Management and Technical IT Priorities for Digital Organizations in 2022

Dimitrios S. Stamoulis

ABSTRACT

Internal and external business forces, mature and premature technologies, innovations, and new methods of work constitute a multi-dimensional space in which IT organizations have to navigate in order to present a consistent, coherent and effective IT priorities list that organizations need to invest to. Despite their importance, these priorities have not been systematically investigated but remain at an opinion's survey level of processing. Moreover, their modification year by year makes them a less popular subject of study. However, a review and discussion of an as much as possible representative set of IT priorities of 2022 would reveal the main contemporary IT management challenges and offer useful insights into IT investment areas, skill demand and projects to be run or initiated within this year.

Keywords: IT investments, IT priorities, IT strategic plan.

D. S. Stamoulis
Department of Informatics, N&K University of Athens, Greece.
(e-mail: dstamoulis@ di.uoa.gr)

I. INTRODUCTION

A significant component of yearly IT governance activities is the decision making process and its outcomes regarding the IT priorities to be followed as part of the strategic plan of the organization. The IT priorities, or otherwise IT strategy plan, is revised at least annually, if not more frequently nowadays, due to the turbulent forces of disruptive digital innovations observed across industries. Consulting companies and experts are issuing lists with IT priorities based on CIOs surveys, IT strategic plans and observations of IT decisions, trends, and investments.

The research literature behind the decision making process for IT management priorities is obviously based on the IT strategy formulation (Auer & Reponen, 1997) and the business-IT alignment process (Tallon, 2007), (Cuenca *et. al.,* 2011) etc. Sectoral studies such as for the financial services (Rathnam *et. al.,* 2005), for the health care (Iveroth *et. al.,* 2013), etc. are providing evidence for such alignment in specific industries. Laudon & Laudon (2017) have shaped a competitive forces model that can be used to address the question of how much your firm should spend on IT infrastructure. This "competitive forces model for IT infrastructure" that lends itself to the well-known in management, Porter's five forces competition model, includes the following six elements:

I. "Market demand for your firm's services.
II. Your firm's business strategy. Analyze your firm's five-year business strategy and try to assess what new services and capabilities will be required to achieve strategic goals.
III. Your firm's information technology (IT) strategy, infrastructure, and cost. Examine your firm's information technology plans for the next five years and assess its alignment with the firm's business plans.
IV. Information technology assessment. Is your firm behind the technology curve or at the bleeding edge of information technology?
V. Competitor firm services. Benchmark your service levels to customers, suppliers, and employees against those of your competitors.
VI. Competitor firm IT infrastructure investments. Benchmark your expenditures for IT infrastructure against your competitors."

In the aftermath of the Covid-19 crisis and the full-blown expansion of the digital transformation activities that several organizations undergo, planning is less important as compared to flexibility, or agility, and responsiveness to continuous change. "As business and technology environments change at an unprecedented rate, software development agility to respond to changing user requirements has become increasingly critical for software development performance. Agile software development approaches, which emphasize sense-and-respond, self-organization, cross-functional teams, and continuous adaptation, have been adopted by an increasing number of organizations to improve their software development agility". (Lee & Xia, 2010) IT organizations are necessarily running in a bimodal way of operation (Horlach *et. al.,* 2017), (Haffke *et. al,* 2017), i.e., both traditional SDLC and agile development methods, such as Scrum, in an attempt to optimize operations for both static and dynamic business requirements projects.

However, the IT organization needs to keep on getting organized in anticipation of change waves, to keep in touch with new technologies which will drive business innovation as well as with the expectations from CIO to create new IT-based value for the organizations. (Cokins, *et. al.,* 2010) Therefore, IT priorities and the rationale behind appropriate decisions is probably the most value – sensitive exercise taking place in contemporary digital industries. Wrong

decisions, apart from being very costly, may also derail and distract organizational capabilities in such a way that might possibly be fatal for the organization itself, since "the assignment of the correct resources to the correct priorities can be a key differentiating factor between high- and low-performing firms" (Prajogo & McDermott, 2011). In the context, investigation of contemporary IT priorities in organizations for 2022 is useful and helpful for decision makers and IT management researchers. This paper offers insights into what is at stake in the 2022 IT strategic plans by revealing priorities that arise from an array of relevant publications which are sorted, analyzed and their topics are categorized in a meaningful and actionable way. Moreover, these priorities are enriched with some suggestions made by the author, as overarching principles on these priorities; these suggestions are the product of observations and personal interviews with key stakeholders made by the author in the context of validating the results of the analysis of the literature review.

II. REVIEW OF LITERATURE FINDINGS

First, we have searched websites using terms such "IT priorities", "CIO priorities", "IT spending" etc. to find out relevant results from recent attempts to reveal what the suggestions or decisions have been and/or are being made for 2021-2022. Search results are not directly incomparable; thus normalization, categorization and sorting are necessary in order to extract meaningful results from the literature review. First of all, published priority lists have been split under three main headings: (a) pure management recommendations, (b) pure technology recommendations and (c) mixed lists.

In the first area, *(a) pure management recommendations for IT priorities*, the main search results are presented below:

- "The top 3 priorities for CDOs [Chief Data Officers] are creating a data-driven culture, developing a data and analytics strategy, and standing up a data/ information governance program"[1].·
- The CIO agenda for the next 12 months: six make or break priorities[2].
  a) "Know your customer as well as you know your technology: tech leaders are part of the inner circle and embedding developers into product and sales teams to co-create the things that customers want.
  b) Put cloud at the center of your tech strategy: CIOs need to master cloud economics and target business areas that can benefit from the cloud's advantages of speed, flexibility, and scale.
  c) Make developer experience the cornerstone of talent strategy: CIOs need to put in place a disciplined process to track what top talent is working on and rapidly relocate the most skilled to the most meaningful initiatives.
  d) Become the fastest learner: Digital leaders, in fact, share test-and-learn findings across their

organization far more often than their peers. This has talent implications as well since the most talented want to be in an organization where they can grow their skills.
  e) Make security an enabler of speed and growth: The second shift is to upgrade security operations to improve prevention and resilience. CIOs can best enable this shift by applying a developer mindset to security rather than a compliance one. A DevSecOps working model, where security is integrated into each stage of an agile product life cycle rather than being a check at the end, is one way to do that. CIOs can further harden security by committing to a "security as code" approach that defines cybersecurity policies and standards and then instantiates them as code through architecture and automation.
  f) Choose better over more when it comes to data: The first is quality (including access and usability) over quantity. Too often the focus on data quality becomes just a set of policies and guidance that an IT support function executes but is not widely followed. The CIO can drive effective data governance through a balance of centralized data-management and governance roles. More than 60 percent of tech leaders from our survey, in fact, say they are planning to scale data, analytics, and AI—more than any other tech initiative. CIOs will need to bring in data and machine-learning operations people to manage this effort."

In the second area, *(b) pure technology to invest recommendations*, the main search results are presented below:

- "According to the 2021 State of the CIO survey of 812 IT leaders, IT shops will spend more on data and business analytics (39%), security and risk management (37%), cloud-based enterprise applications (32%), and customer experience technologies, including chat bots and mobile apps (30%)."[3].
- 6 top CIO priorities for 2021[4].
  a) Low-Code Development;
  b) Getting to The Next Phase of Chat bot Maturity;
  c) Enabling the Return to Workplace.
  d) Artificial Intelligence for IT operations, also known as AIOps, leverages machine learning, big data, and analytics, analyzing heaps of IT data generated, diagnosing issues in real-time, improving application performance and uptime by predicting future outages, and reducing operations and maintenance expenditure.
  e) Reducing Silos and Streamlining The Technology Landscape: Now is the time for CIOs to unify all these apps together with a Digital Experience Platform (DEX) and reduce silos. A DXP acts as a centralized digital platform that offers flexible app integrations and easy extensions for emerging business needs.

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[1] Top Priorities for IT: Leadership Vision 2021 | Gartner (www.gartner.com/en/publications/top-priorities-for-it-leadership-vision-2021)
[2] https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-cio-agenda-for-the-next-12-months-six-make-or-break-priorities

[3] https://www.cio.com/article/191450/top-it-spending-priorities-for-2021.html
[4] https://botcore.ai/blog/cio-prioritites-2021/

f) IT as an Enabler of business growth. Thus, reinforcing the role IT plays as a strategic enabler of business growth will be a top CIO priority in 2021.

- Top game-changer technologies to emerge stronger from COVID-19 crisis (in decreasing order of importance)[5].
  a) Analytics;
  b) Artificial intelligence;
  c) Autonomous things (cars, robots, etc.);
  d) Public cloud computing;
  e) Smart spaces (e.g., smart cities);
  f) Blockchain;
  g) Virtual/augmented reality;
  h) Quantum computing.

- Technologies with the most potential to significantly alter the way your business operates over the next three to five years[6].
  a. Big data/analytics;
  b. AI/machine learning;
  c. Cloud infrastructure;
  d. Identity and access management;
  e. Cloud databases;
  f. SaaS;
  g. IoT/Machine-to-Machine;
  h. Security Orchestration Automation and Response (SOAR);
  i. Serverless computing;
  j. Next generation Wifi.

- Top initiatives for 2020 and 2021[7].

TABLE I: CHANGE OF TOP PRIORITIES FROM 2020 TO 2021

	2020	2021	Change
Digital transformation	54%	56%	+2%
Cyber security	49%	50%	+1%
Cloud / cloud migration	40%	48%	+8%
Customer experience	37%	29%	-8%
Cost savings	9%	27%	+18%
Agility / automation	17%	12%	-5%
Analytics	17%	12%	-5%
Governance / compliance	11%	6%	-5%

In the third area, (c) <u>mixed lists of technologies and management suggestions</u>, the main search results are presented below:

- the list of the Forbes magazine[8]: Its "15 Tech Industry Leaders Share Their Top Priorities For 2021" list includes:
  1. Enabling Tech Staff to Work Remotely;
  2. Leveraging Low-Code Tools;
  3. Ensuring Client Satisfaction;
  4. Supporting Clients' Digital Transformation Journeys;
  5. Promoting Sustainable Business Practices;
  6. Accelerating Client-Side Protection;

7. Focusing on Speed, Flexibility and Agility;
8. Keeping Employees Engaged;
9. Being Proactive and Intentional;
10. Driving Innovation;
11. Refining Remote Work Processes;
12. Bringing Team Members Together;
13. Fostering Work-Life Balance;
14. Improving Product Simplicity;
15. Gaining A Broader Perspective on A Changing World.

- 5 priorities for CIOs in 2021[9].
  1. Balance remote and in-person operations
  2. Accelerate automation with intelligent decision-making. In 2021, hyperautomation seems to be the name of the game. According to Gartner, "Hyperautomation is the idea that anything that can be automated in an organization should be automated." Especially for companies that implemented point solutions to adapt and survive in 2020, now is the time to intelligently automate repeatable, end-to-end processes by leveraging bots. With hyperautomation, CIOs can implement new-age technologies such as business process management, robotic process automation, and artificial intelligence (AI) to drive end-to-end automation and deliver a superior customer experience.
  3. Be wherever the customer is. Technologies such as social listening, enterprise content management, and mobility.
  4. Offer personalized communications and customized, mobile, and contactless solutions
  5. Increase emphasis on data and cybersecurity

III. ANALYSIS, COMMENTS AND FURTHER SUGGESTIONS

A. Technological Priorities

Analyzing the results of the literature on technological priorities (second area above), and grouping them into areas of topics, the main priorities that concern CIOs appear to be the following:

TABLE II: TECHNOLOGICAL PRIORITIES

Category of topics	% of topics
Digital transformation	16.67%
Cloud	13.89%
Infrastructure	13.89%
Security	13.89%
Analytics	11.11%
Operations	11.11%
IoT (internet of things)	8.33%
AI (artificial intelligence)	5.56%
Management	5.56%

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[5] https://emtemp.gcom.cloud/ngw/globalassets/en/publications/documents/top-priorities-for-it-leadership-vision-for-2021-data-analytics-leaders-ebook.pdf Source: View From the Board of Directors 2021, CIO Research, July 2020. Top Priorities for IT: Leadership Vision for 2021

[6] Exclusive survey: CIOs outline tech priorities for 2021-22

https://www.cio.com/article/189346/exclusive-survey-cios-outline-tech-priorities-for-2021-22.html

[7] https://www.flexera.com/blog/technology-value-optimization/2021-it-executive-trends-revealing-their-top-priorities/

[8] https://www.forbes.com/sites/forbestechcouncil/2021/02/10/15-tech-industry-leaders-share-their-top-priorities-for-2021/

[9] https://enterprisersproject.com/article/2020/12/cios-5-priorities-2021

The main priority topics for each category are the following:

1) Digital transformation

- Customer experience general;
- Customer experience technologies (Chat bot) Maturity;
- Customer experience technologies: chatbots;
- Customer experience technologies: mobile apps;
- Digital Experience Platform (DEX) to unify all these apps;
- Digital transformation general.

Digitization of products and services obviously prevails the agenda, with two main issues arising: one is the digital customer experience domain which is of cornerstone importance if the adoption of digital offerings is to continue, and the other is the consolidation of the dispersed set of digital applications rapidly grown over the last few years in an accelerated mode due to the covid pandemic into a unified platform that may support an homogenous digital experience to the customer that may build a digital brand distinguishing character.

Right after digital transformation, cloud, infrastructure and security priorities emerge of equal importance.

2) Cloud

- Public cloud computing;
- Cloud / cloud migration;
- Cloud databases;
- Cloud infrastructure;
- Cloud based enterprise applications.

Cloud technologies are emerging as a key issue into current IT agendas since the virtues of elasticity, supply on demand, free-up from complex security concerns, commoditization of IT resources and other similar forces push for more cloud solutions, and, thus, operational rather than capital expenses.

3) Infrastructure

- Blockchain;
- Next generation Wifi;
- Quantum computing;
- Serverless computing;
- Virtual/augmented reality.

Infrastructure issues show an interesting trend; organizations are thinking of experimenting with new, different types of infrastructures, although the opinions are very fragmented and no dominant opinion prevails here, supporting our attitude that it is a rather experimental mentality that drives these choices, rather than mainstream.

4) Security

- Identity and access management (IAM);
- Security and risk management;
- Cyber security;
- Security Orchestration Automation and Response (SOAR);
- Security as a Service (SaaS).

Security issues deploy over two axes: one has to do with how security is consumed internally into the organization (SaaS, SOAR, IAM) and the other has to do with the external risks that information systems are facing (cyber-threats, risk management) due to the opening to the world outside the organizational boundaries.

5) Analytics

- Analytics general, big data analytics

Analytics and big data are necessary for the mass tailoring of products and services, for advanced user experience, for revealing trends and for the implementation of the new breed of applications called regutech, meaning regulation compliance technologies. For some researchers and practitioners, big data analytics form a part of the information and processing infrastructures for digital transformation applications.

6) Operations

- Agility / automation;
- Cost savings;
- Low-Code Development;
- Return to Workplace.

Operations is an old topic with new perspectives and challenges driven by the surge of low-code/no-code application platforms, robot process automation for back-offices cost efficiency and the need to support the remote or hybrid workspace. With so many new challenges around operations, it is not a surprise that operational efficiency and effectiveness have returned in the high positions of the agenda.

7) IoT

- Autonomous things (cars, robots, etc.);
- Machine-to-Machine;
- Smart spaces (e.g., smart cities).

IoT and AI have appeared in less than 10% of the agenda issues; the former because supply exists but demand is not really strong enough yet and the latter because the benefits from the use of AI are not yet mainstreamed in many areas of the IT demand and supply.

8) AI

- Artificial intelligence general;
- Artificial Intelligence for IT operations (AIOps);
- Machine learning.

B. Management Priorities

As far as the results of the literature *on IT management priorities* (the first and the third area above), their grouping has given the following list of current priorities for organizations:

TABLE III: IT MANAGEMENT PRIORITIES

Category of topics	% of topics
staff	23.08%
internal organization	23.08%
data	15.38%
digital marketing	11.54%
vision	11.54%
innovation actions	7.69%
security	7.69%
All	100%

1) Staff

Interestingly enough, staff issues score highest in the management concerns of the IT agendas. In detail, respondents are concerned with how to:

- Enable Tech Staff To Work Remotely;
- Keep Employees Engaged;
- Refine Remote Work Processes;

- Bring Team Members Together;
- Foster Work-Life Balance;
- Balance remote and in-person operations.

2) Internal organization

Business processes issues, together with staff, are at the top of the IT management agenda. Running IT as a bimodal organization (Haffke *et. al.,* 2017) for increase effectiveness, automation of business processes wherever possible to cut costs (Flechsig *et. al.*, 2019), product redesign processes as well as governance and compliance dominate the priorities in this area:

- Focus on speed, flexibility and agility;
- Promoting Sustainable Business Practices;
- Improve Product Simplicity;
- Accelerate automation with intelligent decision-making;
- Compliance;
- Governance.

3) Data

The 2nd most important topic from the IT management perspective is data – not surprisingly, since compliance and regulatory reporting, mass customization as needed by the tailored experience required by the digital transformation and the engagement of the business people as consumers of data must be based on a data-driven culture and a well-established governance structure:

- Data-driven culture;
- Data and analytics strategy;
- Data/ information governance program;
- Increase emphasis on data.

4) Digital marketing

Marketing is changing in the digital era, expecting IT to empower it in new ways to win the battles of consumer satisfaction. The main requirements from technology management in this area is represented by the following three statements:

- Ensure Client Satisfaction;
- Be wherever the customer is (social listening, enterprise content management, and mobility);
- Offer personalized communications and customized, mobile, and contactless solutions.

5) Vision

In the domain of vision, the statements recorder is very broad and don't constitute anything new or immediately actionable from a strategic planning point of view:

- Be proactive and intentional;
- IT as an enabler of business growth;
- Gain a broader perspective on a changing world.

C. Further Suggestions for IT Priorities

Over and above the aforementioned analysis results, it is important to pinpoint four megatrends that arise from observations and personal interviews in digital organizations, as further suggestions for IT management priorities in 2022, taking into consideration all the previously presented listings

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[10] https://www.cio.com/article/189346/exclusive-survey-cios-outline-tech-priorities-for-2021-22.html

of findings and their weight of importance:

1. The empowerment and proliferation of technical skills outside IT, in domains such as CRM, digital marketing, risk management, etc. create the prerequisites for shaping the *shadow IT phenomenon*. "Shadow IT describes the supplement of "official" IT by several, autonomous developed IT systems, processes and organizational units, which are located in the business departments" (Rentrop & Zimmermann 2012). "The true extent of shadow IT bypassing the corporate IT units is estimated to be ten times greater than what CIOs suspects within their organizations (Corbin 2015)." (Haag & Eckhardt, 2017). One of the most significant IT management challenges is how to manage the Shadow IT phenomenon, to reap the benefits and avoid the risks.

2. Cost-cutting and value-for-money in IT investments call for more transparency in IT spending. More and more, IT organizations need to be run as a separate virtual business, charging the internal clients with their consumption of IT resources and allocating IT costs to where they really belong. This is a very difficult exercise especially for resources shared across different and/or extensive IT infrastructures, including the cloud. These needs pave the way for adopting new IT financial management frameworks, such as the *TBM (Technology Business Management) framework* (Jaeckels & Yin, 2020) where costs per application consolidating the costs of the entire underlying IT stack are mapped to business applications, whose business owners are charged either in terms of resources and/or real accounting costs.

3. *Business Process Management* (BPM) has been identified as the single most important technology project they were working on[10], by 6% of IT leaders. Although Robotics Process Automation projects proliferate, BPM is higher in the IT agendas, rather than RPA. "Perhaps this disregard for RPA — which typically only automates a few simple steps in a process — is because IT heads have their eye on the bigger picture: business process management (BPM), or workflow automation. BPM is already on the radar for 25% of them, in the pilot phase for 21%, and in production in a business unit or enterprise-wide for 27%." [ibid]. BPM is the orchestrator of several applications that provides the necessary unification effect that digital organizations require in order to run customer initiated business processes that span across several organizational units and IT resources.

4. Agility in product and process innovation as well as the unleashing of the potential of the design thinking (otherwise called zero based design), require an internal organization that may support, both from the methods- and the IT-perspective, *the scaling up of agile teams* in either big-bank or a more step-wise approach (Rigby, *et al.*, 2018).

IV. CONCLUSIONS

Setting up a coherent and well-grounded IT strategic plan with the appropriate IT priorities that exploit mature and immature technological opportunities within a sound management and governance framework is of paramount importance in today's digital organizations. This paper has attempted to contribute to the shaping of the 2022 IT priorities by offering suggestions that come from analyzing and compiling published lists as well as collecting overarching principles for IT priorities through observations and personal interviews with key stakeholders. It would be interesting to further investigate how the IT strategic plan formation process has been reconfigured in the digital era and review the top-down (business-IT alignment) as well as the bottom-up (IT-driven innovation and growth) procedures that shape the candidates and the final selections of management and technical IT priorities for digital organizations.

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