Digital Transformation Framework for Building Localities Financial Maps

Mohamed Abdul-salam*
Samir Abul-fotuh Saleh**
Mohamed Ramadan Youssef Attia***

_____

 (*) Mohamed Abdul-salam: Dr. of Information Systems Faculty of Commerce and Business Administration Helwan University
 E-mail:
(**)Samir Abul-fotuh Saleh: Professor of Accounting Information Systems Faculty of Commerce Mansoura University
E-mail:
(***)Mohamed Ramadan Youssef Attia Master in Administrative Information Systems Sadat Academy for Management Science
E-mail

Mohamed Abdul-salam
Samir Abul-fotuh Saleh
Mohamed Ramadan Youssef Attia

• **Abstract.**

Egypt seeks to move to the concept of digital transformation, so this proposal came as a "**Digital Transformation Framework for Building Localities Financial Maps**" applied to the Ministry of Local Development and its affiliated budgetary bodies and it was a part of the general framework that the state seeks to achieve it

This framework is based on the idea of innovation in using the modern technologies for digital transformation such as, data analysis, automated work systems, and cloud computing services to prepare the two-part budget project, budget items / Programs and Performance Budgeting in order to accomplish the framework of the government's work program and Egypt's Vision of 2030.

The framework rests on the following: **First**: An Automated Budget Items Preparation Project Service (ABIPPS) with the aim to access the services programs that operate under the platform of Cloud Computing, **Second**: Work preparation project of Program and Performance Budgeting to set and analyze the goals for the budget to access the structural data through designing entry and data collection forms. Determine all attributes of those forms through entity relational diagram systematically to be applicable to all programs and activates related to preparation project of Program and Performance Budgeting (PPPPB).

Keywords—Digital Transformation Technologies, digital transformation framework, Digital Transformation Business, Cloud Computing, Budget Items, Program and Performance Budgeting.

● مستخلص

تسعى الدولة للإنتقال إلى مفهوم التحول الرقمى لذلك جاء هذا المقترح " اطار مقترح للتحول الرقمى لبناء الخريطة المالية للمحليات" وذلك بالتطبيق على وزارة التنمية المحلية والجهات الموازنية التابعة لها بعدد ٢٧ إدارة موازنية (جهة موازنية لكل محافظة) كجزء من الاطار العام الذى تسعى الدولة لتحقيقه ويقوم هذا الاطار على فكرة الابتكار فى استخدام التقنيات التكنولوجية الحديثة للتحول الرقمى فى تحليل البيانات، أنظمة العمل الاتوماتيكية وخدمات الحوسبة السحابية لإعداد مشروع الموازنة بشقيه (موازنة البنود/ موازنة البرامج والاداء) بهدف تحقيق إطار برنامج عمل الحكومة ورؤية مصر ٢٠-٣٠ ، يبنى اطار العمل المقترح على أولاً: ميكنة موازنة البنود والوصول الى البرامج الخدمية والتى تعمل تحت مظلة الحوسبة السحابية، وثانيا: العمل على موازنة البرامج والاداء لتحديد وتحليل الاهداف الاجمالية لكل وحدة حكومية وفقا للقرارات الصادرة بشأنها للوصول إلى بيانات هيكلية من خلال نماذج إدخال وتجميع للبيانات وتحديد كافة عناصر تلك النماذج بشكل قياسى من خلال رسم توضيحى للكيانات والعلاقات يمكن تطبيقه على كافة برامج وأنشطة إعداد مشروع موازنة البرامج والأداء .

الكلمات المفتاحية: التحول الرقمى، اطار التحول الرقمى، الحوسبة السحابية، التحول الرقمى لموازنة البرامج والاداء، التحول الرقمى لموازنة البنود.

• Introduction and Theoretical Background

Most organizations are tending today to achieve a good business environment that does not negatively affect their corporate flexibility thus; Digital transformation is widely affecting various industries particularly healthcare, telecommunications, automotive, banking and manufacturing sectors. It enables innovation practices, improved designs, and new business models, and shapes how organizations create value on the internet, so one of the key success factors in the global business environment is modeling a structural approach toward digital transformation. [1]

In the wider field of digital transformation, the terms digitisation and digitalisation appear, digitisation refers to the conversion from analogue to digital, digitalzisation is refers to the process of using digital technology, also digitalisation describe as the innovation of business models and processes that exploit digital opportunities. [2]

Fig. 1: Definition of Digitization, Digitalization and Digital Transformation [2]
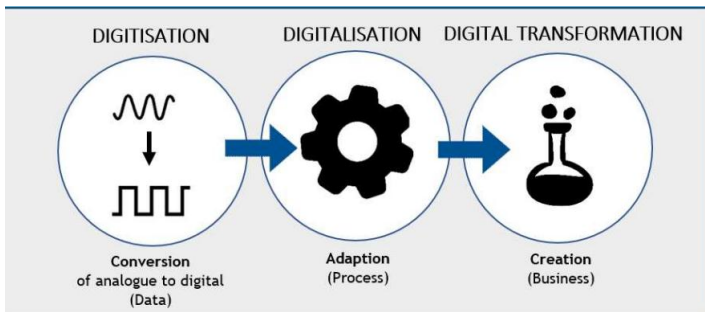
digital transformation describes the shift from traditional (often physical) creation and delivery of customer value, including the operational procedures related to this, into the massive use of digital technologies which enhance or replace the traditional product with smart, connected product [3]

Digital transformation

The term digital transformation is a subject that is widely discussed among practitioners, but also paths its way as a scientific discipline. It affects industries, people and organizations. Technology is seen as a major

36

driver and enabler of digital transformation. Those digital transformation technologies (DTT) cause changes in value creation. Companies adapt their strategies, explore new business models, and focus on acquiring new skills and competences, [4] we can define the term of digital transformation as shown in the following table:
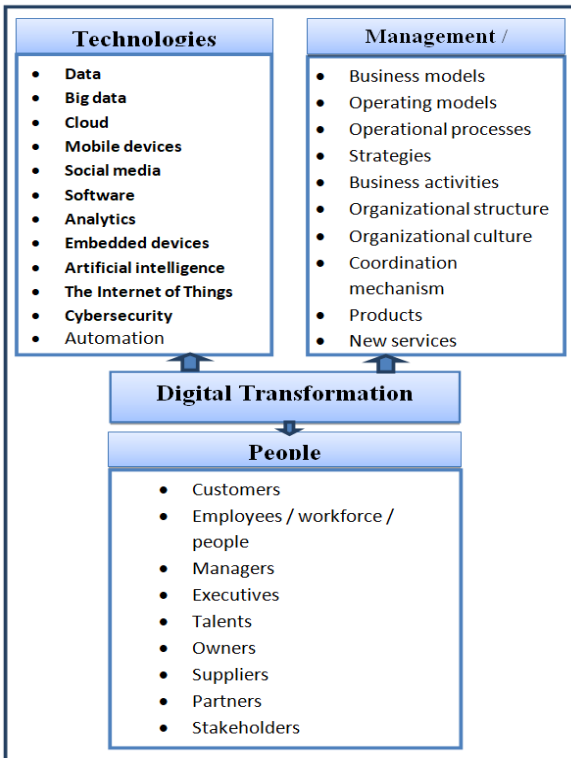
Table1: Definition of Digital transformation

| Definition |
| --- |
| Digital transformation is characterized by a fusion of advanced technologies and the integration of physical and digital systems, the predominance of innovative business models and new processes, and the creation of smart products and services. [5]. |
| "Digital transformation is the use of technology to radically improve the performance or reach of an organization. In a digitally transformed business, digital technologies enable improved processes, engaged talent, and new business models." [5]. |
| Digital transformation describes the fundamental transformation of the entire business world through the establishment of new technologies based on the internet with a fundamental impact on society as a whole [6]. |
| Digital transformation is referred to as "the use of new digital technologies to enable major business improvements in operations and markets such as enhancing customer experience, streamlining operations or creating new business models[7]. |
| Digital transformation is a combination of both procedures of Digitization and Digital innovation with an intention of improving existing products with advanced abilities (Yoo, Boland, Lyytinen, & Majchrzak, 2012). As per Holotiuk and Beimborn [8] . |
| Digital transformation strategy is a blueprint that supports companies in governing the transformations that arise owing to the integration of digital technologies, as well as in their operations after a transformation[9]. |

Elements of digital transformation:

Technology, Management/Processes, and people are the most important elements or components of digital transformation, as shown in the following figure: [5] [6], Digital Transformation can use one or more technologies as shown in the following table: [5] [6] [10]

Fig 2: Elements or Component of Digital Transformation [5] [6]

Technologies
- Data
- Big data
- Cloud
- Mobile devices
- Social media
- Software
- Analytics
- Embedded devices
- Artificial intelligence
- The Internet of Things
- Cybersecurity
- Automation

Management /
- Business models
- Operating models
- Operational processes
- Strategies
- Business activities
- Organizational structure
- Organizational culture
- Coordination mechanism
- Products
- New services

Digital Transformation

People
- Customers
- Employees / workforce / people
- Managers
- Executives
- Talents
- Owners
- Suppliers
- Partners
- Stakeholders

Cloud computing:

Cloud computing is a distributed computing system that offers software, CPU, memory, storage, and other computing resources. It provides on-demand services as a pay-per-use service through the internet, cloud computing is used to construct and operate the cloud computing environments of virtualizing technologies. It allows sharing a single application or physical resource among multiple clients, and load balancing can be handled by virtualization [11], cloud computing extends the information technology

38
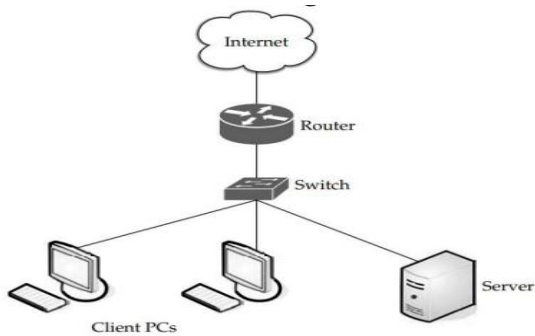
capabilities by increasing the capacity and adds abilities dynamically without investing on large and expensive infrastructure, licensing software, or training new personals. Among the several benefits, cloud computing provides a more flexible way to access the storage and computation resources on demand. In the last few years, different business companies increasingly understand that by tapping the cloud resources and gaining fast access, they are able to reduce their initial business cost by paying only the resources they used rather than the need of potentially large investment (owning and maintenance) on infrastructure. Rapid deployment, cost reduction, and minimal investment are the major factors to employ cloud services that drive many companies [12], Cloud-Based Digital Transformation: Cloud computing enables ICT service providers (person, organization or entity responsible for making a service available to cloud consumers) to virtualize their computational resources and concurrently provision them [13],

Fig3: Internet is depicted by a cloud in a network [14]

Cloud have a Characteristics such as On-demand self-service, Cost effectiveness, Broad Network Access (mobility) ,Rapid Elasticity, Measured Services , Multitenancy, Scalability, Reliability, Economies of scale ,Customization, Virtualization: [14] [15]

Cloud computing architecture has a set of services; the three main cloud service delivery models useful for organizations are Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS) or Infrastructure-as-a-Service (IaaS). [16] Which are used to access the configurable computing resources (applications, storage, servers, networks and services) on demand,

39

dynamically scalable, virtualized and multi-tenant that offers a self-service over the internet, It provides the flexibility to handle the rapidly changing customer requirements and gives a reliable solution for customer demands. [12]

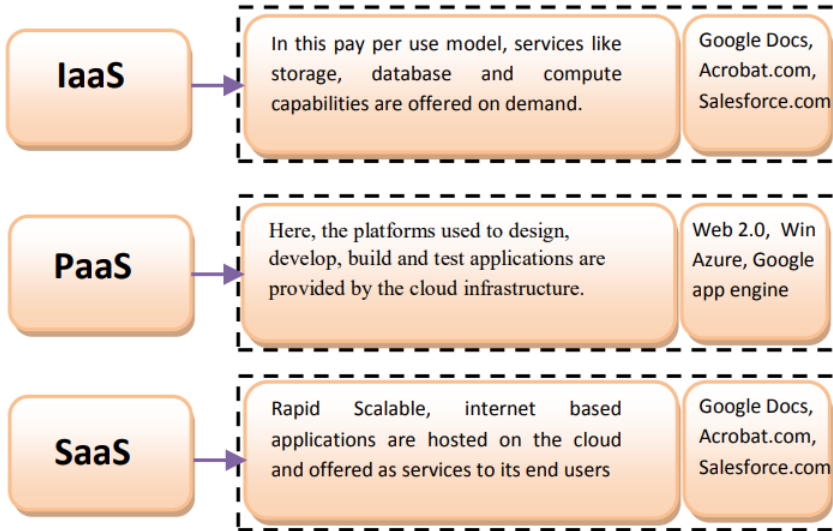| IaaS | In this pay per use model, services like storage, database and compute capabilities are offered on demand. | Google Docs, Acrobat.com, Salesforce.com |
| PaaS | Here, the platforms used to design, develop, build and test applications are provided by the cloud infrastructure. | Web 2.0, Win Azure, Google app engine |
| SaaS | Rapid Scalable, internet based applications are hosted on the cloud and offered as services to its end users | Google Docs, Acrobat.com, Salesforce.com |

Fig 4: CLOUD COMPUTING SERVICE MODELS [14]

SaaS is one of the methodologies of Cloud Computing, which is based on a "one-to-many" model where by an application is shared across multiple clients, Software as a service can be characterized as "Software deployed as a hosted service and accessed over the Internet." Software as a service (SaaS) is a way of delivering applications over the Internet-as a service. Instead of installing and maintaining software, you simply access it via the Internet, freeing yourself from complex software and hardware management. SaaS applications are sometimes called Web-based software, on demand software, or hosted software. Whatever the name, SaaS applications run on a SaaS provider's servers. The provider manages access to the application, including security, availability, and performance. SaaS customers have no hardware or software to buy, install, maintain, or update. Access to applications is easy: you just need an Internet connection. [16]

Business model

In this section move to concept of a business model:
Business model is the basic, underlying logic of a company which describes what benefits are provided to customers and partners. A business model answers the question of how the benefits provided by the company also flow back into the company in the form of revenue. The value created enables a differentiation from competitors, the consolidation of customer relationships, and the formation of competitive advantage. A business model involves the some dimensions and elements: [17]
Business model dimensions:
The customer dimension contains the customer segments, customer channels, and customer relationships. The benefit dimension includes products, services, and values. [6] [18], the digital transformation of business models relates to individual business model elements, the entire business model, value-added chains, as well as the networking of different actors in a value-added network. Within the digital transformation of business models, enabler(s) are used to generate new applications or services, the digital transformation of business models is based on an approach which includes a sequence of tasks and decisions that are related to one another in a logical and temporal context. It affects four target dimensions: time, finance, space, and quality. The next table presents digital transformation of business models definitions and components [19]

Digital transformation of the public sector:

The public sector must undergo radical changes in the years ahead to cope with demographic and financial challenges. The use of technology, building innovation capabilities and digitalization through digital transformation projects are key factors to succeed with the change to realize expected benefits. [20]

From e-Government to Digital Government, This concept of Digital Government implies an important paradigm shift in how the use of technologies in the public sector is conceived and implemented. Earlier on in the e-Government movement, the use of ICT focused on improving the efficiency of specific operations and areas of work but with the rapid progress of digital, mobile and cloud technologies The new digital paradigm recognizes the opportunity offered by new technologies to radically

41

transform back-office operations in order to: improve public sector agility, enhance data management, and create more open and innovative societies that can drive social inclusiveness, and improve government accountability and effectiveness. Digital public services could substantially reduce the time required to create a company, file and pay taxes, obtain licenses, or apply for tax reductions, subsidies or other benefits, digital public services simplified bureaucratic procedures and delivered integrated digital services. [21]

Fig 5: Digital transformation of the public sector: From e-Government to Digital Government

The digital government will implement online public services in order to minimize corruption and bureaucracy in the public administration and to offer more easily accessible services to all citizens and investors; the Organization for Economic Cooperation and Development (OECD) specified six dimensions of Digital Government Framework [22]

- From the digitization of existing processes to digital by design.
- From an information-centered government to a data-driven public sector.
- From closed processes and data to open by default.
- From a government-led to a user-driven administration, that is, one that is focused on user needs and citizens' expectations.
- From government as a service provider to government as a platform for public value co-creation.
- From reactive to proactive policy making and service delivery.

42

Public sector budgeting

Public sector budgeting systems evolve and change according to the dynamics of public sector management and claims that arise in the community [23], there are five several types of public sector budgeting first one the Line-Item Budgeting that is widely used in developing countries, The second: Budget planning and programming, Third: Program and Performance Budget [24], the fourth: Contractual budget and the Fifth: Zero-Based Budgeting [29].

The general budget in Egypt is estimated through the preparation of the draft budget, which is estimated in two ways [30]:

- Budget Items "Line-Item Budgeting".
- Program and Performance Budget.

According to the framework of the government's work program and Egypt's vision and according to key performance indicators for knowledge, innovation, and scientific research until 2030 the state seeks to move to the concept of digital transformation [25].

2-Resarch Problem:

The main Problem of building the Proposed:

The first one: The absence of an Automated framework to consolidate Project Preparation of Budget items, and consequently, the inability to collect these data at the level of the budget units in the governorates, which leads to the inability to extract reports or Calculate the value of the budget increase or decrease to balance the items in the budget of the new project for the coming year.

The second one: Failure to define the unified concepts when preparing project of budget of programs and performance leads to an inability to analyze the goals that government units wish to implement and distribute them to programs and projects, which results in an inability to define elements of imputable inputs as well as standard input forms that are capable of entering those goals, programs and projects that can be applied to all budgetary organization to access structural data.

2.1- Research Question:

The research scope will cover two dimensions related to Draft budget preparation process. The first Part is the Budget Items Preparation

Project. Second Part is preparation project of Program and Performance Budgeting. The researcher suggested a new way to deal with the preparation of the draft budget using the digital transformation method, cloud computing technology and data analysis, which would enhance financial control over all inputs and outputs of the budget project and also extract performance indicators for those outputs.

This research will be guided by a main research question, which is formulated as follows:

How could we construct Digital Transformation Framework for Building Localities Financial Maps?

In order to answer the main research question, a number of sub-questions of the two parts of the framework will appear as follows.

- What are the techniques could be used to build an Automation Budget items Preparation Project Service (ABIPPS)?
- Can we generate three dimensions report from ABIPPS?
- Can we define unified concepts when preparing project of budget of programs and performance cycle?
- How do we determine the goals that government units wish to implement and distribute those goals to programs and projects?
- Are we able to analysis cycle of preparing project of budget of programs and performance and define standard forms and elements inputs to get structural data?
- Can we apply these forms to all budgetary organization?

The answers to each of these sub-questions will address the research objective to an integrated answer to the general research question. The first sub-question explores the different technologies and techniques that used to build innovative [26] framework based on digital transformation, cloud computer (software as a service) and Automation technologies. The second research sub-question shows the ability to create reports and three dimensions report from ABIPPS. The third research sub-question. But the question three, four, five and six define the analytics of all element of preparing project of budget of programs and performance for arrive to design entity relational diagram (ERD), determine the Software

44

Development Life Cycle model (SDLC) [27] to define tasks performed at each step in the framework to arrive to structure data .

4- Research Objectives:

The main objectives of building the Proposed:

- Building Automated Budget Preparation Project Application Service (ABPPAS) to overcome the problems that occur when dealing with excel files such as (link errors, equations and aggregation, human errors) and create different levels of reports.
- Analytics of preparation project of Program and Performance Budgeting framework "APPPB" to define overall goals and programs of each government for applying Budget of Programs and Performance, input elements and design ERD to get structured data.

5- Research Importance:

This framework helps localities as a part of State's Vision 2020-2030 to turn to the digital transformation [25] through building framework of Localities Financial Map with to part.

The first part of the framework (ABIPPS) provides us with the budget data of previous years (historical data)in addition to the current year without suffering it keeps cube of data through time (year), location (governorate) and sectors so, It saves us time and effort in re-entering those historical data, which reduces entry errors; Also, the entry does not require technical staff in computer science or accounting, as the framework does all the calculations and Aggregation according to the items, groups, Chapter, Classification and all budget with friendly interface . Finally by ABIPPS we can extract reports that enable us control state funds in order to direct them to specific purposes.

APPPPB is the second part of the framework : Although the item budget is based on achieving financial and legal control over the items of revenues and expenditures, it cares about the inputs without paying attention to the quality of the outputs end indicators [31], Thus the information it provides has become insufficient for the purposes of planning and decision-making, and the inability to follow up and evaluate the performance of government programs and activities due to the distribution of resources and uses on government departments or on Accounts and not on programs and activities. Therefore, it was necessary to move gradually from balancing the items to

45

programs and performance budget, which links all the input elements (financial, human and material) and the outputs to be reached (the returns to be achieved and their impact on society), and from here the concept of applicable programs appeared in accordance with the goals and needs Which is divided into sub-programs and those sub-programs into projects and activities that can be measured and the performance indicators of those programs were measured. Therefore, it was necessary to analyze all the inputs, processes [32], outputs and results, define the concepts of those terms, and draw a diagram of the entities and the life cycle of that entire process in order to reach structural data.

In general, the importance of the study is due to:

- Enhance financial control over all inputs and outputs of the budget project using the digital transformation, cloud computing technology and data analysis.
- Create modern methods alternative to traditional methods which help to save cost by Reduce paper consumption, Reduce purchasing software licenses and Reduce expenses transportation to move employees from each governorate to the Ministry of Local Development (MLD).
- On the social and economic side, this framework promotes the concept of sustainable development, as it leads to improving the living conditions of Citizens in the community, developing means and methods of production, and managing them in ways that do not lead to the depletion of natural resources.
- It is leading to the efficiency of putting the future plans for the development of administrative tasks.
- The framework includes the budget execution service and accounting information, so we no longer need specialized accountants for each process
- Extract report and indicators.
- Ease of data retention and retrieval.
- Building this framework enable researchers to keep historical data and data mining to extract new patterns of data.
- Reduce paper consumption and save costs.
- Save the cost of purchasing software licenses

46

- Save the cost and time for employees to move from each governorate to the ministry of Local Resources and Budget in the MLD.
- Preventing administrative, financial corruption and achieving transparency.
- By APPPB can Select the main programs and sub program of the administrative agency.
- By APPPPB can define the activities of each project and the unit responsible for it.

6 - General research approach

This section explains the research design and approach to answer the research questions and reaching the research objectives.

6.1 Research design

This study explains how the researcher used this approaches to design the research, Develop a clear vision of what research design.

For a research to be carried out successfully, it requires suitable design. This is the plan adopted by the researcher to achieve the goal of the research in a correct manner, as the essence of the research design is to interpretation a research problem to provide answers related to the research questions [28], the researcher used the theoretical study to identify the gaps in the existing knowledge associated with the specific problems and the current gaps through theoretical studies in understanding and try to answer the research questions to develop an initial vision for the proposed framework.

6.2 Research Methodology

This study depends on the theoretical study to identify the gaps in the existing knowledge associated with the specific problems and the current gaps through previous studies in understanding and try to answer the research questions to develop an initial vision for the proposed framework.

According to the previous theoretical study, it turned out that this proposal "a digital transformation framework for building local financial maps", which came to achieve the government's program and Egypt's Vision 2030 [25] can be built and applied to the Ministry of Local Development and its budget entities in each governorate. Because this framework is based on component of DT (Technology, Management/Processes, and people) [5,6], using the modern technologies [7] for digital transformation such as,

47

data analysis, automation, and cloud computing services [5,6,10] applying on puplic sectors [20, 21, 22] innovate [26] and build new framework for both sides "Automation the Budget Items Preparation Project Service (ABIPPS)" as shown in Fig 6 and Analytics of preparation project of Program and Performance Budgeting framework "APPPPB] as shown in Fig7, so, we can build the framework " A Proposed Digital Transformation Framework for Building Localities Financial Map " with two parts as shown in the two next figures :

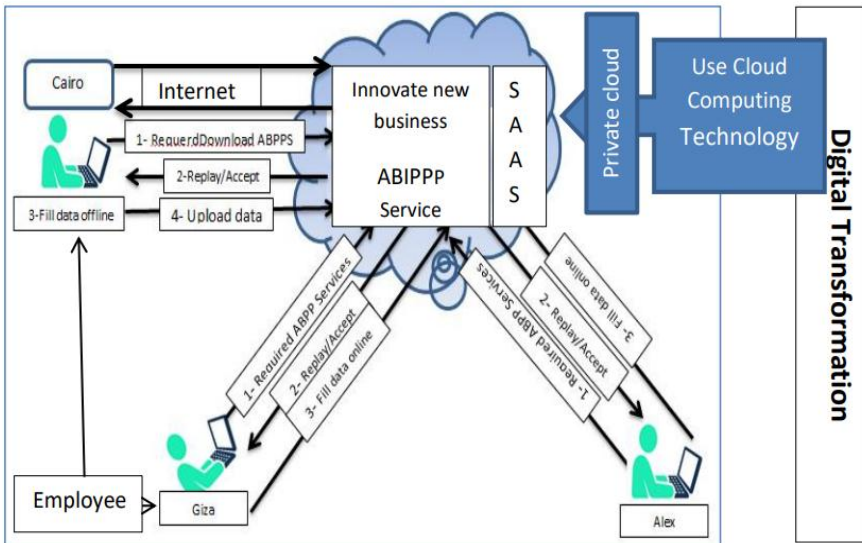- The first Part: Automation the Budget Items Preparation Project Service.

Fig 6: ABIPPS

48

- The Second Part: Analytics of preparation project of Program and Performance Budgeting.

Fig 7:

Analysis → Business

Vision Egypt 2020-2030

Organizational Structure (Ministry / Governorate) Structure/HR/laws

Feasibility study

Determine the national position served by the agency in which it operates "in light of "the functional distortion of the budget

Select the administrative authority that you are affiliated with

Select the main programs of the administrative agency

Divide these programs into sub-programs

Put these sub-programs as projects

Define the activities of each project and the unit responsible for it

Determine the activity of each credit

Specify performance indicators for each project and program activity

ERD

APPPPB

49

6-Research limitations:

6.1Spatial limitation:

The scope of the proposed thesis will focuses on The Central Administration for Budgetary Resources of Localities, Ministry of Local Development.

6.2Time limitation: From 2019/2020 to 2021/2022

7- Research Resultes:

From the previous theoretical study, we can conclude the answer to the main research question, which is formulated as follows:

We construct Digital Transformation Framework for Building Localities Financial Maps

And can answer sub-questions of the two parts of the framework will appear as follows.

- We can used DT elemants to build an Automation Budget items Preparation Project Service (ABIPPS).
- We can generate three dimensions report from ABIPPS.
- We can define unified concepts when preparing project of budget of programs and performance cycle.
- By anlysis life cycle of "preparing project of budget of programs and performance" we determine the goals that government units wish to implement and distribute those goals to programs and projects.
- We are able to analysis cycle of preparing project of budget of programs and performance and define standard forms and elements inputs to get structural data.
- We can apply these forms to all budgetary organization

8. CONCLUSION:

The aim stated by the author within the current research trough theoretical study was to get an insight into the concept of digital transformation, and its components (Technologies, Management / Processes, People) ,focusing especially on the Technologies (such as Automation, cloud and Analytics) element and how link this Technologies in our business (Budget Items Preparation Project, preparation project of Program and Performance Budgeting) applied on Government sector /Localities ("Ministry of Local Development and its affiliated budgetary bodies"), the combination of this components leads to the innovate a new framework .The researcher adopted a specific research plan to achieve the goal of the research

50

correctly. Where the essence of the research design is to solve the research problem to provide answers related to the research questions.so we recommend to build a framework "Digital Transformation Framework for Building Locality Financial Mapping" which consists of two parts, the first part "Automation of Budget Line Preparation Service (ABIPPS)" and the second part "Program Preparation Project Analytics and Performance Budgeting Framework APPPB" in order to accomplish the framework of the government's work program and Egypt's vision 2030.

English References:

[1] Ayesha, N., Babak, A., Narciso, C., and Eng C, (2017). Digital Transformation & Digital Business Strategy in Electronic Commerce - The Role of Organizational Capabilities", Journal of Theoretical and Applied Electronic Commerce Research.

[2] Jimmy Bumann Marc K. Peter, (March 2019). Action Fields of Digital Transformation - A Review and Comparative Analysis of Digital Transformation Maturity Models and Frameworks, research gate.

[3] Kaidalova Julia, Sandkuhl Kurt, Seigerroth Ulf, (2018).How Digital Transformation affects Enterprise Architecture Management – a case study, International Journal of Information Systems and Project Management, Vol. 6, No. 3, 5-18

[4] Anna Lisa Junge, (2019). Digital Transformation Technologies as an Enabler for Sustainable Logistics and Supply Chain Processes – an Exploratory Framework, Brazilian Journal of Operations & Production Management.

[5] Natalja Verina, Jelena Titko, (2019). Digital Transformation: Conceptual Framework, International Scientific Conference.

[6] D. Schallmo, C. A. Williams & L. Boardman, (December 2017) Digital Transformation of Business Models — Best Practice, Enablers, and Roadmap, International Journal of Innovation Management Vol. 21.

[7] Abdul Karim Feroz, Hangjung Zo and Ananth Chiravuri, (2021).Digital Transformation and Environmental Sustainability: A Review and Research Agenda, Sustainability Journal.

[8] P. V. M. V. D. Udovita,(2020), Conceptual Review on Dimensions of Digital Transformation in Modern Era, International Journal of Scientific and Research Publications, Volume 10, Issue 2.

[9] Mohamed Iliasse Mahraz, Loubna Benabbou, (2019). A Systematic literature review of Digital Transformation, Proceedings of the International Conference on Industrial Engineering and Operations Management Toronto, Canada.

[10] Ulrike Stefanie Foerster-Metz, Katrin Marquardt, Nina Golowko, Andras Kompalla and Christian Hell, (2018). Digital Transformation and its Implications on Organizational Behavior, Journal of EU Research in Business.

[11] A. H. Radie, Hanan M. Shukur, Mohammed A. M.Sadeeq, Karwan Jacksi, Zryan Najat Rashid Hajar Maseeh Yasin, Subhi R. M. Zeebaree and Ibrahim Mahmood Ibrahim, (2021).Task Scheduling Algorithms in Cloud Computing: A Review , Turkish Journal of Computer and Mathematics Education Vol.12 No. 4

[12] Muhammad Faheem Mushtaq, Urooj Akram, Irfan Khan, Sundas Naqeeb Khan, Asim Shahzad and Arif Ullah, (2017). Cloud Computing Environment and Security Challenges: A Review, (IJACSA) International Journal of Advanced Computer Science and Applications Vol. 8, No. 10

[13] Trevor Clohessy, Thomas Acton and Lorraine Morgan, (2018). The Impact of Cloud-Based Digital Transformation on ICT Service Providers' Strategies, AIS Electronic Library (AISeL)

[14] Aaqib Rashid, Amit Chaturvedi, (2019). Cloud Computing Characteristics and Services: A Brief Review, International Journal of Computer Sciences and Engineering Vol.7 (2)

[15] Mohsen Attaran and Jeremy Woods, (2018). Cloud Computing Technology: A viable Option for Small and Medium-Sized Businesses, Journal of Strategic Innovation and Sustainability Vol.13 (2)

[16] Vaikunth Pai T. and Dr. P. S. Aithal, (2017). Cloud Computing Security Issues - Challenges and Opportunities, International Journal of Management, Technology and Social Sciences (IJMTS).

[17] Marcin kotarba, (2018).Digital Transformation of Business Models, Foundations of Management, Vol. 10,

[18] Chanté van Tonder, Chris Schachtebeck, Cecile Nieuwenhuizen and Bart Bossink , (2020). AFRAMEWORK FOR DIGITAL TRANSFORMATION AND BUSINESS MODEL INNOVATION, Journal of Contemporary Management Issues Vol. 25.

[19] Daniel Schallmo and Christopher Williams, (2018). Digital Transformation Now Guiding the Successful Digitalization of Your Business Model, Springer Briefs in Business.

[20] Odd Ruud, (2017). Successful Digital Transformation Projects in Public Sector With Focus On Municipalities, Skema Business School.

[21] OECD (2017), Benchmarking Digital Government Strategies in Mena Countries, Oecd Digital Government Studies, Oecd Publishing, Paris.

52

[22] Luminita Ionescu and Maria Andronie, (2019). The Future of Jobs in the Digital World, Procardia Of Economics and Business Administration

[23] Alaa Mohamad, Magdy Melegy, (2017). Program and Performance Budgeting System in Public Sector Organizations: An Analytical Study in Saudi Arabian Context, International Business Research; Vol. 10.

[24] Meily Surianti and Abdul Rahman, (2017).The Implementation of Performance Based Budgeting in Public Sector (Indonesia Case: A Literature Review), International Journal of Developing and Emerging Economies Vol.5

[25] Egyptian Vision 2030.

[26] Francesco Paolo Appio, Federico Frattini, Antonio Messeni Petruzzelli, and Paolo Neirottim, (2021).Special Issue Guest Editorial Digital Transformation and Innovation Management: A Synthesis Of Existing Research And An Agenda For Future Studies, J Prod Innov Manag.

[27] M. A. Adeagbo, J. E. T. Akinsola, A. A. Awoseyi and F. Kasali, (2021). Project Implementation Decision Using Software Development Life Cycle Models: A Comparative Approach, the Journal of Computer Science and Its Applications Vol. 28, No. 1

[28] Bostley Muyembe Asenahabi, (2019). Basics of Research Design: A Guide to Selecting Appropriate Research Design, International Journal of Contemporary Applied Researches, Vol. 6, No. 5

ثانيا مراجع باللغة العربية :

[29] د عطية عزالدين و د أحمد بيرش ، (٢٠٢٠). أساليب إعداد وتنفيذ الموازنة العامة للدولة (دراسة مقارنة) مجلة إدارة الأعمال والدراسات الاقتصادية، مجلد (٦) عدد (٢)

[30] دليل موازنة البرامج والاداء، (٢٠٢٠)، وزارة المالية، جمهورية مصر العربية.

[31] محمد عبد الرضا كاكولى، (٢٠١٨). تطوّير موازنة البرامج والاداء بهدف إحكام الرقابة وتقّييم الاداء المالى للقطاع الحكومَى الكوّيتى، مجلة البحوث المالية والتجارية، المجلد ١٨، العدد الرابع – الجزء الأول.

[32] أ. م. د. أياد شاكر سلطان، م. م. ريباز محمد حسين محمد، (٢٠١٨). إمكانية تطبيق موازنة الريامج والاداء ودورها فى ترشيد الانفاق الحكومي دراسة ميدانية فى عينة من الدوائر الحكومية فى إقليم كوردستان، مجلة الغري للعلوم الاقتصادية و الإدارية، مجلد. ١٥، عدد. ٤

53