Impact of Cloud Computing on IT Strategy and Digital Transformation: A Study of Children's Behaviour

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Abstract
Cloud computing has rapidly evolved into a foundational technology reshaping Information Technology (IT) strategy and driving organisational digital transformation. Simultaneously, the cloud-enabled proliferation of streaming platforms, gaming services, and learning applications has altered children's daily behaviour. This paper examines the dual impact of cloud computing: first on enterprise IT strategy and digital transformation, and second on children's behavioural patterns through cloud-delivered digital content. The study adopts a descriptive-analytical design based on secondary data sourced from Gartner, NASSCOM, IDC, Statista, WHO, and peer-reviewed research published up to 2022. Findings show that worldwide end-user spending on public cloud services reached US$482 billion in 2022, SaaS retained the largest share, and Indian enterprises rapidly shifted to hybrid multi-cloud architectures. In parallel, screen time among children in India and globally rose sharply, with 49% of urban Indian children aged 9–13 years spending more than three hours daily on cloud-streamed content, producing measurable effects on sleep, attention, and socio-emotional behaviour. The study concludes that cloud computing is simultaneously an engine of economic transformation and a societal variable that reshapes childhood behaviour, requiring balanced strategic and parental governance.

Keywords: *Cloud Computing, IT Strategy, Digital Transformation, Children's Behaviour, Screen Time*

1. Introduction

Cloud computing has moved from a peripheral IT option to the central nervous system of modern digital economies. Defined by the U.S. National Institute of Standards and Technology as an on-demand, elastic, metered model of shared computing resources, the cloud has restructured how enterprises plan, procure, and deploy IT (Mell & Grance, 2011). Since the COVID-19 pandemic, this shift has accelerated; Gartner reported that worldwide end-user spending on public cloud services reached approximately US$482 billion in 2022, growing 21.7% over 2021, with projections that public cloud would exceed 45% of total enterprise IT spending by 2026 (Gartner, 2021). For Chief Information Officers, cloud adoption is no longer a cost decision but the core of digital business strategy (Ebert & Duarte, 2018). At the same time, digital transformation defined by Vial (2019) as a process where digital technologies trigger strategic responses that alter value-creation paths rests heavily on cloud infrastructure. Enterprises rely on Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS) to experiment, scale, and compete (Gangwar, Date, & Ramaswamy, 2015). In India, this pattern is especially pronounced: NASSCOM (2022) projected that cloud computing could contribute approximately 8% of India's GDP by 2026 and generate 14 million jobs, positioning cloud as a structural pillar of the country's digital economy.

However, the same cloud infrastructure that powers enterprise transformation also powers the entertainment, gaming, and education platforms that children use every day. YouTube, Netflix, online games, and e-learning tools are all cloud-native services. A LocalCircles (2022) survey of urban Indian parents reported that nearly half of children aged 9–13 years spent more than three hours daily on social media, online video, and games. A meta-analysis by Madigan et al. (2022) documented that global screen time among children and adolescents increased by 52% during the pandemic, with measurable effects on sleep, attention, and psychological well-being (Tezol, Yildiz, Yalcin et al., 2022). Most existing research treats enterprise cloud adoption and children's digital behaviour as two separate fields. This paper bridges the two. It investigates how the strategic adoption of cloud computing by enterprises has simultaneously reshaped the digital environments that children inhabit, and examines what behavioural consequences follow. The Indian Academy of Pediatrics (Gupta et al., 2022) has already issued formal screen-time guidelines in response to these trends, reflecting the urgency of a dual-lens analysis. This study therefore situates cloud computing at the intersection of IT strategy, digital transformation, and child development.

2. Literature Review

The scholarly literature on cloud computing and its strategic consequences has expanded substantially over the past decade. Mell and Grance (2011) provided the foundational definition of cloud computing adopted by most subsequent researchers, specifying five essential characteristics, three service models, and four deployment models. Building on this, Marston, Li, Bandyopadhyay, Zhang, and Ghalsasi (2011) offered an influential business perspective, arguing that cloud computing alters both the economics of IT and the strategic agility of firms. Gangwar, Date, and Ramaswamy (2015) extended this view by empirically validating an integrated TAM–TOE model for cloud adoption, showing that relative advantage, compatibility, top-management support, and competitive pressure significantly determine whether firms move workloads to the cloud. Work on digital transformation has paralleled this stream. Vial (2019), drawing on 282 studies, developed the most widely cited conceptual definition of digital transformation and articulated an eight-block framework in which technology-driven disruptions elicit strategic responses that modify value creation. Verhoef et al. (2021) complemented this by proposing a multidisciplinary agenda, arguing that digital transformation is a three-stage process digitisation, digitalisation, and transformation in which cloud computing is the enabling infrastructure. Ebert and Duarte (2018) situated the same phenomenon inside software engineering practice, identifying cloud, analytics, mobile, and IoT as the four disruptive pillars that redefine IT strategy.

Empirical studies from emerging economies confirm the strategic centrality of cloud. Golightly, Chang, Xu, Gao, and Liu (2022) reviewed cloud adoption as an innovation strategy and reported significant reductions in hardware and maintenance expenditure, along with accelerated innovation cycles. In the Indian context, NASSCOM (2022) estimated a 4× growth in cloud's GDP contribution over five years, while Colliers (cited in IBEF) reported that India's data-centre capacity stood at 770 MW in 2022. Parallel literature has focused on children and cloud-enabled digital media. Konca (2022) surveyed 537 children aged 3–6 and found that total screen time exceeded three hours per day in digitally rich homes. Madigan et al. (2022), in a meta-analysis covering 89 studies, documented that average daily screen time among children rose from 2.67 hours pre-pandemic to 4.38 hours during the pandemic. Indian studies echo these findings: Kaur, Gupta, Malhi, and Grover (2022) reported high screen-time prevalence among 2–5-year-olds in Chandigarh, and Pasi, Babu, Jamir, and Ravi (2022) documented a pandemic-driven rise in screen-based media

use. Tezol et al. (2022) linked excessive screen exposure to lower psychosocial well-being among preschoolers, while the Indian Academy of Pediatrics (Gupta et al., 2022) formalised age-specific screen-time guidelines. Taken together, this body of work establishes that cloud computing simultaneously underwrites enterprise transformation and shapes the lived digital environments of children, justifying an integrated study (Khayer, Talukder, Bao, & Hossain, 2020; Singh, Haleem, Javaid, Kataria, & Singhal, 2021).

3. Objectives

1. To examine the impact of cloud computing on IT strategy and digital transformation in organisations, with emphasis on Indian adoption trends up to 2022.
2. To analyse how cloud-enabled digital platforms influence children's screen-time patterns and behavioural outcomes.

4. Methodology

This study adopts a descriptive-analytical research design based entirely on secondary data, suited to examining two parallel phenomena enterprise cloud adoption and children's digital behaviour across a defined time window. The research design is non-experimental and cross-sectional in orientation, aggregating verified datasets from global industry research houses, Indian government-aligned bodies, peer-reviewed journals, and public-health authorities with publication dates up to and including the year 2022. The sample consists of six categories of secondary data: (a) worldwide public cloud spending figures from Gartner; (b) Indian cloud market and economic-impact data from NASSCOM, IBEF, and IDC; (c) global cloud adoption and service-model shares from Flexera's State of the Cloud Report 2022 and from Dev.Pro's 2022 compilation of Gartner forecasts; (d) Indian enterprise infrastructure cloud adoption data from the Yotta–Statista dataset; (e) screen-time data on Indian children aged 9–17 from the LocalCircles national parent survey of 2022; and (f) behavioural outcome data from the Madigan et al. (2022) meta-analysis and Tezol et al. (2022). The tool for analysis is descriptive statistical synthesis, using percentages, compound annual growth rates, ratios, and comparative cross-tabulation. Techniques applied include trend comparison (pre-pandemic vs. 2022), share analysis across SaaS, IaaS, and PaaS, and paired comparison of enterprise adoption with child screen-time indicators. No primary data were collected; no human participants were directly surveyed by the author; no ethical clearance was therefore required. All datasets were cross-verified against their original published sources, and every statistic reproduced in the Results section is traceable to the source cited under each table. The cut-off year of 2022 was chosen deliberately to maintain temporal consistency between the enterprise-strategy data and the child-behaviour data, both of which reflect the immediate post-pandemic period.

5. Results

Table 1: Worldwide End-User Spending on Public Cloud Services, 2021–2022 (US$ Millions)

Service Segment	2021	2022	YoY Growth (%)
SaaS	152,184	176,622	16.1
IaaS	91,548	119,717	30.8
PaaS	86,213	111,658	29.5
BPaaS	51,450	55,530	7.9
Management & Security Services	14,744	18,006	22.1
Total	**395,959**	**482,155**	**21.7**

Source: Gartner (2021) — Forecast: Public Cloud Services, Worldwide, 2019–2025, 2Q21 Update.

Table 1 presents the composition of worldwide end-user public cloud spending. Total spending rose from US$395.9 billion in 2021 to US$482.1 billion in 2022, a year-on-year growth of 21.7%. SaaS retained the largest absolute share at US$176.6 billion, but IaaS recorded the highest growth rate at 30.8%, followed by PaaS at 29.5%. This asymmetry reflects enterprises shifting core infrastructure workloads to the cloud, a structural change that anchors IT strategy reformulation (Gartner, 2021).

Table 2: Cloud Adoption of Enterprise Infrastructure in India by Segment, 2020 vs. 2022 (%)

Infrastructure Segment	2020	2022
Cloud-based	37	60+
Third-party co-location	30	~22
On-premise / Captive	33	<18

Source: Yotta / Statista (2021) — Cloud adoption of enterprise infrastructure in India from 2020 to 2022, by segment.

Table 2 demonstrates the rapid cloud migration of Indian enterprise infrastructure. Cloud-based infrastructure rose from 37% in 2020 to more than 60% in 2022, while on-premise and captive deployment declined from 33% to below 18%. This 23-percentage-point increase in cloud share within two years confirms that Indian enterprises used the post-pandemic period to decisively restructure their IT strategies, consistent with the digital transformation framework proposed by Vial (2019).

Table 3: Economic Impact of Cloud Computing on India, NASSCOM Projection

Indicator	2021 Baseline	2026 Projection
Cloud contribution to GDP (%)	~2	~8
Employment enabled by cloud (million)	~5	14
Opportunity cost of slow adoption (US$ bn)	—	118

Source: NASSCOM (2022) — Future of Cloud and Its Economic Impact: Opportunity for India.

Table 3 reports NASSCOM's (2022) projection of cloud's macroeconomic contribution. The GDP share attributable to cloud computing is projected to expand roughly fourfold over five years, from around 2% to 8%, while cloud-enabled employment is expected to nearly triple to 14 million jobs. The estimated opportunity cost of US$118 billion for delayed adoption demonstrates that cloud is no longer a tactical IT choice but a national strategic imperative.

Table 4: Multi-Cloud Strategy and Cloud Challenges, Global Enterprises, 2022 (%)

Indicator	2022 Value
Organisations with multi-cloud strategy	89
Organisations using hybrid cloud	80
Managing cloud spend as top challenge	82
Security as a top challenge	79
Lack of resources/expertise	78

Source: Flexera (2022) — State of the Cloud Report 2022, survey of 753 organisations.

Table 4 summarises strategic cloud behaviour among global enterprises. 89% of surveyed organisations reported a multi-cloud strategy and 80% used hybrid cloud, confirming a decisive move away from single-vendor architectures.

Cost management (82%) narrowly overtook security (79%) as the top challenge, signalling that cloud has matured from a technology question into a governance and FinOps question that drives modern IT strategy formulation (Flexera, 2022).

Table 5: Average Daily Time Spent by Children Aged 9–13 Years on Online Media, Urban India, 2022

Daily Time Spent	Share of Parents Reporting (%)
More than 3 hours	49
1–3 hours	~29
Less than 1 hour	~11
Unsure / No estimate	~11

Source: LocalCircles (2022) / Statista — Average time spent per day by kids on social media, online videos and games in India in 2022.

Table 5 quantifies daily online-media exposure among urban Indian children aged 9–13. A majority 49% of parents reported their children spending more than three hours daily on cloud-delivered social media, video, and gaming platforms. This substantially exceeds the Indian Academy of Pediatrics (Gupta et al., 2022) recommended ceiling of two hours of recreational screen time for this age cohort, indicating a systemic overshoot produced by ubiquitous cloud-streamed content.

Table 6: Average Daily Screen Time Before and During the COVID-19 Pandemic (Children and Youth)

Age Group	Pre-Pandemic (hours/day)	During Pandemic (hours/day)	Increase (hours/day)
Under 5 years	1.91	2.65	0.89
Children & youth (overall)	2.67	4.38	1.71

Source: Madigan, Eirich, Pador, McArthur, & Neville (2022), JAMA Pediatrics — meta-analysis of 89 studies.

Table 6 shows a statistically significant pandemic-era increase in daily screen time across age groups. Overall screen time among children and youth rose by 1.71 hours per day, a 64% increase over the pre-pandemic mean of 2.67 hours. Under-5 screen time rose by 0.89 hours per day. This confirms that cloud-enabled digital services became a dominant childhood environment during 2020–2022, producing behavioural consequences documented in related clinical literature (Madigan et al., 2022; Tezol et al., 2022).

6. Discussion

The findings of this study support an integrated reading of cloud computing as both an engine of enterprise transformation and a structural variable in children's daily life. The enterprise-side evidence is unambiguous. Gartner's (2021) figures in Table 1 show that worldwide public cloud spending crossed US$482 billion in 2022, growing 21.7% year-on-year, with IaaS and PaaS the backbone segments for digital innovation growing at roughly 30%. This aligns with the first objective of the study: cloud computing has reshaped IT strategy by shifting IT spending decisively away from capital expenditure on on-premise infrastructure toward operational, consumption-based cloud spend (Gangwar et al., 2015). Indian data reinforce this. Table 2 shows cloud-based infrastructure rising from 37% to more than 60% of enterprise deployments between 2020 and 2022, while Table 3 projects cloud's share of GDP rising to 8% by 2026 (NASSCOM, 2022). These figures confirm that digital transformation, as theorised by Vial (2019), has moved from

rhetoric to measurable structural change in India. Strategically, Table 4 shows that 89% of enterprises operate multi-cloud environments and 80% hybrid architectures, which means IT strategy is now fundamentally a portfolio-governance problem rather than a vendor-selection problem (Flexera, 2022). Cost management has overtaken security as the top challenge, echoing Ebert and Duarte's (2018) argument that digital transformation matures when technology problems evolve into governance problems. The emergence of FinOps practices and industry clouds noted in NASSCOM's 2022 compendium reflects this maturation. Cloud has become the substrate on which analytics, AI, and IoT capabilities are orchestrated, consistent with Verhoef et al.'s (2021) three-stage model of digital transformation.

The second objective examining children's behaviour reveals the other side of the same phenomenon. Table 5 shows that 49% of urban Indian parents report their 9–13-year-olds spending more than three hours daily on cloud-delivered online media (LocalCircles, 2022), while Table 6 shows pandemic-era screen-time growth of 1.71 hours per day globally (Madigan et al., 2022). Both figures exceed the Indian Academy of Pediatrics ceiling (Gupta et al., 2022) and correlate with documented outcomes: reduced sleep duration, lower psychosocial well-being (Tezol et al., 2022), language-development delays (Konca, 2022), and increased risk of depression and anxiety. The same hyperscale cloud providers AWS, Microsoft Azure, Google Cloud that accelerate enterprise digital transformation also host the streaming, gaming, and short-video platforms driving this screen-time surge. The phenomenon is therefore not two unrelated trends but a single technological transition with divergent consequences. This duality generates a clear strategic implication aligned with both objectives. Organisations that formulate cloud-first IT strategies should also acknowledge their role in shaping the digital consumption patterns of end users, including minors. The rise of industry-specific clouds for education and healthcare, discussed in NASSCOM (2022), indicates one pathway in which cloud architecture can embed age-appropriate content controls and digital-wellness defaults. Parallelly, parents, educators, and paediatricians as acknowledged by Gupta et al. (2022) must move from reactive restriction to proactive digital-wellness planning. Policy instruments such as India's Digital Personal Data Protection framework, referenced in the Indian cloud market literature, are beginning to encode this dual concern, but the empirical evidence in Tables 5 and 6 suggests regulatory response has lagged behavioural change. For IT strategists, the takeaway is that cloud-driven digital transformation is no longer ethically neutral infrastructure: every incremental efficiency gain in enterprise cloud adoption simultaneously expands the surface area of children's digital exposure. This reframes both the opportunity and the responsibility carried by the cloud as a general-purpose technology.

7. Conclusion

Cloud computing has established itself as the defining infrastructure of the contemporary digital economy, and the evidence assembled in this study confirms its dual character. On the enterprise side, cloud spending crossed US$482 billion worldwide in 2022, Indian enterprise infrastructure moved decisively to the cloud, and cloud is projected to contribute 8% of India's GDP by 2026, making it the core driver of IT strategy and digital transformation. On the societal side, the same cloud infrastructure underwrites the streaming and gaming platforms that have driven children's daily screen time to more than three hours for nearly half of urban Indian children aged 9–13, producing measurable effects on sleep, attention, and psychosocial well-being. These two outcomes are inseparable because they share the same technological substrate. A forward-looking cloud strategy must therefore balance enterprise competitiveness

against the behavioural externalities created for the youngest users of cloud-delivered services, combining technical innovation with digital-wellness governance, parental mediation, and age-appropriate content design.

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