transformation in the context of resource-constrained countries.. Moreover, research suggested that in developing nations, only 13% of businesses have adopted cloud-based transformation (Cresswell et al., 2022). The literature review suggests that there is a need for more exploration of issues\challenges (Awan et Al; 2021) and strategically aspects (Al Najjar et al., 2022) of cloud based orgnaizatizational transformation in the context of developing countries such as Pakistan.

Literature Review

Businesses are increasingly preferring to move from on-premises to the cloud based solution. This trends seems to benefit the business in a number of ways, not the least of which is that cloud service providers can leverage the pay-as-you-go model at a reasonable cost (Sharma et al., 2023). Cloud computing offers high-quality, low-cost IT infrastructure services. Specifications may limit IT investment, market environment data storage, capacity, and elasticity (Andronie, M., & Ionescu, L. 2019). Flexible and scalable computing power can match elastic demand and supply while lowering capital expenditure (Bhatti, T. 2017). Cloud users benefit from the pay-as-you-go approach, which eliminates the cost and time-consuming job of installing and maintaining hardware, software, and computing resources (Cresswell et al., 2022). However, it requires an upfront commitment from customers (Awan et Al; 2021). Portability of the application (Ahuja et al., 2018), Information access from anywhere (Azmir, A. F., & Wijayanti, L. 2022).), guaranteed service level special supporting and Security control improvement (Ghanam et al., 2012). The application of this new technology reduces IT costs and increases business capabilities (Morgan et al., 2017). Nonetheless, implementing a cloud-based transformation project is not easy, always remain complex and ongoing processes, and there are substantial challenges that arise during the project's various phases, namely pre-implementation and post-implementation

(Shatat, A. S., & Shatat, A. S. 2021), that must be addressed before initiating cloud-based transformation. Prior research studies revealed certain challenges that are crucial to the success of cloud project implementation (Abied et al., 2022). Researchers are always interested in data security, and they believe that this is the most significant challenge in the implementation of cloud-based transformation initiatives (Al-Marsy, et al., 2021). Recent study also revealed substantial barriers that hindered the project's successful deployment and post-implementation, including a lack of service support, a lack of user control, data loss, compliance and regulatory concerns, and a lack of confidence (Krishnan, S., & Chen, L. 2019). In addition to this, several previous research studies have emphasized that data governance, integration of the new system with the existing on-premises system, and culture are the most crucial challenges that management faced in implementation cloud technology solution (Khan et al., 2022). According to (Al Yami, M. ,2023) businesses with varying degrees of cloud computing experience are more likely to

be resistant to change, which in turn can delay or even halt the transformation project's adoption.

Effective implementation of cloud-based business transformation in both private and public organizations requires an in-depth understanding of these challenges, as well as the development of proactive and effective implementation strategies (Subramaniam et al., 2024). However, companies are still facing several challenges when striving to implement these projects (Alsharari, N. M. (2022). Summarizing the literature, it revealed that the mostly companies are fail to effectively plan to address these challenges which causes a high rate of such complex project failure.

Material and Methods

Cloud-based company transformation is a challenging process in many ways, such as migrating all valuable data, machines, and other infrastructure to third-party premises, which presents multiple obstacles. Cloud based digital transformation projects impact on every aspect of the organization's structure (people, procedures, technology, and culture), and the entire installation might be take more than six months. In the selected company the available secondary data, which include presentations, project completion reports, and meeting minutes, was thoroughly analyzed in order to gain an in-depth understanding of the project success journeys of the selected organizations.

Based on available evidence and our analysis, it was established that the cloud-based transformation project took longer than six months to complete as well as that multiple apps had yet to be hosted and integrated by the needs of the organization. To manage and mitigate its risks, this transformation project has been divided into three phases due to its complexity. They first rebuilt their cloud architectures, bought space, RAM, and CPUs, and configured many virtual machines (VMs) to meet their needs. Over 3 million account data is migrated in phase 2. Each phase comprises intensive testing and experimental projects. Transferring account data for the remaining seven million members was the final process. Each phase's output fed the next.

Researchers have consistently asserted that case studies are the best approach to improving comprehension and understanding of these phenomena (McCutcheon, D. M., & Meredith, J. R. 1993; Yin, R. K. (2009). Therefore, a case study approach was used in this research study to explore the cloud-based transformational challenges and its counter strategies in VRG (Virtual Remittance Gateway), a Fintech Company under the umbrella of Pathfinder Group of Companies. Examining the case company's records, conducting in-depth interviews, and making observations were all part of the data collection procedure for this case study. Relevant documents were provided by the VRG team, including the initial feasibility report, project completion report, meeting minutes, presentation, SOPs, for the review. In addition to this, throughout this case study, the observation record was also meticulously kept. The next phase was to conduct and transcribe semi-structured interviews of the top management, middle management, as well as the staff members, who were involved in the installation process. The purposive sample approach was used for choosing a total of ten (10) participants for a semi-structured interview. The people who were interviewed in this case were the, CIO, COO, Regional Director, Head of Application, CTO, Head of Cloud, Manager of Information Security, Network Manager, System Manager, and Project Manager,. The demographic information about the respondents is shown in table 1. After being transcribed, the interviews were sent to the respondents for consent. The suggested changes were also performed in order to improve the credibility of the interviews. We arranged an informal

discussion meeting as a follow-up. During this case the relevant information which was provided by the management of the VRG team very useful to deeply understand the complex concept, implementation, and even the post-implementation processes of the

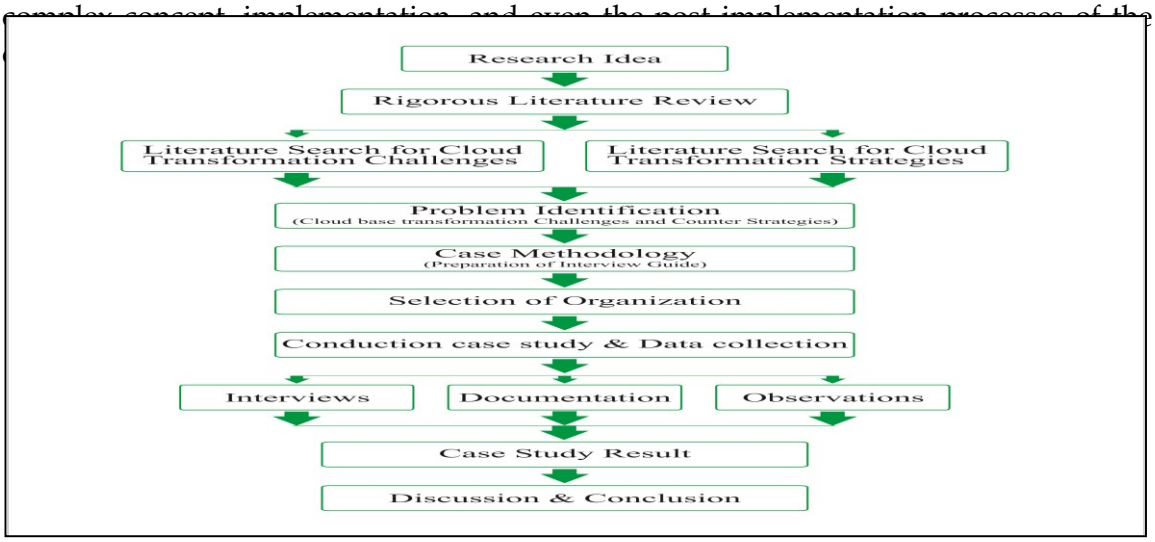

Fig.1. Research Methodology

Case Study

Company Introduction

Virtual Remittance Gateway (VRG) has maintained a clear focus in providing financial services as an enabler and a disruptor through a secure/regulated platform for a number of industries. The Company has developed cost effective products with advanced technologies under a B2B model that provides convenience in payments to un-banked / low end customers for their banking, financial needs under a unified payment platform and enabling information exchange for creating a knowledge based economy. VRG is Pakistan's first PSO/PSO licensed company from SBP and the only TPSP licensed company by SBP & PTA. VRG is an end-to-end national white labeled services platform, and its key competitive advantage is that it is a many-to-many interoperable end-to-end platform which provides financial services at an affordable cost. Its Unstructured Supplementary Service Data ("USSD") service not only provides the financial access for the un-banked but can serve as a platform for diversified industries to reach customers in remote location with limited infrastructure.

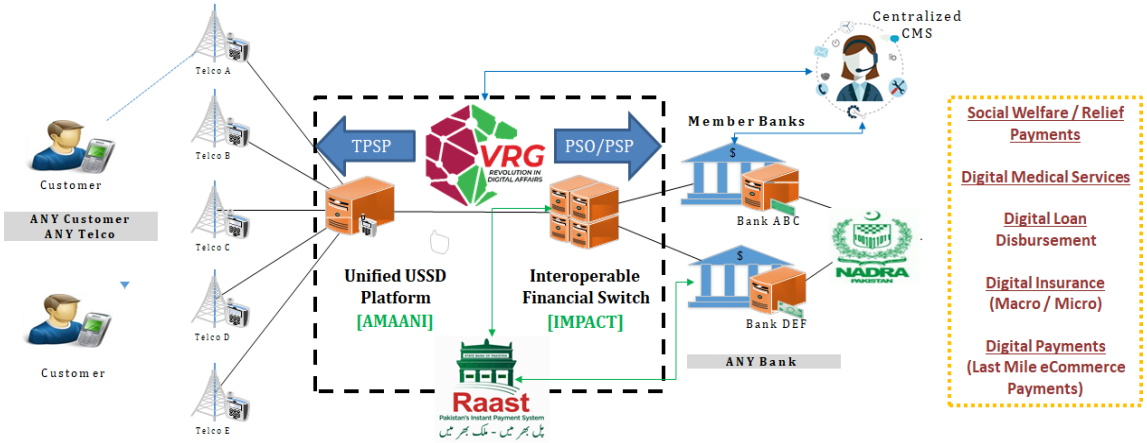

Fig.2 Work Processes of Organization

Need for Cloud based Transformation

One of the On the basis of the interviews with the management and the available documentation, this study discovered the following reasons\ challenges for the cloud based business processes transformation in this company.

- As VRG's operations expanded to other countries as well as joint ventures with multinational businesses. The management faced many concerns and challenges coming from the on-premises technology. Such as culture differences.
- Additionally, the company's employees were unable to operate remotely using the legacy system during COVID-19.
- High operational cost, and 24/7 support of the on-premises infrastructure
- High investment was needed to upgrade data centers with the international standard.
- Long time consuming to purchase any faulty parts for infra
- Real time data analytics was not possible with the existing infra
- Rigid to the new innovation or scaling the existing resources.
- Inefficient processes.

One of the senior executive said that

"It was quite difficult for us to expand our operations activities efficiently outside the country with the current infrastructure. One of our most significant challenge was successfully handling our global operations activities with our current infrastructure which were required to establish an infrastructure that adhered to global standards."

In a similar spirit, another member of senior management said that

"Providing round-the-clock support was challenging, driving up operational costs, and upgrading the existing infrastructure to match international standards required a substantial investment".

The senior management of VRG recognized the necessity of transitioning from on-premises to cloud-based solutions. The management expressed a desire to implement new cloud-based technology in order to decrease operational expenses, transfer the responsibility of 24/7 support to an external party, and establish a system that promotes innovation, flexibility, scalability, and resource optimization. Additionally, they sought to establish a central repository for storing large amounts of data, where real-time data analytics could be conducted to help the top-level management in their business decisions. Another move made by management was that the IT division's experts implement the transformation project rather than using an outside vendor. Additionally, upper management will consider hiring additional staff members experienced in virtualization if the information technology team determines it is needed.

This research study was used interviewees to gain insight into the challenges and possible remedies of cloud-based company transformation. The relevant documents provided by *VRG's management was very helpful in outlining the measures that were taken to ensure successful project completion. The following key challenges and remedies were explored.*

Challenges

Based on an analysis of interviews with the management of the company, we identified the fifteen (15) significant challenges that management experienced during the change. These challenges were split into three different phases, mainly pre, implementation and post-implementation challenges. Additionally, as indicated in the figure, we separated into three categories: people, processes, and technology.

Readiness

Readiness is and will remain an essential concern for companies that are experiencing technology-enabled transformation. During interviews, this company's management team voiced the same concerns. One executive said that

"Being more complex and agile, cloud-based transformation always demands consistency in the readiness of the origination, which poses a significant challenge for any organization – not just for us."

Similarly, another member expressed his views that

"A big challenge for us was data readiness because our data was massive in size and contained sensitive information."

Skilled Gap

One of the most serious challenge recognized by the company's management during the interviews session is the lack of experienced staff required to complete this complicated project. The senior management and Chairman of the company deliver concise instructions to the staff members they can hire professionals with experience in cloud computing if they needed. One of most senior manager said

"Cloud computing is still in its early stages, especially in Pakistan, where very few people have experience working in such environments. Even if we have experienced staff members there is still a need to address these areas before we embark on such a crucial project". Similarly another senior executive highlighted the skilled gap in the company

"We can't continue on this path without filling the skill gap; after all, we were the first Pakistani Fintech to entirely revamp business processes using cloud computing. We didn't want to rely entirely on the current team, so we recruited in seasoned professionals having virtualization understanding."

Lack of Awareness

During interviews, this organization's management, like many others in Pakistan, voiced concern about the lack of understanding about this new technology. One manager said that

"In the eyes of our many staff members, this platform was nothing more than cutting-edge innovation."

Lack of Knowledge Sharing Culture

Vendor Selection

Another issue which was identified by the managnent of VRG in the journey of cloud based transformation was the vendor selection for this project.

One member of implementation team said that

"It was an uphill battle for our team to find the right service provider, due to restrictions imposed by the State Bank of Pakistan and PTA on using international cloud providers. Few organizations in Pakistan offer cloud services."

Similarly another manager said that

"The process of selecting a cloud provider was one of the most challenging assignments as cloud transformation is an ongoing process that involves constant reliance on the provider. The capacity of the vendor will determine the overall success of your project. It was challenging for our team as we could only host our system locally."

In-house resistance

In interviews sessions it was revealed the in-house resistance but the magnitude was resistance was very low compare to the public sector. One manager said that

"At the very beginning of the project, some of the employees voiced an unwillingness since they were concerned we had very sensitive data and it might be unsafe to transfer to the cloud."

Re-archetectruing

Re-archetectruing was also determined to be one of the primary challenges in this project; this issue was raised by multiple VRG managers during their interviews. Head of cloud of this organization shows their concern that

"*Re-architecting all of our applications and system on a cloud-based platform was a difficult decision for us because most of our applications were designed and based on on-premise technologies."*

One other manager said that

"Undeniably, re-architecting was a daunting undertaking, but it was essential if we were to attain maximum benefit from cloud-based transformation."

Culture differences

Due to the collaborative nature of cloud-based transformations, cultural differences are an inherent challenge for both the hosting business and the cloud provider. VRG's management team shares the same way. One of the team member of VRG said that

"We continue to face the same challenges in many areas due to cultural differences such as working hours and data center access policies."

In the same way the other manager also shows their concern

"It was hard to integrate the different cultures of two distinct companies since our company's culture contrasted with the cloud provider in many ways, such as leadership style, resolving problems as well as working hours."

Migration challenge

Interviewers in this organization unanimously recognized that our team faced challenges in migrating our app and other systems to a cloud-based site. One implementation team members said that

"We had over 10 billion accounts and vast data, so it was tough to safely transition all systems to the cloud, even though our organization wanted to move all apps and infrastructure there."

Customization

Customization was also found a challenging task which faced by the implementation team during the cloud transformation journey in this organization. One senior manager said that

"Our applications were largely designed for premises technology, therefore customizing them to run on cloud premises and improve performance was challenging for our team."

Similarly another manager said that

"Since our applications were mostly developed for legacy technologies and our purchased applications were mostly limited to premises technology, the balance between customization in application and other systems and processes re-engineering was a challenge."

Employees Retention

When working on complex, ongoing projects, it can be challenging to retain experienced employees. In both official and informal discussions with the management of the company, this issue was also highlighted by the management.

Two senior managers' viewpoints are summarized as follows:

"The perceived workload, stress, job uncertainty, and skill gaps might cause employees to resign. This may reduce the company's value and hamper cloud transformation process.

Data Loss

Data loss is also reported as an important challenge in the discussion with this company management. One senior team member said that.

"Accidental deletion, poor data quality, security breaches, and corrupted data are some of the multiple kinds of data loss that pose substantial challenges to the implementation team across cloud migration processes."

One other senior manager said that

"Our company's financial data is a lifeblood for us, our senior management assumed that only our data would be secure on our premises. Several challenges stood in our way, including the possibility of data leakage, degradation in data quality, or compromise of additional sourced data**."**

Governances

The primary challenge that this organization's management team faced during their transformation was the governance, which they reported during the interview. One of the top executive said that **"***Cloud ecosystems can often be described as complex and able to grow at a quick pace. Especially when companies undertake massive cloud-based process transformations, efficiently govern this complexity is very challenging task for us"*

One of the senior executive share his concern like that

"*As our company transferred a massive data set and multiple vital apps and infrastructure, and we implemented fundamental cloud-based transformation within the company process, we faced several governance challenges regardless of our exclusive governance strategy.*"

Security threats

Cloud-based transformation is risky because of more chances of data loss and security vulnerabilities. The VRG management team shows the same security challenge throughout the cloud journey.

One of the executive said that "As a Fintech Company we have sensitive data of the customers. Therefore, the management is more concerned about disclosing information that the company keeps from its market competitors. Financial information accounts for almost all of an organization's stored data and is regarded as the company's heart. This makes it hard for any business to have trust on third-party." Similarly one other senior executive share his concerns on security as "Security threats are usually psychological rather than genuine for any businesses".

In the same way one other manager said that *"Many businesses hesitate to migrate their data to the cloud because of mental and psychological impediments. It isn't that there are actual security issues, but rather that enterprises view cloud computing negatively and fear the potential threats it poses."*

Down-time

Down-time has also reported of the serious challenge raised by the management of this organization. One of senior manager talks about down-time aspect of cloud based transformation *"It was challenging to ensure that all operations and financial transactions could*

run online efficiently without extended downtime because our servers were live and integrated with multiple telecom companies and banks." One other manager said that *"Assuring the least amount of downtime is the most important aspect of cloud-based transformation. The accessibility and availability of operating apps and other infrastructure are determined by downtime during the transition from an on-premises to a cloud-based environment."*

Business Process Re-engineering (BPR)

BPR is found one the most important challenge in this organization transformation.

One manager said that

"As our team opted to rebuild all of our systems on the cloud, it was not only important but also one of the most challenging task to implement BPR into our business processes to reap the full benefits of this transition."

Similarly one other senior executive highlighted this issue like that

"Our most formidable challenge was maintaining a balance between the BPR and the customization options for the current application and infra that already running on-premises site"

Integration

One senior manager expressed that

"The presence of third-party applications designed for the on-premises platform posed a challenge to the integration of the legacy system with the cloud-hosted applications and other systems."

One other member expressed similarly

"Due to management's decision to maintain both the cloud and the current legacy system, integrating the two has been challenging in many ways. This challenge becomes even more severe when we make use of multiple cloud hosting solutions."

***Coordination in* collaborative work environment**

In interviews, management reported that coordination in collaborative environment among our own team members and the cloud vendor team was a challenging task for us in many ways.

One of the top executive said that

"In a team setting, coordination is getting everyone on the same page and making sure they have what they need to complete their tasks. However, it is not always easy to ensure good coordination."

Vendor Relationship management

Managing vendor relationships in a cloud-based transformation is tough due to the various components that are intrinsic to the dynamic and complicated nature of cloud

services. The same challenge was also found in the interviews session with the management of this company.

The following is a summary of the views of two senior staff members:

"You need to successfully establish a long-term partnership because cloud-based transformation is a dynamic environment, your whole asset base is stored on the vendor's premises, and vendor participation determines the success of most projects. The Pakistani environment makes it challenging because some activities require many vendor visits."

Optimization

Many participants in the organization highlighted optimization as an important issue in interviews.

One member said that

"Cloud providers offer a wide range of services, making it challenging to evaluate which ones are appropriate for our organization and how to maximize their use, particularly for enterprises with diverse workloads."

Similarly one other senior executive reported that

"*I believe that the procedures and cost optimization pose the greatest obstacles that could prevent us from fully realizing the benefits of transformation, even though optimizing all aspects is obviously important.*"

Auto-Scaling

Interview participants recognized auto-scaling (scaling in and scaling out) as a challenge for this company. This function helps optimize cost, resources, and processes by removing or adding resources as needed. The head of application said that

"Auto-scaling is a highly significant function supplied by foreign cloud providers, but local suppliers do not, therefore you have to manually handle this, which is challenging."

Regulatory and Compliances

It seemed clear during discussions with upper management that they had encountered difficulties with regulations and compliance, which they ranked among their most pressing concerns. One of the top executive said that

"As a Fintech company, we must adhere to the norms and regulations established by the PTA and the State Bank of Pakistan, and telecom operators. One instance of this is the policy that the State Bank of Pakistan established, which states that a financial company can only host its data on local clouds."

In the same spirit, another manager stated that

"The financial services sector operates under a set of stringent rules. Companies need to protect customer information in line with regulatory mandates. Tackling this task is no easy feat. In order to ensure that we adhere to all regulations, we retain the services of an independent auditor."

Political Instability

Political instability is the challenge which still faced by this company in after shifting the cloud based transformation. One senior manager said that.

"The concept of cloud formation anywhere, at any time, becomes irrelevant in the context of political uncertainty in Pakistan. Because PTA has generally restricted internet access, it is quite difficult for us to connect to our customer hosted site from anywhere."

Lack of knowledge sharing culture

Because of its virtualization foundation, Cloud technologies is of the most complex technologies and calls for highly skilled workers. One of the primary challenges that was brought up by many of our interviewers during the session was the lack of a culture of knowledge sharing. Two senior managers' viewpoints are summarized as follows:

"Being an unfamiliar technology, cloud computing demands an open culture of exchanging knowledge freely. Unfortunately, this culture is more common in impoverished nations, where folks are less likely to share their expertise. Consequently, which posed challenges for learning, creative thinking, and teaming."

Strategic Initiatives for Cloud-based Transformation

Implementing a cloud-based transformation project is a complex and demanding task. VRG seeks to execute projects in-house rather than outsourcing. A successful transformation strategy is always needed for such a project. This study also detailed the strategies devised by the organization to address the highlighted challenges.

Readiness for Cloud

A key aspect of the company that has been adopted relates to the organization's readiness for the cloud. This also comes to light in the interview process. One senior member said that

"We have rigorously evaluated our cloud readiness and determined our strengths and areas for improvement."

One other senior executive said that

"We hired an outside consultant to analyze our cloud preparedness. In response to the readiness report, our top management established a temporary cloud department and hired new people with project experience

Established Cloud Department

The chairman and higher management created a temporary cloud department in response to the project's delicate and intricate nature. Two seasoned executives with expertise in telecommunications and cyber security were recruited. These new employees are assigned duties as follows: one is designated as the Director of Telecoms and the other as the Head of Cloud.

Team Formation

Interviews and informal meetings with the management of this company revealed that the organization concentrated on establishing a cross-functional team led by the head of the cloud to complete this project. Head of cloud said that

"We formed a cross-functional team that was further divided into sub-teams (Application team, Risk Assessment team, Systems team, and Network team and Data analytics team), with each team having its own responsibility and being empowered to make decisions."

One other senior member said that

"The intention of establishing a cross-functional team was to integrate varied skills and experiences and take a holistic approach to dealing with the issues related to cloud-based transformation."

Vendor Selection strategy

Local vendors were thoroughly assessed by this company's management. Jazz Garaj was selected by management due to his impressive record and exceptional technical abilities. One member said that

"To keep the relationship alive, it is essential to choose the correct supplier for cloud-based transformation."

Top management involvement

Moving data and other infrastructure to third-party premises and changing the organization's IT, processes, structure, and employee roles and responsibilities are all aspects of cloud-based transformation that require the full support of top management from the moment they are considered until after the deployment is complete. Papers and interviews show that VRG's high management was enthusiastic about the project from the beginning to the end.

One manager said that

"*Our chairman had a vision for our company—to become the pioneer in cloud-based financial technology in Pakistan.*"

Communication Strategy

A well-planned strategy for conveying correct information to the right people at the right time has been developed by management. One of the staff member said that

"Considering the collaborative work environment our communication strategy were covered both aspects internal and external communication"

One other senior manager said that

"Keeping stakeholders informed, engaged, and aligned throughout the project was our primary goal in developing and implementing our communication strategy."

Change IS and IT Strategy

As revealed through both formal and informal conversations, the VRG revamped the IS/IT Strategy to incorporate cloud-native capabilities. *One team member said that*

"We have redesigned our IT strategy to take use of cloud computing and its services so that our business can adapt quickly to new technological developments and keep an eye on innovation."

One other senior manager said that

"Cloud native application development was central to our new IS strategy, which aimed to boost our company's value by making our systems more secure, scalable, agile, and cost-effective."

Change Management Strategy

An important step that this company has taken was to establish a strategy for handling change. Management consults with seasoned workers from all areas of the company to build an all-encompassing plan for effectively managing people, processes, culture, and technological changes.

One senior team member said that

"Our developed change management strategy enables us to not only traverse the challenges of this project but also completely realize the benefits of the cloud-based transformation in reaching their strategic objectives."

Phase-wise Strategy

The project was divided into three different phases, as the management highlighted in the discussion. The aim was to efficiently manage this complicated project while minimizing risk. Briefly summarized the two senior executives' statements, such as

"Our sensitive massive data volume and project complexity led us to separate it into three phases. Our project management ensures that each step feeds the next."

Incremental Strategy

An additional point raised during the discussion with the management team was the enactment of incremental strategy in each phase of this project. One member said that

"With the ever-accelerating evolution of cloud computing, our implementation team decided to take baby steps to ensure consistent delivery while also leaving room for adaptation."

Two-tiered Regular Audit Approach

The misuse of data on third-party premises and the possibility of data security breaches are major worries for senior management. We instituted routine audits to deal with these problems. One senior manager said that

"We established a two-tiered audit plan that includes internal audits and an auditing firm to manage data migration challenges, security and risk."

Similarly

"Our entire hosted infrastructure is also being audited by the state bank's IT audit experts."

Backup Strategy

In light of the intricacy of the project, the manager encouraged the implementation team to create backups of data and other systems. Interviews also revealed management's concern. One team member said that

"*To handle unforeseen events, we retain the on-premises current system and we created a master copy of the data and system.*"

Governances Strategy

An organization's governance plan is what ultimately decides a cloud based transformation project's success or failure. One top executive said that

"We designed a comprehensive governance plan that effectively governs people, processes, technology, and culture change since we understand the importance of excellent governance for project success."

In a similar vein, another manager commented

"We were able to come up with a suitable governance strategy by incorporating the most key concepts from different renowned cloud governance frameworks."

Cloud Security Strategy

The most pressing concern with cloud computing is security. This company's management has also emphasized the same concern in the discussion. Summarized the statement of the IT experts

"Different Security parameters, such as data policy, user's access layers, password policies, machine-level security, MPL use, data ownership, and accountability are all parts of our security strategy."

Re-artchteteruing strategy

The re-architecting plan, rather than the lift-and-shift strategy, was revealed during discussions with management of the company. One manager said that

"We have decided to implement a re-architecture strategy for deploying our new system to the cloud as our main application and other systems had been developed for on-premises technologies."

Training

Extensive training for staff members was a key step taken by management. Summarized the statements of two senior executives.

"As a means of attracting and retaining top talent, we provide comprehensive training programs along with complimentary cloud technology certifications to pave the way for professional growth and success."

Multiple Cloud

Other post-implementation strategic initiative revealed in the discussion included hosting his system on various clouds. One senior executive said that

"Management at the company has decided to host the system on other cloud sites in case the primary one goes down or loses data."

Continues Feedback Strategy

The implementation team has initiated frequently feedback strategy as also revealed in informal and formal discussion with the managnent. It has a key role to on track the transformation journey. One senior member said that

"Keep an eye on how things are changing. There was a need to create a TMU department to help in gathering stakeholder feedbacks and getting it to the management."

Strategy for Knowledge management\Sharing Culture

Another approach which has taken by the VRG management is to executing the Chairman's policy of barring non-collaborators and providing rewards to experienced personnel who voluntarily share their knowledge with juniors, VRG management also developed an environment for learning**.**

One Senior Executive said that

"We promote incentives and prizes to teams who document their cloud computing solutions, experiences, and best practices. Set up centralized data repositories so that employees can easily access and collaborate on documents."

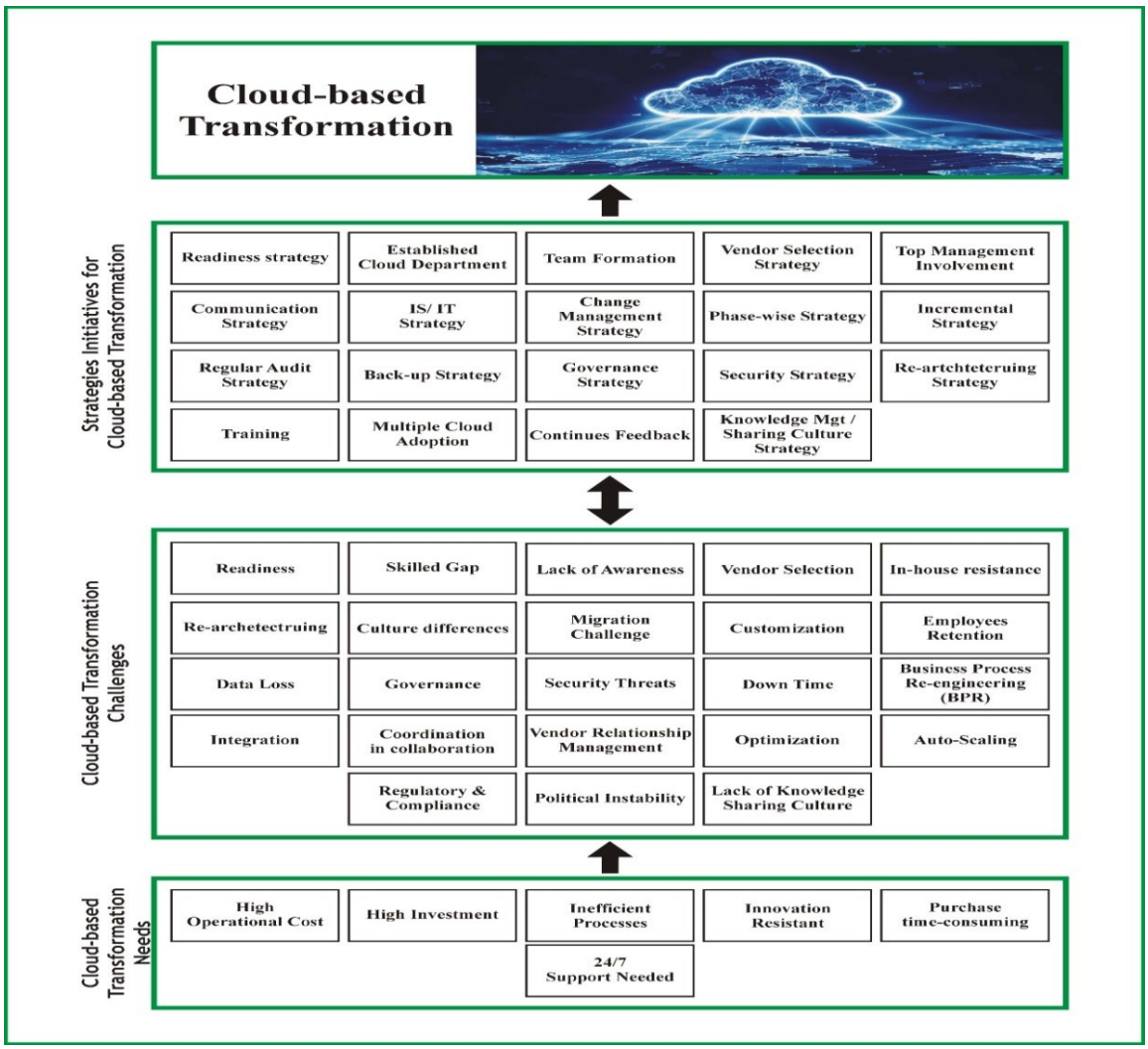

Fig.3 Framework for Cloud-Based Transformation Initiative

Conclusion

Businesses are increasingly looking to cloud-based digital change as a viable alternative to legacy systems, therefore, to guarantee the success of the transition, it is vital to understand and assess all the challenges that emerge during cloud-based digital transformation as well as the devise strategies for handling them. In this regard, this study developed a comprehensive framework for Cloud-based transformation. The proposed framework comprises three parts: the business demands for cloud-based transformation, the issues arising from this transformation, and the strategies implemented to overcome these challenges, as illustrated in Figure 2. The developed framework would be serve as a valuable asset when the organization initiates its projects to transform to the cloud. We used an unstructured interview-based case study methodology to gain insight into the business's challenges faced and the remedies they implemented in cloud transformation project. We highlighted the challenges that this company experienced in this project, including: ( ). The key to effectively managing this complex, long-term project was coming up with strategies that could handle the issues and challenges during various implementation phases. The strategies developed\adopted by the management of this organization proved to be lucrative.

Table 1

Demographic data of Interview Participants

S.#	Position	Experience	Duration (Min)	No. of Participants
1	Chief Information officer	16 Years	60	1
2	Chief Operating Officer	13 Year	55	1
3	Head Of Cloud	17 Year	45	1
4	Regional Director	14 Years	40	1
5	Head of Applications	10 Years	45	1
6	Chief Technology Officer	15 Years	40	1
7	Network Manager	12 Years	35	1
8	Manager Cyber Security	8 Years	35	1
9	System Manager	8 Years	40	1
10	Project Manager	5 Year	35	1
	Total Participants			10

Research Implication

This research work highlights the following key guidelines for successful cloud-based transformation projects.

- **For Organizations:** This study provides a strategy framework to address cloud transformation challenges and develop proactive counterstrategies.
- **For Academics:** closes the gap between theoretical models and real-world cloud transformation challenges, particularly in nations with poor infrastructure.
- **For Practitioners:** This study emphasis on Consistent Leadership commitment, team formation, training facility, effective stakeholder engagement, effective governance and continues feedback mechanism are all critical for the implementation of cloud based transformation.
- **For Policymakers**: Provides insights into developing regulatory standards that combine innovation with security and compliance.
- **For Technology Leaders:** For technology leaders: Highlights best practices for connecting cloud projects with business objectives to maximize ROI and efficiency.

Future Recommendation

This study was limited to a single business. Future research may use a comparable research methodology and incorporate multiple companies to enhance the generalizability of the findings.

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