Requirements of Restructuring & Raising Efficiency of Public Service Channels in localities: Applying on Citizen Service Automated Centers, A.R.E

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Study Abstract:

The Study built its major research question on the potentiality of enhancing decentralized local e-service for serving local citizens through offering some complementary aggregated mechanism for improving standards of local services. Thus the author proposed some developed model for restructuring the currently standing citizen technological automated service centers [CASC] in a new institutional form based on Government Data Exchange [GDX] networked service centers applying on Egyptian context, and for reaching research objective, the study had to analyze the current situation of CASC performance including designated tasks, scoop of services, then it came to conclusion that CASC is a wasted governmental local asset that in a need for more institutional capacity building, thus study proposed some analytical framework for expanding provided local services offered by CASC quantitatively & qualitatively by setting a new proposed framework including new institutional structure chart, new technologies, new charts of work flow process, proposing HR competencies, service time providing standards, setting KPIs, besides the study proposed some quantitative distribution of the new institutional potential formula under [GDX] service centers over all the republic of Egypt.

Key Words: *Raising Efficiency, Restructuring, CASC, GDX networking centers of public service.*

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ملخص الدراسة باللغة العربية:

قامت الفرضية الرئيسة للدراسة على أساس بحث إمكانية تطوير وتعزيز منظومة الخدمات العامة المقدمة للمواطن المحلي بصورة لامركزية من خلال الكيانات المحلية المألوفة، والتي يأتي في مقدمتها المراكز التكنولوجية لخدمة المواطنين بالمراكز والمدن والأحياء بمختلف المحافظات، حيث توصلت الدراسة من خلال تحليل الوضع الراهن لهذه المراكز بأنها فرصة كبيرة مهدرة من جانب الدولة لتعزيز وتوطين وتوسعة حجم ونوع ونطاق سائر الخدمات القطاعية المتنوعة من خلال هذه المراكز التكنولوجية والتي يقتصر دورها الحالي على مجرد الوفاء بعدد محدود من الخدمات المحلية الصرفة، في حين أن الاتجاهات الحديثة بالتجارب الدولية تشير لكون أقرانها من منافذ تقديم الخدمات بالمحليات الأجنبية أقرب للنمط المتكامل الذي يغطي أكثر من نطاق قطاعي في آن واحد بجانب نمط الخدمات المحلية التقليدية، مما يفتح المجال للحديث عن إعادة هيكلة المراكز التكنولوجية بالحالة المصرية بالإفادة من التقنيات الشبكية الحديثة التي تتيح تناقل وتبادل البيانات الحكومية من وإلى الوحدة المحلية عبر الدولة بكامل أجهزتها سواء المركزية أو المحلية القرينة بنفس المستوى، من هنا اتجهت الدراسة لرسم إطار متكامل لإعادة هيكلة ورفع كفاءة المراكز التكنولوجية بالمحليات بما يجعلها أقرب لتصور عمل الشباك الواحد متكامل الخدمات عبر سائر قطاعات الدولة الخدمية الأخرى (من صحة وتعليم وإسكان، خدمات أحوال مدنية، جوازات، ضرائب، تراخيص مرافق، خدمات مرورية، سداد مستحقات، ... إلخ) لتكون منبراً محلياً موسعاً ومتكاملاً لتأدية أنماط جديدة من الخدمات القطاعية بما يخفف العبء على كاهل المواطنين خاصة أوقات الذروة والأزدحام الشديد على المنافذ التقليدية بأماكنها المعهودة، وتحقيقاً لهذا الغرض قامت الدراسة برسم إطار متكامل لإعادة الهيكلة شمل إعادة النظر في خريطة الخدمات التي تقدمها المراكز، فضلاً عن مقترح مقدم لهيكلها التنظيمي الجديد،

تصور لتطوير هياكل جدارات الموارد البشرية العاملة بها ومصادر استقطابهم خاصة عقب الانتقال للعاصمة الإدارية الجديدة وفائض العمالة الحكومية بالمحليات، فضلاً عن تسليط الضوء على محددات الأداء والتميز المؤسسي كمؤشرات قياس الأداء، إعادة النظر في زمن تقديم الخدمة للمواطن وسرعة الاستجابة، إعادة النظر في خريطة تدفق العمل الداخلي ذاتها للوحدة الخدمية الجديدة المقترحة في ثوبها الجديد، مع اقتراح لإعادة توزيعها الجغرافي والمكاني على محافظات الجمهورية ووحداتها الفرعية بما يتوائم مع الكثافة السكانية بكل وحدة محلية بالجمهورية.

الكلمات الدالة: *إعادة الهيكلة، رفع الكفاءة المؤسسية، أسلوب توصيل الخدمة العامة، المراكز التكنولوجية لخدمة المواطنين، أسلوب الخدمات الشبكية المؤتمتة.*

Abbreviations

CASC	Citizen Automated Service Centers
GDX	Government Data Exchange service centers
OSP	One-Stop Point service centers
DiGi.	Digitalization

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**** Introduction:**

As Egypt on the edge of public service digitalization transitions era, there are many callings for developing provided public services to citizens especially in localities as local public administration and local services are representing over more than 60-70% of the whole governmental apparatus performance, and therefore we may in need of seeking a new administrative additional mechanisms, alternatives for enhancing sectoral local public services in its new form matching with assumptions of DiGi. Era.

Egypt has too many ready qualifications for enhancing the dimension of decentralization of e-local public service in many sectors, and the most important of which are the currently existing CASC [citizen automated service centers in localities], and in the light of the current reform wave of public services, a new callings sourced from inside the Egyptian government and reform experts are addressing new expanded roles of CASC centers covering too many sector services in all fields of citizen life, not only being accustomed to minor local services specifically relevant to real state nor constructions nor public utilities, but to handle other qualitative services, represented in other developmental sectors (Education, Public Health, Housing, Maternity, Social solidarity, Public affairs & Participation… etc.), that could be aggregated totally in one service point station for the favor of local citizen's conformability with less exerted effort to obtain, less suffering access especially regarding this kind of services that depend on citizen access to other different bodies in the same time, thus, a new entitled form of offering e- service to local citizen is required for fulfilling the desired new role of decentralized sectoral service through one stop point of service designated stations, and that could be elaborated within the next research question as follows..

**** Research Question:**

The major issue of the study is to propose some model for enhancing a new public service form matching with requirements of Digi. Era that might intermediates, combines, and replaces both

traditional public units from a side and currently excising CASC service centers from the other side in local areas based on full service automation from the local service source to the ending point of consumption and delivering to citizen, thus the major question is on how to transform the performance of the current CASC centers from a narrow local service scoop to more expanded service scoop, expertise, representing other departmental sectoral services in the line with decentralization of local public service in local communities applying on Egyptian context.

** Research Objectives:

- *Detecting new techniques of building, designing, offering public service.*
- *Offering a proposed model for raising capacity of local public organs as the biggest components of the whole public administration apparatus in Egypt.*
- *Offering new Recommendations to local decision makers with more practical implications in the line with decentralizing public services matching with digitalized standards of service.*
- *Raising efficiency of local public service, targeting more citizen satisfaction with governmental performance.*

** Research Sub-questions:

1. *What is the current status of CASC service centers of Egyptian localities?*
2. *What is the potential mechanism of GDX service base?*
3. *What kind of future service could be offered within GDX based centers?*
4. *How to raise efficiency of capacity building process through the local one stop service points?*
5. *How to re-adjust performance of CASC centers in the light of GDX mechanism?*

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6. *What would be the potential institutional capacities responses of GDX service centers regarding designing its new structure, HRM competencies, KPIs, Service control and assessment?*

**** Study Axes & Division:**

- **Axis (1):** Evolution of public service's channels & dynamics: literature review & theoretical framework.
- **Axis (2)**: Research methodology & proposed model for restructuring CASC.
- **Axis (3)**: Study's results & discussion.

Axis (1): Evolution of public service's channels & dynamics: literature review & theoretical framework

Literature derived some crucial implications for developing mechanisms and dynamics of public service's channels and outlets as follows:

According to Peter C. Humphreys (1998); & MINISTRY OF PUBLIC SERVICE, PERFORMANCE AND DELIVERY MANAGEMENT, REPUBLIC OF KENYA (2024), public service is set of offered activities, goods to public citizen that is funded by taxation. Public services could be provided on a commercial or a non-commercial bases by either government or private sector, or even through private sector on behalf of the government according to partnership special agreement formulas.

Peter Langham , et.al, (2012) raised the assumption of " Open Public Service" for the purpose of offering some several varied & potential service outlets for enabling citizen to choose from within a variant range of providers, such service channels are based on market type mechanisms, covering many sectors: adult care, education, public health, child services, family services, social housing , replacing the traditional scoop of providing public services for taxpayers through pure government owned agencies.

Wim Oosterom, (2007) discussed some crucial driving factors in the line with improving and reforming public service delivering means due to many considerations such as public sector

is being the largest service provider to people all over the world, daily it is affecting lives of millions, besides other factors like the changing demographics, budgetary constraints, customer awareness, global competition for investments, sectoral reform programs.

From another side, speaking on changing nature of government HR members who are in charge of running & delivering public services to people, Mehmet Metin UZUN., (2021) argued HRM in government practices witnessed many evolutional waves, starting from the first generation of government civil service 1.0 in the light of classic webberian model, HR environment was characterized of being more static based on rule of law, regulations, fixed work conditions, systematic operations, centric planning, domination of rigid classic values such as seniority as a base of promotion, traditional autocratic leadership model, thus public employee was just a passive subordinate, then second generation of civil service 2.0 under the umbrella of NPM model with more tendency to market soul, flexibility, market oriented competencies, HR members were more admitted as social capital assets more than classic passive subordinates, with more empowerment movement toward self-managed teams and quality circles, then moving to civil service 3.0 according to NPG model, HRM practices that witnessed more openness on society and citizens, emergence of telework conditions, changes of HRM competencies matching with digitalization philosophy, creativity, data-based culture, system thinking, absorbing more ICT techniques (ex. AI, e-clouds, cyber security systems..).

Luangvilai, Airada,, (2021) deliberated the changing nature of public service organizational structures and arrangements, transition from classic, hierarchical, multi level, overlapped structures that has been characterized by a narrower span of control, more resource consumption rate, longer chain of workflows, more procedures, more time consumption, less achievement rates, less efficiency work degrees, less effectiveness, less service quality, less citizen satisfaction, more corruption

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potentialities, to a new scoop of organizational structures that are characterized of being more flatten, less crowded, wider span of control, less decision making passing channels, more achievement rates, less service procedures, more efficiency and effectiveness rates, more quality and citizen satisfaction rates, less corruption, more automated, more open to external environments, more partnerships, societal protocols, coordination, data sharing, more official open data sources, more citizen participation rates in public affairs, offering more chances for gov.- societal dialogues concerning policies formulations & public services creation, more accountability and transparency, more service quality rates, less corruption potential rates, turning from hand to hand documents deliberation within daily transaction flows to virtual or no face transactions, from systematic physical flows to more digitalized flow of e-service documents, from traditional analog paper records to fully automated e-records, from traditional paper archiving to e-clouding based archiving (Casalino Nunzio, et.al,).

According to Elena Grigorieva et.al, (2020)., financial management system in government sector practices has been witnessed several crucial changes, for illustration the transition from fixed budgeting model , utilizing traditional credit cards (since1950s), ATM Services (1960s), e-stock trading (1970s), SWIFT system (1973), to more sophisticated financial methods such as performance & program based budgeting, internet & e-commerce business (1990s), e-payments services, e-shopping, e-marketing, inter-banking services, international money transfer techniques, and then within digitalization era modern societies witnessed more sophisticated methods of financial management systems & technologies: emergence of Bitcoin (2009), Block chain (2014), crowed funding, e-taxing services, financial inclusion connecting services, financial mobile apps, beside more modern payment systems ex. e-wallets, e-contracting, e-tendering, auctions.

Beside all what has been introduces, there were many literatures that supported the effects digitalization process on public service dynamics:

Sara Hinkley, (2023) asserted on that modern technologies are affecting mechanisms of providing public services to the people in several faces, they are driving more in the direction of outsourcing from the private sector, from other side governments utilize technologies in 5 different categories including manual tasks automation, service processes automation, enhancing automated decision making systems, sharing and deploying integrated data systems, and last but not least utilizing daily electronic monitoring systems around service outlets.

Connecting to the same idea, Misuraca, G., and van Noordt, C.(2020), elaborated some of the most promising public services that are able to absorb artificial intelligence (AI) applications in public sector such as public health services, education, economic & financial policies, GPS based services like transportation service, with utilizing new AI applications & tools as chat bots and intelligent digital assistants, predictive analytics, simulation and data visualization, identity recognition, algorithmic decision making, machine learning and deep learning, threat intelligence, ..etc.

Welby, B. and E. Tan (2022), argued that creating public service digitalized delivery methods for the public is not an optional issue for governments, it is necessary for offering some user-driven services, inclusive innovative, resilient, and trustworthy services, and from the other side he asserted on that processes requires some other supporting precautions in other words changing nature of service delivery methods is not enough, the governments need more complementary actions besides as: reconsidering about the available HR competencies, transition to more networked organizational structures, agility, service providing time and fast responds to people demands, changing organizational cultures into more citizen-centered service approaches.

According to Accenture Research center survey results (2022) that was applied on a sample of 5,500 citizen & 3,000 public employees in 10 countries, 75% of people are dealing with

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the government services zero to 2 times a year, 71% of them were accessing public services through a digital service channels, 36% of sample thought that government services processes are intuitive, while 41% agreed that government transactions were clear and understandable, 95% of public employees thought that their work is meaningful, 43% expressed their wishes of accessing digitalized public service as it was more enough secured, and around 30% of public employees obtained cyber security & data training.

Last but not least, Pritta Andrani Widyanarko, (2020) elaborated a categorized five different forms of circulated public services that are varying in between:

- [*Informative Service*]: represented in providing Publications, Reports, Data, Regulations, Decrees, Brochures, Official Documentations… to citizens as a new trend of enhancing transparency and open government mechanism locally.
- [*Contact Services*]: such as offering supplying Complaints, Suggestions, Initiations, Questionings, Investigations, Questionnaires, ..etc.
- [*Transaction service*]: this kind of services is expected to be the most demanded type of which, like Filling in forms, Taxes, Renders, Auctions, Licenses, Payments, Fees.. etc.
- [*Participatory service*]: E-voting, E-participations, E-forums, assessing policies, Local Governance activities, Policy labs...etc.
- [*Data Transfer service*]: including Funds, Data transfer, records sharing, Gov. e-documents intersharing... etc.

Thus, based on all the previous evidences around changing nature of public service from a side, public service delivery methods from another side, and public service dynamics, public service methods could be categorized under 3 different waves: from service delivery 1.0 to smart service delivery 3.0. (Butcher, David Gilchrist, 2016); (Pritta Andrani Widyanarko, 2020):

Table (1): Evolution of Public Service Delivery concept across managerial theories

	Webberian P.A [Public Service 1.0]	***N.P.M [Public Service 2.0]***	***N.P.G + E-governance & Open Gov. model [Public Service 3.0]***
Public Service main Producer	State, Government, Public sector agencies	State + Private sector + Civil Society	State + Private sector + Civil Society + Citizen
Public Service Characteristics	Face to face transactions, Intensive Documentation, Law regulatory & public policy oriented, more procedures, more hierarchy	Contestability, market values, Service Quality Standards, KPIs, Professionalism, Efficiency, Effectiveness, citizen oriented	Virtuality, no face – no place transactions, less time, less physical mobility, more citizen oriented
Means of Public Service Production	Public Budget, Public investment, Laws, Plans, Public Organs, Bureaucracy	Out sourcing, In sourcing, informing, supply chaining, Contracting out, Off shoring, Pubic private partnership projects (PPP)	Chatbots, Gov. ports, Platforms, e-clouds, Service Cyber labs, Virtual networks, service webs, Apps, Cell phones..
Public Service Place of Delivery	Traditional schools, hospitals, Public agencies, Bureaus, offices, ministries, directorates, departments	Private sector agents, public agencies, private projects	Your: [personal computer, e-mail, mobile, platform, home mailed, hotel, in car, business, company, club,.. Etc].

Source: Organized by Author, depending on data of: Pritta Andrani Widyanarko, (2020)., "The Placeness of Public Service: Redefining the Meaning of Place in the Digitalization of Public Service Delivery", **Master Thesis**, the Ragnar Nurkse Department of Innovation and Governance, Tallinn University of Technology., Aug. 2020.,p.5-15.

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** **General comment on literatures:**

By the end of reviewing the previous literatures, study may come to some primary lessons as follows:

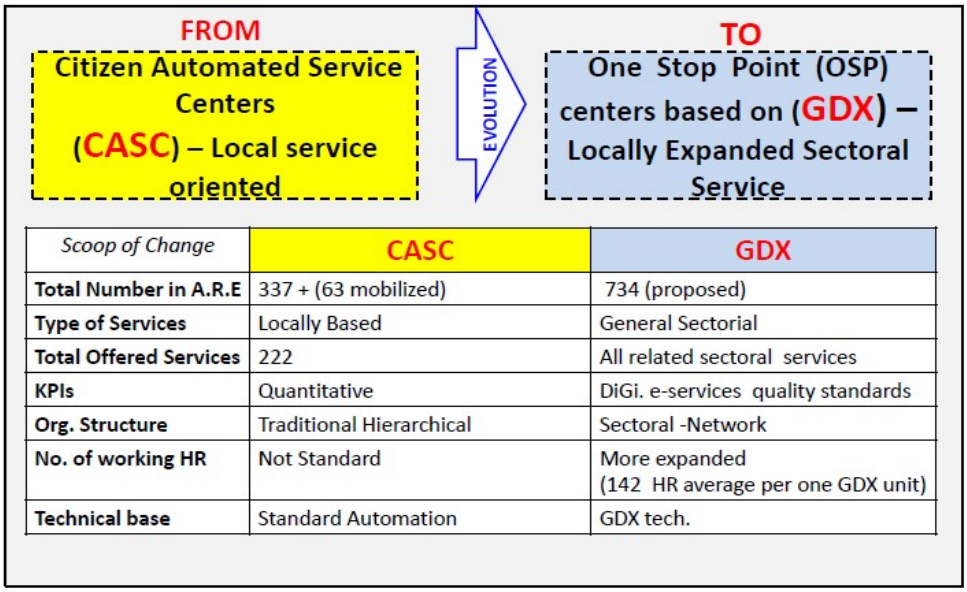
- First, public service delivery method concept doesn't work in a vacuum, it is being surrounded by variant dynamics formulas ex. official HR members, organization structure, organizational values & cultures, financial managerial & payment methods, service document circulations, transactions & interactions, technologies, time service deliverance, time of responding to potential customers (citizens).
- Second, public service delivery practices witnessed many evolutions, shifts that in turn were accompanying to public administration paradigm shift models from the classic type to the pluralistic based governance model.
- Third, while thinking about improving & restructuring public service delivery organizational channels through the Egyptian case as raised in study's major question, the proposed model of reforms has to respond to all of deliberated dynamics of public service channels, and that what is the primary lesson retrieved through literatures, and to be considered while designing study's methodology and major assumptions.

Axis (2): Research Methodology & Proposed Model:

Based upon the presented literatures, the study adopts both (Deductive) and (Structural) approaches for fulfilling the major study question, in the light of qualitative and quantitative research techniques, beside depending on accessing secondary data sources.

In the light of adopted approaches, the study raises the following assumptions:

First assumption: the major idea of study & proposed restructuring program is based on the major following assumption:



Scoop of Change	CASC	GDX
Total Number in A.R.E	337 + (63 mobilized)	734 (proposed)
Type of Services	Locally Based	General Sectorial
Total Offered Services	222	All related sectoral services
KPIs	Quantitative	DiGi. e-services quality standards
Org. Structure	Traditional Hierarchical	Sectoral -Network
No. of working HR	Not Standard	More expanded (142 HR average per one GDX unit)
Technical base	Standard Automation	GDX tech.

Fig. (1): Study's major assumption & proposed model of CASC restructuring

Source: Author.

the new proposed GDX networked service based systems are proposed to work as new vocal service point or service intermediation link in between local authorities, from a side and the citizen from the other side, to replace traditional narrow work scoop of [CASC] that are specialized mainly in performing and offering pure local services - not departmental expanded tasks, services - as it is designated in the new proposed model. The new GDX model is supposed to cover and serve local citizens applying on decentralized local sectoral services that in turn are represented by at least 12 sectoral ministries that are having actual regional directorate existence within a 27 governorates with all of its sub-levels locally. (Al- hosary, 2019).

Second assumption: thus the question now is on: how does the GDX networked system service work? the major idea of designing the mechanism of [Government Data Exchange units]

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known as [GDX] is on facilitating the process of inter-organizational exchanging & fulfilling required documentations among several sectoral organizations simultaneously, in a way that enables local citizen to obtain all needed services from within only one unified aggregated outlet, or in other words inter-sharing of citizen related official data from one governmental spot that in turn is connected to other designated public organs locally in a systematic, dynamic manner, especially regarding these kinds of governmental services that depend on communicating and interacting with several places for reaching only one service, without the need of transition from one agency to another in the same geographic area (Grichawat Lowatcharin, 2021).

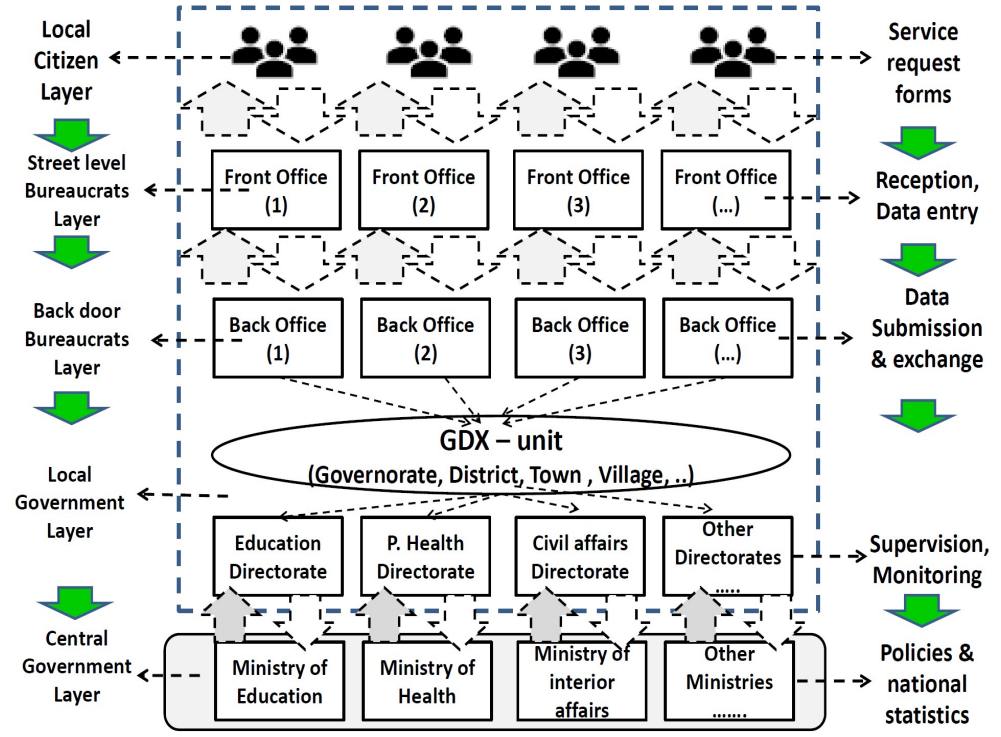

Fig. (2): GDX's proposed work mechanism
Source: Author.

Thus, the internal GDX work-flow map design could be running according to the following perception:

1. [Citizen]: Requesting the service by citizen, ex. Educational service department.
2. [Front Office]: applying service conditions on citizen and regulations, and then forwarding transaction to the designated, affiliated departmental back office.
3. [Back Office]: reviewing transaction, passing & monitoring service request with designated departmental GDX sub-unit.
4. [GDX sub-unit]: designated GDX unit performs original semi-final service transaction including consulting with other service complementary departmental GDX sub-units (ex. if educational transaction depends on other complementary transactions relevant to youth department inside the same branch (center), in this case Education GDX unit can consult directly with youth GDX sub-unit without citizen request.
5. Then Education GDX sub-unit electronically reports to designated Education directorate, and re-passing final transaction documents to original departmental Back office who in turn delivering the final service to citizen either face to face, or in electronic form (through e-mail, phone, ports, platforms…) depending on citizen request wishes that he submitted from the beginning to designated front office:

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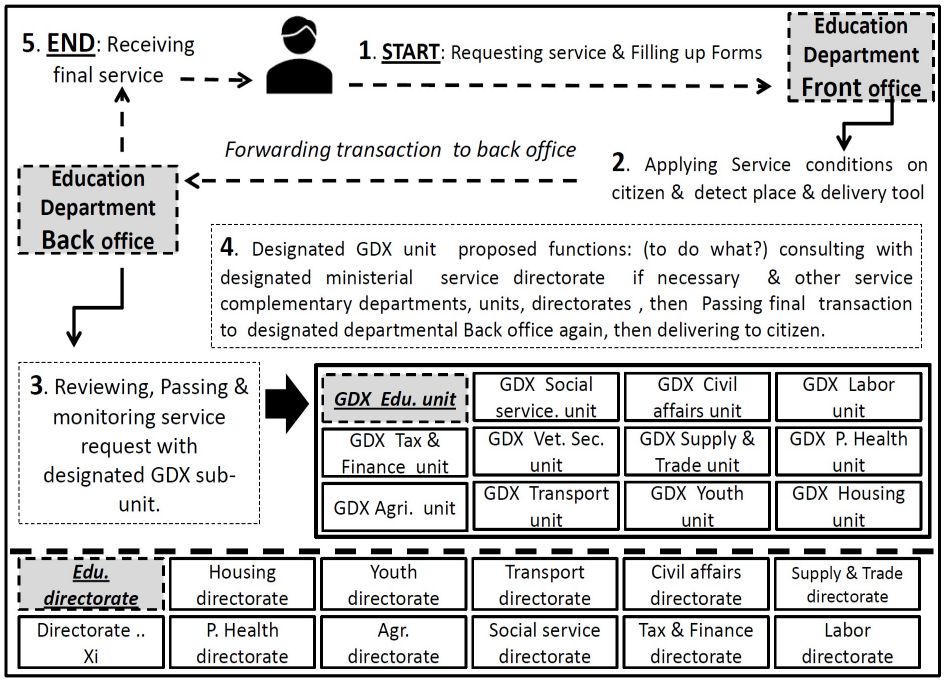

Fig. (3): GDX's internal flow of work proposed chart applying on educational service (as example)

Source: Author

Axis (3): Research results & discussion:

A. Analyzing the current situation: Egypt's public services available outlets through current public organs.

B. Building & designing restructured model of GDX service units applying on Egyptian context.

A. Analyzing the current situation: Egypt's public services available outlets through current public organs.

Egyptian public service theatre has many models & forms, the traditional public service provided to the citizen used to be offered within traditional classic tubes represented in ministries,

local authorities, public agencies, associations, usually the biggest amount of demand of this kind of public service could be provided to some segments of citizens especially illiterate people, and those who don't have regular access to the web, and those who still neither can deal effectively with technology, nor those who still don't trust digital governmental transactions, The higher ratio of such kind of governmental transactions is, the society is recognized to be less digitalized (Negative Reverse Relationship) and vice versa.

The second wave of public service evolution in Egypt was in the mid of 1990s [Emergence of the internet] & 2000s decades, Egypt began to witness the emergence of CASC [citizen automated service centers in localities] that were based on automated but face to face transactions, working side by side to other traditional governmental units, departments, and directorates serving people in localities.

Until, the third wave of public service evolution, when the emergence of no-face service transactions started with the mid of 2010s decade up to 2020s period after the COVID-19 pandemic , thus public service are now depending on different types of channels for delivering service to citizens due to technologies special DiGi. Applications such as Portals, Platforms, Cell-phones apps, beside automated mobilized service units, and so this kind of services types became more attractive to new segments of citizens especially youth people who have regular accessing to the web:

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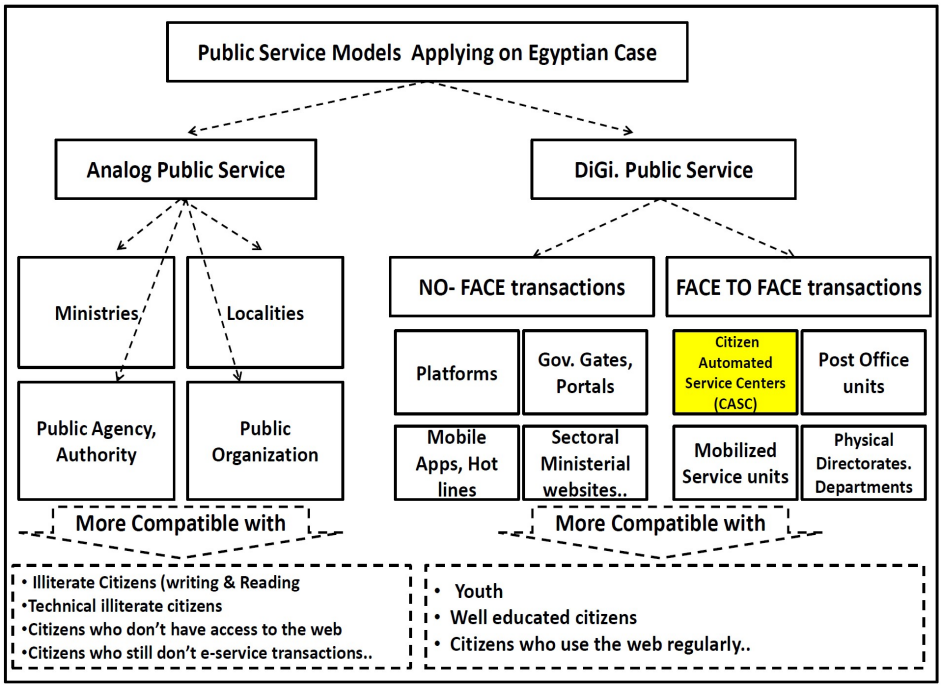

Fig. (4): Current Status of Egyptian Public Service Channels

Source: Author

Thus, we may find local citizen being in the middle of 3 different sources of public services accessing channels:

1. [Geographically Fixed Service Points]: for citizen who prefers traditional channels of accessing public service but with more modernized standards.
2. [Electronically Virtualized Public Service Points]: represented in e-clouding based portals, platforms, phone apps .., that in turn is another service option for citizen but in more practical soft digitally based service that could be accessed anytime and anywhere.
3. [Automated Mobilized Public Service Points]: they usually targeting reaching citizen areas within population crowded areas, and districts, through mobilizing from one area to another.

Thus, based upon the last analysis: what chances do we have in the future for developing our local e-service systems, channels?

1. The emergence of new form of service providing that may replace traditional departments of public service that were based on classic model.
2. A new chance for expanding and exceeding services provided to local citizen by traditional CASC quantitatively and qualitatively, based totally on DiGi. Service standards.
3. A new form of physical public service channels outlets that could be connected to the other forms especially digital ports, platforms, and cell-phones apps.
4. Thus, we may have potentiality of establishing a new form of decentralizing e-public service based on concentrated One Stop Point (OSP) networked; connected service stations that could be located within localities.

** CASC as the core base of creating comprehensive and complementary OSP public service system in Egypt: analyzing the current status:

- CASC branches are being realized as local-based public service provider centers for citizens within local units basically represented in governorates, departments, cities, districts, and villages.
- According to declared official data of ministry of planning & economic development, current total number of CASC local units is 337 and increasing, offering more than 222 different local services, beside other current 63 mobilized unites [service unit vans] which in turn are offering more than 140 different services, in addition to other 43 CASC branches in the new cities and newly established urban communities.[see: www.mped.gov.eg].
- Basically, CASC units are offering only local services that related to (constructions, buildings, stores, shops, licenses, paying fines and fees, real-states, organizing public utilities … as pure local services not sectoral).

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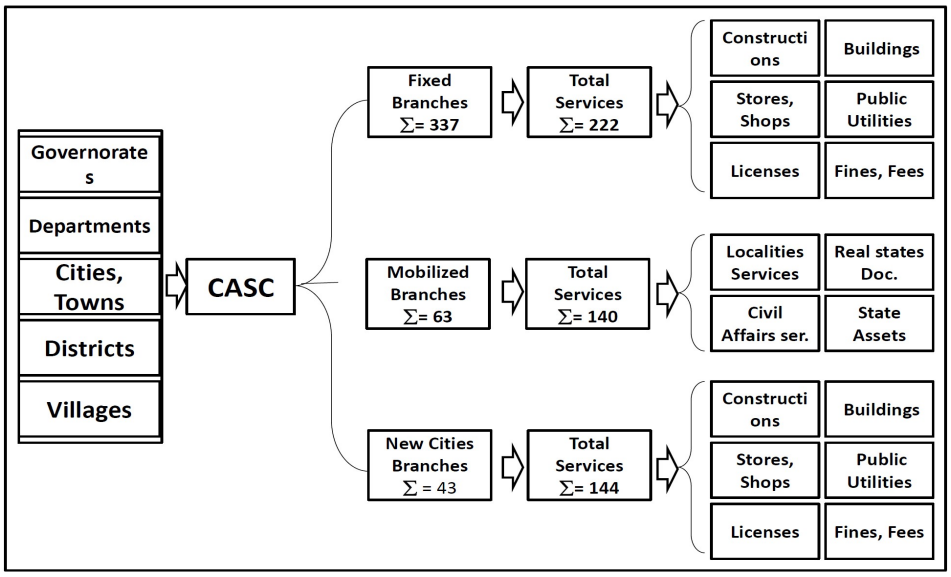

Fig. (5): Current Status of CASC local service centers in Egypt (until 2022)

Source: Designed by Author, depending on Data of: Digitalization Projects in Egyptian Government Sector Report, Sep. 2021, available at: official site of Ministry of Planning & Economic Development, A.R.E., Date of Access: April, 2022: www.mped.gov.eg.

- CASC units according to current situation don't offer an expanding sectoral service mechanisms such as education services, public health, industry, tax, agriculture and farming, investment… etc.
- Nowadays, newly emergent raised voices from inside the government are calling for expanding and increasing the role of CASC as modernized one stop service point (fully automated, sectoral fixed local service stations) that could replace the other classic traditional sectoral departmental units within localities as a new form of governmental apparatus.
- Thus, the new version of CASC could be a more sophisticated transition from the traditional departmental units to a new DiGi. form based on One Stop Point (OSP)

approach, running side by side and real-time connected to governmental portals, platforms.

- The remaining question is on: how could this be achieved? How could be translated into tangible reality? These questions are representing the major target of the study, that could be illustrated through the next Axis..

B. Building & designing restructured model of GDX service units applying on Egyptian context.

(1) GDX centers' capacity power building:

Actually, capacity power of GDX centers are affected and detected in the light of many factors that differ in turn according to its relative weights and importance, and so the study is answering question of what might be the potential capacity building indicators of GDX service units? Actually there are many pillars to address, with different relative weights as it is proposed according to the following researcher's proposed context:

Variables Affecting Capacity Power of (GDXs)	Assigned relative weights
• Time of performing one single service transaction.	20%
• Ratio of GDX's HR : Total citizens (per local area)	5%
• Total number of work shifts (per day)	5%
• Total number of HR (per GDX branch)	5%
• Rate of population intensity (per local unit)	5%
• GDX's logistics (waiting areas, place area, total no. of outlets)	20%
• ICT infrastructure capacity (servers, PCs, Broadband, Wifi ..)	20%
• HR training programs type	5%
• Total of GDX's actual working hours / per single shift	5%
• Average of employee's productivity / per 1 hour of work	10%
Σ =	**100%**

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For Example:

For Example :	
• If one (GDX) branch has a number of service out lets =	2 out lets /per 1dep.
• Total Department number =	12
• Mean period of service transaction =	15 mins. /per a citizen
• Total number of actual working hours / per a single shift	7 hrs (-1 hr break)
• So, productivity per 1 hr = 12*2*4 =	96 citizen / hour
• Productivity per a single day (one shift) = 96 * 6 =	576 / a day
• Productivity per a week (5 days work) = 576 * 5 =	2,880 / a week
• Productivity per a month = 2,880 * 4 =	11,520 / a month
• Productivity per a year = 11,520 * 12 =	138,240 / a year

Source: Author

Thus, according to the previous assumed scenario, if we tried to enhance the model's internal capacity power, the more output service productivity we gain per/ day, week, month, year.

(2) GDX centers' Geographic Distributions according to Capacity power [Deconcentration Scoop]

In the light of planned capacity power as illustrated through the previous scenario, we may conclude some quantitative distribution of GDX service centers as a ratio out of total number of local population per/ local unit in the light of the following estimations:

- *First Potentiality [F]: assuming that the GDX centers productivity per a month = 11,520 citizen, what are the predicted needed numbers of centers per/governorate according to total number of local population?*
- *Second Potentiality [S]: and what if the annual GDX centers productivity per a year is = 138,240 citizen then, how many of centers might be needed?*

That could be detected by calculation of both scenarios according to the next ratio formula:

$$F = \frac{[Pi]}{GDX\ [capacity\ power\ /\ Month]} \qquad S = \frac{[Pi]}{GDX\ [capacity\ power\ /\ Year]}$$

Thus, the total needed number of GDX centers according to first and second potentialities per/ Governorate will be as follows:

Table (2): Numeric Distribution of GDX centers per/ local units in the light of potential Capacity powers

Governorate	Population (2021 est.) per/governorate [P_i]	GDX [capacity power / month] = 11,520	GDX [capacity power / year] =138,240
Cairo	10,021,820	**870**	**72**
Alexandria	5,422,608	**471**	**39**
Port-Said	778,544	**68**	**6**
Suez	770,333	**67**	**6**
Damietta	1,578,340	**137**	**11**
Dakahlia	6,859,894	**595**	**50**
Sharqia	7,640,082	**663**	**55**
Kalyoubia	5,953,131	**517**	**43**
Gharbia	5,285,660	**459**	**38**
Kafr-El-Sheikh	3,600,196	**313**	**26**
Menoufia	4,578,910	**397**	**33**
Behera	6,632,497	**576**	**48**
Giza	9,200,884	**799**	**67**
Ismailia	1,400,315	**122**	**10**
Beni-Suef	3,430,098	**298**	**25**
Fayoum	3,897,412	**338**	**28**
Menia	6,023,203	**523**	**44**
Asyout	4,802,434	**417**	**35**
Suhag	5,439,346	**472**	**39**
Qena	3,463,061	**301**	**25**
Aswan	1,590,377	**138**	**12**
Luxor	1,345,279	**117**	**10**
Red Sea	387,494	**34**	**3**
ElWadi ElGidid	257,752	**22**	**2**
Matrouh	502,734	**44**	**4**
North Sinai	489,428	**42**	**4**
South Sinai	111,870	**10**	**1**
Total	**101,463,702**	**8,808**	**734**

Source: Designed and Calculated by Author, depending on Data of: Egypt Human Development Report 2021: "Development, a right for all: Egypt's pathways and prospects", UNDP, Ministry of Planning & economic Development, Egypt, 2021, p.331.

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We can illustrate that matrix more practically in the light of the following map distribution:

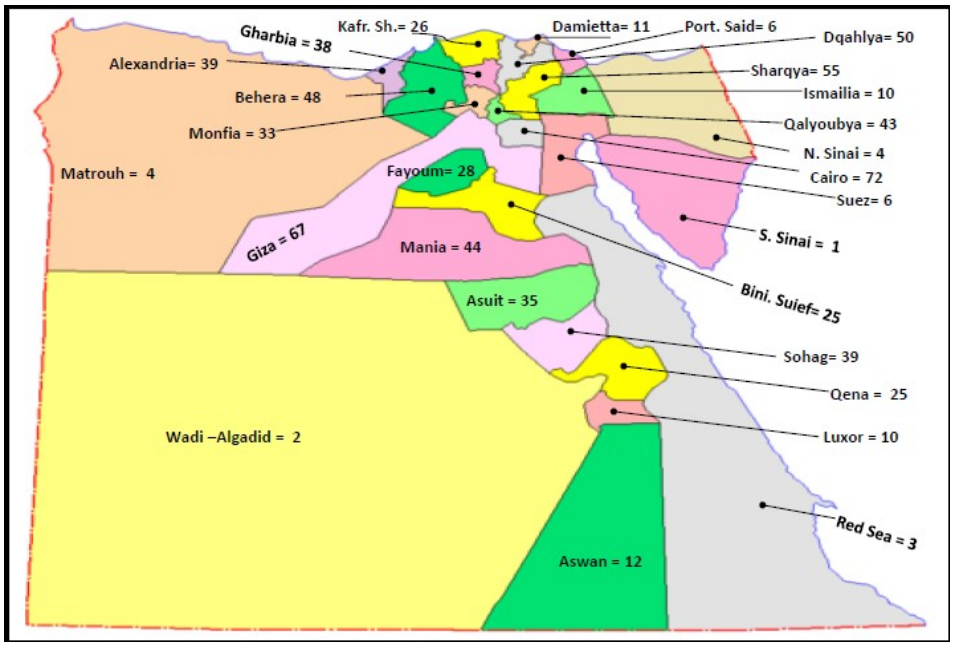

Fig. (6): Numeric Distribution of GDX centers per/ local units Source: Author.

As illustrated, Cairo, Giza, Sharqia, and Daqhlia governorates are the most absorbing samples of nominated expected numbers of GDX centers due to local population numbers, and this could be shrink in case of raising capacity power service of centers gradually.

(3) GDX centers' proposed organizational structure:

Another raised question on the expected form of GDX service centers' organizational structure, what it would be looks like?, answering that question, the new proposed design of organizational structure ought to reflect the new recognized philosophy, expanded departmental service role of the GDX centers matching with the new form of e-public service, so here the study offers some proposed form of organizational structure including potential forms of internal units, supported by some primary distribution of working man power (HR) as elaborated in the following context:

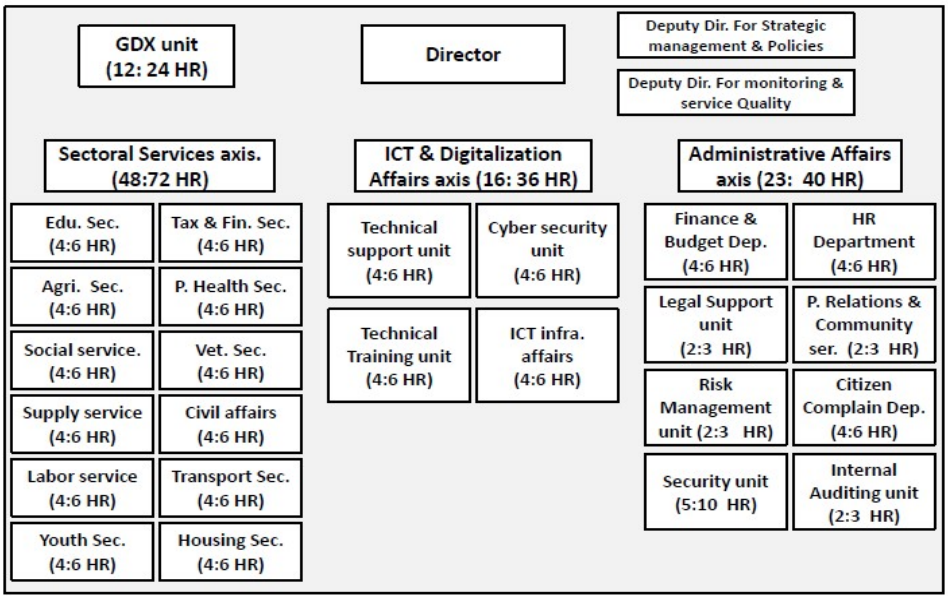

Fig. (7): Potential Organizational Structure of GDX centers supported by Potential HR Distribution

Source: Author.

(4) GDX centers' Service time line management:

One of the most vital factors of assessing performance and raising institutional capabilities of GDX service centers is reaching a standard [Time Service Achievement], how much time does it take to deliver an automated service to local citizen within one local GDX center - compared to traditional paper service based transactions?

According to GDX flow of work chart illustrated in Fig.(4), service cycle is supposed to be running across many potential full automated steps internally and externally, and each step might take some standard period of time as predicted in the next context:

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Assuming that:

• Mean of Time taken for implementing service (according to workflow chart)	μ
• Mean of Time taken for one single Front office transaction	*μ (1)*
• Mean of Time taken for one single Back office transaction	*μ (2)*
• Mean of Time taken for one single GDX sub-unit transaction	*μ (3)*
• Mean of Time taken for sectoral data exchange process	*μ (4)*
• Mean of Time taken for reverse connection from GDX unit to Back office	*μ (5)*
• Mean of Time taken for reverse connection from Back office to Front office	*μ (6)*
• Mean of Time taken for reverse connection from Front office Citizen	*μ (7)*
• Total Number of internal & external transactions / per a single service	*Nx*

Source: Author

Thus, Time Mean Value of Service Delivery process / per citizen could be estimated according to following formula:

$$= \frac{1}{Nx} * \sum_{i=0}^{7} [\mu(1) : \mu(7)]$$

By calculating [Mean] values of each service step, we may be able to detect some standard service transaction timing that could be taken as reference while comparing actual time of service performing with the standard one, then deciding means of raising capacity power in the future beside other controlling factors.

(5)GDX center's Measuring Performance: Designing unit KPIs

By Analyzing GDX internal performance in form of KPIs [Key Performance Indicator], we may conclude 2 different categories of KPIs:

- *[Positive (+) value KPIs]*: that expresses the most desirable performance dimensions across daily service transactions that need to be enhanced positively, for instance:
  - *Rate of Service Productivity / per day, month, year =* X_1
  - *Rate of Increasing New e-Service / per, year =* X_2
  - *Rate of Fast Responses to Citizen Complains / per day, month, year =* X_3
  - *Existence of Post-Service Monitoring System (Citizen's Feedback tracing) =* X_4
  - *Sufficient, Clear Service Conditions =* X_5
  - *Ratio of GDX capacity power to population increasing =* X_6
  - *Annual Rate of Citizen Trust of e-local services offered by GDX centers =* X_7

- *[Negative (-) value KPIs]*: reflects the non-desirable performance practices through service transactions, and those need to be neutralized as they have negative effects on performance values, for instance:
  - *Mean of [Actual Transaction Time Value] – [Standard Transaction Time Value] =* Y_1
  - *Rate of Transactions' Mistakes / per day, month, year =* Y_2
  - *Rate of Citizen's Service Complaints / per day, month, year =* Y_3
  - *Rate of Technical Malfunctions / per day, month, year =* Y_4
  - *Potential Corruption Rates, Cases =* Y_5

Thus, when detecting GDX Assessing Performance, it requires to calculate the mean values of each indicator in both positive and negative performance directions, then to compare the 2 different values as follows:

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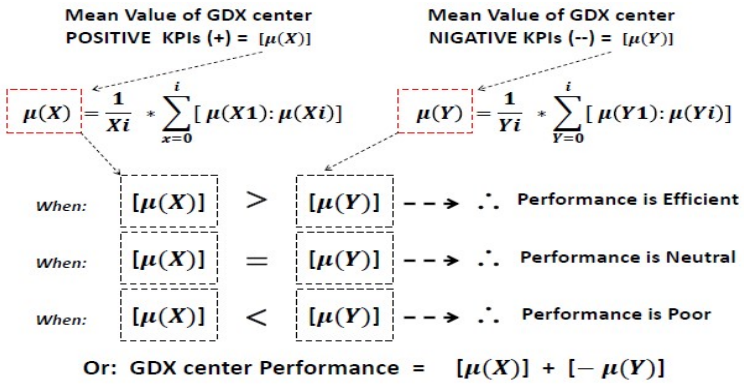

so if the total aggregated mean value of positive indicators **[$\mu_{(x)}$]** is higher than total aggregated value of the negative indicators **[$\mu_{(y)}$]**, then the performance is assessed as [Efficient], if both values are equal, performance is assessed as [Neutral], and if less, then it is assessed as [Poor].

(6) GDX centers' Man Power Planning [HRM Scoop]

This axis is dealing with dimension of Human Resource Management process through many angles:

6.1. HR planning according to new potential organizational structure of GDX center:

Based on the previous illustrated organizational chart of GDX center Fig.(7), the study is assigning the following potential distributions of man power working HR applying on the internal proposed divisions of GDX according to the next matrix:

Table (3): Estimations of Potential HR Members per/ GDX center According to Potential Organizational Structure

Departments & Positions	Min. (HR)	Max. (HR)	Mean μ (HR)
• Director	1	--	1
• Deputy Director (s)	1	3	2
• GDX chief	1	--	1
• GDX HR members	12	24	18
• Axes chiefs	3	--	3
• Adm. Axis HR	23	40	31
• ICT Axis HR	16	36	26
• Services Axis HR	48	72	60
∑ (HR)	*105*	*175*	*142*

Source: Designed and Calculated by Author.

Thus, the total aggregated numbers of HR members would be expected to range from [105 as minimum: 175 as maximum] limits per/GDX local branch, with average of [142 members] according to the previously proposed calculations.

6.2. Local Representation of GDX centers' HR per/Governorate:

Based on above primary assumption, if we have an average of 142 members per/GDX branch, what would be the expected share of local GDX branches per local units?

If we assumed that:

- ***[Zi]*** *= Total number of GDX centers /per governorate*
- ***[μ]*** *= Standard value of HR per GDX (142 HR members)*

So, the total needed number of HR/per Governorate $[Y_i] = [Z_i] * [\mu]_{HR / GDX}$

From the other side:

- *The Ratio of [Total Gov. Employees per/governorate $[T_i]$: Total Number of HR/per Governorate $[Y_i]$*

$$[R_1] = [T_i / Y_i * 100]$$

- *The Ratio of [Total Local Population per/governorate $[P_i]$: Total Number of HR/per Governorate $[Y_i]$*

$$[R_2] = [P_i / Y_i * 100]$$

And by applying that on each local unit, we find:

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Table (4): Numeric Distribution of GDX Needed HR Members per/ local unit in the light of potential Capacity power

Governorate	Population (2021 est.) per/governorate [P_i]	Total Gov. employees per/ governorate [T_i]	GDX [capacity power / year] =138,240 [Z_i]	[Y_i] = [Z_i] * 142	R_1 = [T_i / Y_i * 100]	R_2 = [P_i / Y_i * 100]
Cairo	10,021,820	437,716	72	10,224	4,281	98,022
Alexandria	5,422,608	224,686	39	5,538	4,057	97,916
Port-Said	778,544	66,138	6	852	7,763	91,378
Suez	770,333	37,248	6	852	4,372	90,415
Damietta	1,578,340	63,000	11	1,562	4,033	101,046
Dakahlia	6,859,894	345,870	50	7,100	4,871	96,618
Sharkia	7,640,082	472,878	55	7,810	6,055	97,824
Kalyoubia	5,953,131	293,715	43	6,106	4,810	97,496
Gharbia	5,285,660	190,955	38	5,396	3,539	97,955
Kafr-El-Sheikh	3,600,196	288,040	26	3,692	7,802	97,513
Menoufia	4,578,910	316,500	33	4,686	6,754	97,715
Behera	6,632,497	299,138	48	6,816	4,389	97,308
Giza	9,200,884	392,925	67	9,514	4,130	96,709
Ismailia	1,400,315	94,184	10	1,420	6,633	98,614
Beni-Suef	3,430,098	139,284	25	3,550	3,923	96,622
Fayoum	3,897,412	146,876	28	3,976	3,694	98,023
Menia	6,023,203	239,136	44	6,248	3,827	96,402
Asyout	4,802,434	197,395	35	4,970	3,972	96,628
Suhag	5,439,346	195,548	39	5,538	3,531	98,219
Qena	3,463,061	139,605	25	3,550	3,933	97,551
Aswan	1,590,377	88,068	12	1,704	5,168	93,332
Luxor	1,345,279	74,892	10	1,420	5,274	94,738
Red Sea	387,494	30,969	3	426	7,270	90,961
El Wadi - Gadid	257,752	44,474	2	284	15,660	90,758
Matrouh	502,734	12,190	4	568	2,146	88,510
North Sinai	489,428	35,282	4	568	6,212	86,167
South Sinai	111,870	18,408	1	142	12,963	78,782
Total	**101,463,702**	**4,873,014**	**734**	**104,228**	**4,675**	**97,348**

Source: Designed and Calculated by Author, depending on Data of: Egypt Human Development Report 2021: "Development, a right for all: Egypt's pathways and prospects", UNDP, Ministry of Planning & economic Development, Egypt, 2021, p.334.

So, we may come to some conclusion that:

- *In case of GDX centers work with capacity power = 138, 240 citizen/a year*
- *The Average of work force per/ GDX unit = 142 HR members*
- *Then total number of GDX units = 734 units*
- *Total number of needed HR members = 104, 228 HR members*
- *R_1 [Total Local Employees: Total GDX HR members] per/local unit = 1: 4,6*
- *R_2 [Total Local Population: Total GDX HR members] per/local unit = 1: 97*

The Assumed based of acquiring HR for GDX service centers:

Assuming that the total needed number of HR members of GDX centers is *104, 228 HR*, so the question is what the available sources are of that needed number?

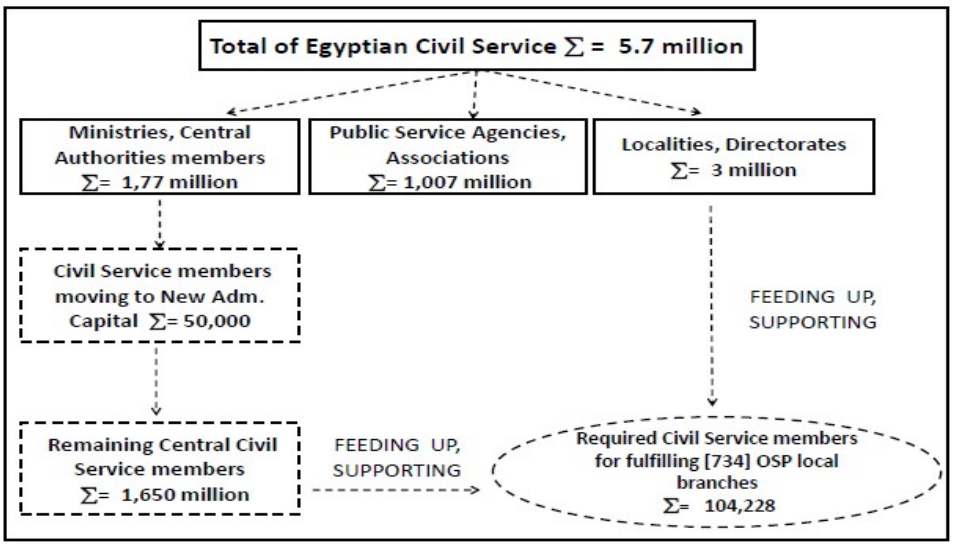

Fig. (8): Potential Sources of Recruiting GDX centers' HR

Source: Designed by Author, Depending on Data of Ministry of Finance: Egypt's Budget Data for financial year of 2015/ 2016: Distribution of Public

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Sector Occupied Jobs according to Sub-division of Egypt's Public Organs & Agencies: www.mof.gov.eg

If there is a clear imagination of transition process to New Administrative Capital of Egypt, we may find out over more than 1,655 million civil servant might be reassigned within the new local service form instead of central services in ministries, as the first recommended source, then from the other side we have over more than 3 million HR already are working originally within localities as other possible source of recruiting required man power for fulfilling GDX centers HR needs, and in both cases a new training plan is acquired for absorbing the nominated HR members for the GDX services form.(Ibrahim Al- Amin, 2021).

6.3. Distribution of HR Competencies' Relative Weights matching with the potential Internal Organizational Structure:

The whole working system of GDX centers is based on automation and DiGi. E-services, thus the ICT factor might be the ruling upper hand that is why we need some special requalification of included HR member, not just for front or back service officers, but the technicians and system engineers as well, so the high-tech. ICT competencies are expected to gain the highest priority while designing the new HR competencies for GDX based service mechanism, in the light of the following proposed competencies weights:

Table (5): Potential Distribution HR Competencies of GDX centers

	Street Level HR Layer		**Technique Layer**		**Support Layer**	**Leadership level**	
	Front HR	***Back HR***	***ICT HR***	***GDX HR***	***Adm. Axis HR***	***Middle level***	***Top level***
ICT Competency	10%	10%	50%	40%	10%	10%	10%
Creativity Competency	10%	10%	20%	10%	5%	10%	10%
Leadership Competency	10%	10%	10%	10%	5%	40%	50%
Comm. Skills Com.	30%	20%	10%	10%	15%	10%	10%
Adm. Competency	20%	30%	10%	15%	50%	15%	10%
Functional Competency	20%	20%	--	15%	15%	15%	10%
Σ= 100%	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*

Source: Designed and proposed by Author.

**Conclusion:

- CASC according to the current status is an important service asset owned by local authorities, but not fully activated, nor well exploited completely in favor of enhancing local public services, so it is currently recognized as a lost local asset.
- CASC transformation into GDX as centralized sectoral networked local e-service could be the base of forming the biggest component of the whole public apparatus matching with the new requirements of digital public service era in post COVID-19 period, in addition to commitment to 4th industrial revolution values especially applications of Artificial Intelligence within public service and governmental practices as whole.
- The current Egyptian context of public service is targeting reaching variation mixes of public service new potential forms of delivering services, either on Geographic, or Mobilized, or Electronic base, or a mix of them as whole.
- For practical considerations, GDX service centers in its new form could address some kinds of potential offered services, especially informative, contracting, documented transactions, participatory, and data sharing within local people.
- GDX capacity building is flexible process designated in the light of available potentials offered by local authorities that could determine capacity power of service per /day, month, year, taking into consideration the ratio of local population per each of local units, and the averages periods of performing service transactions for citizens .
- According to Egyptian government plan of transition to New Administrative Capital, GDX service centers could be good option for absorbing surplus, or overloading of civil service members on condition that a new designated plans of training and requalification should be addressed matching with the new

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orientation of GDX work from a side, and developing local e-public service from the other side under full command of local authorities in cooperation with other stake holders especially the regulatory over sighting agencies.

- Digital Human Resource competencies could be the driving factor of developing the future HRM performances either locally or nationally within public sector organs.
- On the long run, GDX service centers might be the corner stone of the whole DiGi. Process in the governmental sector, by gradual replacing of traditional hierarchical institutional frameworks through new fully automated service centers taking the formula of GDX service units according to the following potential perception:

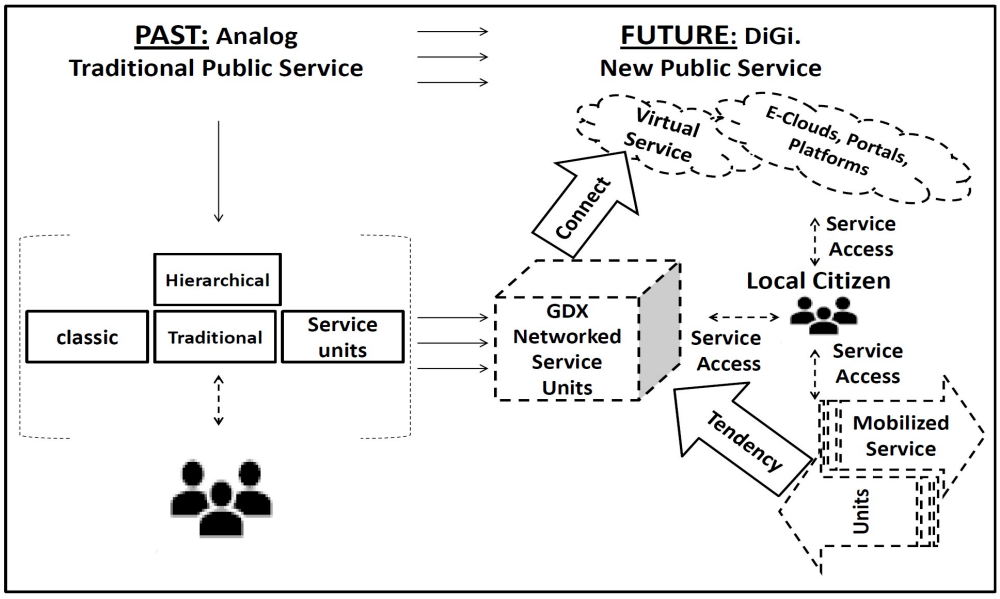

Fig. (9): Study's final perspective of public service evolution applying on Egyptian context

Source: Author.

- Besides, GDX units could be designated as the major supervisor on Service mobility units, in addition to connecting GDX with virtual public service channels especially the local service portals,

platforms, thus citizen could access his service needs depending on many service delivery options according to his own desires & personal potentialities, preferences.

**** Study Recommendations:**

Based upon of all above dissertations, the study recommends the following pillars:

	Recommendation	Designated Executive Authority
1.	Enhancing ICT infrastructure in localities	Ministry of Telecommunication & Information Technology.
2.	Preparing some urgent plan for re-absorbing central agencies HR surplus after transition to the New Administrative Capital, then GDX centers be re-fuelled by them.	Central Authority of Organizing and Administration [CAOA].
3.	Reconsidering the newly required HR competencies matching with digitalization process inside newly digitalized GDX service centers.	Central Authority of Organizing and Administration [CAOA].
4.	Designing new primary financial plan & required feasibility studies for new GDX centers.	Ministry of Telecommunication & Information Technology in coordination with Ministry of Finance
5.	More accurate plans of detecting the required number of GDX centers per governorate covering sub-local units according to population number.	Local Authorities.
6.	Gradual rising of GDX centers capacity power per local unit including increasing of service outlet numbers per GDX service station.	Local Authorities.
7.	Potentiality of connecting Local Platform services with GDX units.	Ministry of Telecommunication & Information Technology in coordination with Local Authorities.
8.	Assigning GDX units' for controlling over mobilized service units in localities.	Ministry of Planning & Economic Development in coordination with Local Authorities.

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