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Trends in ICT Strategies in Financial Institutions

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Abstract: The current economic situation enriches our perception with new perspectives on IT strategies in the economy as well as in the financial sector. Previous concepts have become obsolete and are often at odds with new emerging trends. This article evaluates IT strategies of financial institutions in terms of expected trends. The main methodological approach was to study the IT strategies of the surveyed companies and to compare the identified trends with global trends in IT. One of the main findings is that the past development of corporate IT systems has created for these institutions a historical burden, i.e. an inhomogeneous state of corporate IT. The analyzed financial institutions' planned activities concerning the development of current IT mainly focus on reducing the impact of the historical burden and improving application support, human resources and insourcing, undervalued IT financing, overall corporate IT architecture and major shortcomings in the process management.

Keywords: ICT strategy; financial sector; ICT trends; ICT architecture

JEL Classification G3; G20; C80

1. Introduction

The relationship between a company's organizational structure, information systems and their architecture has been researched in economic entities for many years now. The conclusions differ in some areas, some trends have become obsolete (e.g. nobody remembers nowadays the Y2K problem, the Y2K-related changes in information systems and the solutions of their impact on data content and interpretation), while there are now new trends that mainly concern the interconnection of data with artificial intelligence tools, the evaluation of big data and the comprehensive category called Data Science. On the other hand, the architecture of corporate information systems, including financial institutions' systems, includes applications for automated training, such as various educational applications for the sale of new products e.g. in the banking sector and the insurance industry, for evaluating the financial standing of clients, for performing various market analyses, for managing the relationship with customers and suppliers and of course for training required by law and nowadays usually done in electronic form, such as occupational health safety and fire training.

2. State of Art

Professional literature has analyzed the state of corporate information systems and their relationship to organizational structures and an organization's actual management for many years now. One of the breakthrough articles concerning this area was the study (Nolan &

Koot, 1992). According to a survey, which was based on a total of 936 detailed questionnaires filled out by companies in Australia, North America, Western Europe and India, the harmonization of a corporate information system to organization structures is the most important critical factor of success of corporate information systems, regardless of the region is "Harmonization of a corporate information system to organization structures". In 1992, outsourcing was identified as an ignored factor of success and business process reengineering as the most controversial factor of success (Nolan & Koot, 1992; Messineo, 2019). Other critical factors of success of corporate information systems are discussed e.g. in Khandelwal and Ferguson (1999).

The results of this study and other elaborations helped to further develop this theory, especially towards the planning of corporate information systems. (Nolan, 1979) "Information system planning is focused on determining the information needs and also ensuring that information system planning aligns with the overall business planning. For information system planning Richard Nolan has given a model known as Nolan stage model. It initially had four stages of growth and later on, it was reviewed, and as a result, there is an addition of two intermediate growth stages "(Geektonight, 2021). The model has become obsolete, yet – despite the indicated problems of the entire theory – it has been used for corporate information systems planning to this day: "Despite this criticism, the model finds its validity in many applications of information system planning till today. Every organization realizes that their information system has to undergo these stages. But how long it stays in each stage depends upon the learning process of the organization" (Geektonight, 2021).

Not only large corporations but also small and medium-sized companies (SMEs) strategically plan their corporate information system. Critical factors of the strategy of corporate information systems are discussed e.g. in (Alderete, 2019; Sorensen & Carrol, 2021). The conclusions can be briefly characterized as "ICT and electronic commerce benefits and usefulness among SME. In this manner, they can strengthen firms' ICT strategic alignment" (Alderete, 2019).

The direct impact on the readiness for a digital transformation of financial institutions is shown e.g. in Hussain (2022). "We also find that Digital Financial Innovations (DFIs) positively impact the firms' financial performance and resilience (robustness and adaptability). The results are informative for practitioners and theoreticians. For practitioners, the study informs that realizing DFIs in organizations requires reconfigurability and flexibility of resources, IT, strategy, collaborations, and organization culture" (Hussain, 2022). However, a very interesting conclusion of the study is this fact ""…one crucial finding is that in a developing economy context, digital technology – business strategy alignment does not play a moderation role in realizing DFIs, which may not be the case in the developed economies…" (Hussain, 2022). For this reason, we excluded developing economies from our analysis and we focused only on developed economies, which also include the Czech economy in the area of financial institutions.

3. Methodology

The findings are based on analyses of IT strategies of selected multinational companies that provide services in the financial industry – four independent companies. Two companies are providing bank services (retail) and two companies are providing insurance services. All companies were significantly growing in last 4 years in all key measures, like turnover, number of total employees, number of employees in IT. Companies have significant difference in comparison number of employees in IT with total number of employees.

The main research method included analysis and synthesis as well as consultations and the results of controlled interviews. As a key input were Annual Reports of the selected companies, information about IT which are included in these Annual reports or annual reports of the IT itself.

The authors take into account Annual Reports published by analyzed companies during between 2017 and 2021. Authors search for measures defined above and were analysis especially trends in all four analyzed companies and their IT departments.

For the purpose of this paper were defined two research questions:

- RQ1: What are the main trends in the development of ICTs in financial institutions for the next three years?
- RQ2: Do companies believe that the roles of architects are important roles that need to be established/strengthened in the company?

4. Results & Discussion

The analyzed strategies are extensive documents. The first interesting finding is that all companies approach the preparation of their IT strategies in a similar way. The document includes an analysis of the current state and a definition of the future state. The analysis shows similar problems and critical areas; after that the target state and improvements in the given areas of corporate IT are defined.

The basic approach of all companies to their IT strategy is that they analyze the current state and then define the future state. The analyses of the current and future state focus on four basic factors:

- human resources as the main parameter of success and failure of any IT strategy,
- provided applications,
- provided services,
- future state of IT.

4.1. Conclusions from the Analysis of the Current State

Based on the analyses of the current state, all companies have reached conclusions that they mention as significant. According to the companies, the following outputs of the current state are crucial:

1. historical burden,
2. undervalued human resources & insufficient in-house know-how,
3. application support,

4. process perspective,
5. financial perspective.

A historical burden is understood to mean a set of applications that individual companies use and that – in most cases – are not integrated, are not adequately updated and especially are not in compliance with current trends and requirements. A key finding in this context is that the companies do not use a unified client database. Therefore, same clients are registered in different systems under different identifiers that cannot be linked together, which results in highly insufficient data quality. There is a similar finding concerning reference data management, where individual applications use different code lists for identical things.

Security, reporting and IT infrastructures represent a separate area of the historical burden. All analyzed companies mention significant problems in this area that have already been identified during internal and external audits.

An interesting conclusion in all companies is their objective to reduce the total number of applications in order to improve operability and stability.

Undervalued human resources & insufficient in-house know-how

Almost every financial institution struggles with a shortage of internal employees and their remuneration. According to the companies, their employees have been historically undervalued. The rationale for the current situation varied; nevertheless, the following two common factors were identified in all companies:

A. Insufficient remuneration of their employees, especially of those who have worked in the company for a long time.
B. Insufficient human resources for all IT roles that are necessary for a long-term IT functioning.

Other important findings are as follows:

- Insufficient investments in human capital development. One of the consequences of insufficient investments in the human capital is IT lagging, which mainly stems from the fact that modern trends and best practices are not respected/accepted. This can affect the satisfaction of both internal customers of corporate IT and external consumers of services of the entire company. An internal service is e.g. the company's business system for opening bank accounts, and an external service is e.g. a mobile application.
- Insufficient building of in-house know-how mainly because of the use of external human resources in the form of outsourcing, not only for non-key activities/processes, but also for activities/processes that are important and even critical for individual companies.

Application support

Application support is closely connected with the historical burden, which refers to existing problematic applications, while application support refers to applications that are not available or do not provide the necessary or adequate functionality.

The companies mainly pointed out the following two key areas affected this way:

- customer sales support applications,
- company core systems for processing customer requests made both through digital channels and the traditional way - by visiting a branch office or having a personal meeting.

Based on the analysis and especially consultations with IT directors, the two previous points are the main cause of identified insufficient application support. Due to insufficient in-house know-how, the companies are not able to unambiguously identify the needs of internal and external end users. Furthermore, it is difficult to identify the application among existing applications that should ensure/provide the potential functionality. Another reason is the obsolescence of applications and often also the insufficient architecture and documentation of solutions that would help to develop the architecture. The importance of architectures and IT architects and their qualifications is discussed e.g. in Gellweiler, 2020; Turek & Werewka, 2015; Selcan & Buchalcevova, 2013.

Process perspective

According to all companies, the process perspective is handled insufficiently or not at all, which is reflected in the quality and security of the delivered/provided services. The following key problematic areas from the process perspective were identified:

- missing/insufficient,
- security,
- compliance.

Financial perspective

The financial perspective is the last of the identified areas that all analyzed companies mentioned. According to all companies, IT budgets are undervalued, which affects all previous areas.

All companies identified this issue as a critical output of the analysis and mentioned it as the number one priority in implementing their strategy.

4.2. Conclusions from the Analysis of the Target State – Strategy Definition

The definition of the target state closely follows up on the previous part of the analysis of the current state and expands the analysis by future expectations. The analysis of the IT strategy identified the following main areas on which all companies, although they provide different financial services, will focus:

- reduction of the impact of the historical burden and the improvement of application support,
- human resources and insourcing,
- finance,
- IT architecture,
- processes.

Regarding the **historical burden** and related **application support**, the companies have reached the following same conclusions:

- it is necessary to analyze the existing applications and decide about their future,
- some applications will be suppressed or replaced,
- it is necessary to create a unified database and to set up master data management principles and processes, based on which the company will work with data as with an information asset and every specific customer will have the same meaning and parameters in each part of the company,
- where meaningful, applications will be integrated into a created unified database,
- the implementation of mobile device management technologies will be more secured,
- applications that are critical for IT functioning and will support the implementation of IT processes will be implemented,
- transnational and local directives that have a significant impact on the company's operation, such as IFRS 17 in the insurance industry, GDPR in financial services, etc., will be implemented.

In the context of the three previous points, it is necessary to analyze the objective of applications replacement in more detail. According to the companies, it is better for them to remove some existing applications and to develop from scratch/ buy new applications than to re-engineer existing applications (they will not use the re-engineering techniques). Another reason that the companies mention is the maintenance cost of the applications that use old technologies that are difficult to maintain because they are obsolete and also because there are not enough persons who know these old technologies; outdated technologies are usually not interesting for young employees, which reduces the chance to hire new employees.

Human resources, which affect both the previous and all other analyzed areas and are closely linked to financing, represent the second key and most important plan. All companies specified a new request for the size of the budget of their IT department and the target number of experts working in their IT department. The companies decided that their turnover should be the benchmark for the size of their budget. This benchmark is based on averages, is also mentioned by the Gartner Group and represents 3% of the company's turnover. The benchmark and thus the total IT budget significantly affect the size of investments in human resources, applications, infrastructure and processes, i.e. in the areas critical for sustaining and developing the company's IT services.

All companies have concluded that it is necessary to considerably increase the share of their existing IT human resources to 15-20% of the total number of company employees. The companies have also concluded that it is necessary to:

- ensure the development of employees so that they would be able to implement the requirements for modern information systems,
- remunerate their employees in line with the current situation on the labor market and to offer such remuneration not only to their new employees, but also to their current employees so that they would not leave and take away the company's key know-how',

- increase employee satisfaction and achieve an open culture that would also attract a potential influx of new employees,
- **limit outsourcing and develop in-house know-how** that will ensure the company's sustainability and use outsourcing only to acquire new know-how, which is currently unavailable in the company and must be built up this way, or to cover peak workloads since hiring a new employee would cost more. where it is not cost-effective to hire a new employee.

The infrastructure development and the verification of the option to move applications to a cloud environment represent another area that the companies evaluate similarly. All companies mention, as a first step, the transfer of e-mail services to a Microsoft Office 365 cloud environment and the implementation of services that will ensure security and reduce the risk of cybercrime. All companies have identified a weakness in the design of both the overall corporate architecture and its components, such as IT architecture, data architecture, etc. Therefore, all companies want to create/formalize the roles of architects in the company and to give them the appropriate mandate that will ensure a logical structure and integration of all IT solutions in the company. All companies have identified two main roles that are crucial for their future functioning – the role of **Enterprise Architect responsible for overseeing a comprehensive design of the entire IT landscape** in the context of business needs and the role of **Data Architect**. However, the companies had different plans concerning other roles, such as IT architect, software architect, business architect.

As to processes, the companies very much emphasized the need to transform IT into a process-controlled organization and to improve IT processes so that IT services would be provided in appropriate quality and at appropriate costs. This area also includes the actual transformation of corporate IT that will focus on the delivery of business services and not on the existence of IT as a general service provider that is not business-oriented. This will also affect the organizational structure of corporate IT and IT roles and will strengthen the role of business analysts and business architects, which will then reflect in the application area.

An important part of the process perspective was the implementation of security enhancement processes and documentation of all solutions and design in the company, which will help to develop know-how and to reduce the risk of employee turnover.

RQ1: What are the main trends in the development of ICTs in financial institutions for the next three years?

We can say that the analyzed companies have similar strategic plans for the next three years. The main trends and requirements concerning their IT strategy are as follows:

- strengthen the budgets of IT Departments,
- focus on employee care, the development of employees and insourcing,
- strengthen the role of architects in the companies,
- reduce and replace or improve historical applications in order to achieve application integration and synergy effects from their use,
- set up processes.

RQ2: Do companies believe that the roles of architects are important roles that need to be established/strengthened in the company?

The answer to RQ2 is YES and it has already been answered in previous RQ1, where the role of architects is perceived as important and critical for ensuring the sustainability of IT systems in the company.

4. Conclusion

Based on the analysis of IT strategies of selected multinational companies in the financial sector and interviews with the IT directors of the companies whose IT strategies were analyzed, we have discovered some interesting findings and trends.

The main trend is that in consideration of all of their current and planned activities, all companies want to increase the budget of their IT department and insource their IT activities, i.e. to transfer them from external suppliers to in-house employees. This is justified by two facts: 1) long-term internal employees are cheaper than external employees and 2) know-how should always be kept within the company. The first fact is connected with the companies' efforts to expand their employee care.

A significant trend from a technical and organizational point of view is the pressure to strengthen the role of architects in the companies and the efforts to optimize the entire IT portfolio, which often results in the suppression/cancellation of existing applications and their replacement with new ones.

The IT strategies of the selected companies were made for 3-5 years, i.e. they are truly long-term strategies, with the knowledge that all activities mentioned in this article represent fundamental changes in the functioning of the companies and that they are long-term projects.

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