



Economic
Commission for Africa

A horizontal banner composed of several vertical panels with different images: a window with blinds, a close-up of a plant, a spiral pattern, a wooden post, a honeycomb structure, a building facade, and a blue abstract pattern.

Operational Structural Rationalization for Effective and Efficient Service Delivery

General Services Section
Division of Administration

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Executive Summary

1. The operational and structural rationalization of the General Services Section (GSS) comes at a timely confluence of the UNECA repositioning strategy and the planned implementation of the enterprise resource planning (ERP). The initiatives at three levels converge on the common denominator of effectiveness and efficiency—the stuff of which sound management is made—to reach the desired organizational goal. As much as form follows function in design, automation follows rationalization, making the operational and structural rationalization of the GSS a salutary preparation before the introduction of the ERP.

2. Against such backdrop, the primary objective of the GSS rationalization is to bring about perceptible improvement in the effectiveness and efficiency of service delivery of its units and sub-units by streamlining the business processes and organization structure into an integrated system of interdependent functions, after the diagnosis and evaluation of the status quo business model. The report is organized into five chapters: the conceptual and strategic framework (chapter one), the business process (chapter two), the organization system (chapter three), the information system (chapter four) and the planning system (chapter five). The analysis and synthesis of the business process within the framework of project management and supply chain management forms the backbone of rationalization and the core of the report. The executive summary sums up the highlights of the report.

The Conceptual Framework

3. Concepts make the building blocks of a conceptual framework. Accordingly, the rationalization process begins with the development of the conceptual and strategic framework from key concepts in the terms of reference—notably, rationalization, effectiveness, efficiency, and synergy—with three main aims: to clarify the meaning of these key concepts, to visualize the central issues involved in broad outline, and to formulate the strategic framework of rationalization.

4. Effectiveness is doing the right thing to reach the desired result. And doing the right thing begins with the identification of the right problem before the prescription of the right solution, for the reward of a problem understood well is a problem half solved, as it were. But the right solution to the wrong problem is in effect the wrong solution and a contradiction in terms. As the baseball legend Yogi Berra put it famously with elegant simplicity, “If you don’t know where you’re going, you’re going to end up somewhere else.” The thrust of the conceptual and strategic framework is to serve as the roadmap against straying into such oxymoron by pointing to the right problem before the right solution.

5. The strategic framework of rationalization evolves from the conceptual. The desired end result of rationalization is effectiveness and efficiency—two attributes of sound management. Effectiveness and efficiency depend on four variables—the business process, organization structure, information system and human resources—of which the business process is primary. The rationalization process takes the systems approach by proceeding from diagnostic problem analysis of the status quo business model to prescriptive design of a better paradigm.

The Business Process

6. The business process is primary to rationalization, because it determines the organization structure, the information system and human resources. Chapter two focuses, with commensurate priority, on the analysis and design of the business process within the framework of two pillars: supply chain for procurement and project management for supply chain, and its logical extension travel chain.

Problem Diagnosis

7. Virtually all service-providing units and sub-units of the GSS swear allegiance to the common mantra of effectiveness and efficiency in their ritual mission statements. The service-receiving groups sneer with “where’s the beef “ about the effectiveness-efficiency deficit in the prompt delivery of services particularly in procurement, travel and visa. The service-providing groups counter the charge with “where’s the generic-specification” and partisan defensiveness. But rationalization is not about the passionate fixing of blames, it is about the dispassionate fixing of problems.

8. The diagnosis of the problems leads to two primary conclusions about the effectiveness-efficiency deficit in service delivery: (1) asymmetry between the characteristics of services in procurement, travel and visa and the status quo business model for their management; (2) and the opportunity cost of synergy from the lack of integration among interdependent functional units.

Procurement: The Quintessential Project

9. At the highest level of abstraction and the broadest sense of the term, a project is anything and everything with finite life cycle marked by beginning and ending events: from the universe between the big bang and the big crunch according

to one cosmological scenario, animal and plant life between birth and death, to ephemeral flora and fauna.

10. Coming down to the mundane man-made level, what makes something a project? In one word, tasks—the stuff and building blocks of which all projects are made. A project is a goal-seeking undertaking with defined scope of work divisible into discrete and interdependent tasks, and governed by limiting conditions imposed by specification, time and cost. Apart from scale difference, projects and tasks are so much alike a project is described as a macro-task, and a task as a micro-project. Project management is the equivalent of task management by another name, based on task attributes: discrete with defined boundary and marked by starting and ending events, hierarchical formation suitable for decomposition into the work breakdown structure, serial and parallel dependency relations, ease of time and cost estimation, independent work assignment, and measurable completion status.

11. Just like a generic project, procurement has an explicit goal, which is to deliver the goods and services specified by the requisitioning customer as the standard of effectiveness against which what is actually delivered is measured. It is governed by constraints of delivery lead-time, budgeted cost, and a policy environment circumscribed by the UN Financial Rules and Regulations. Procurement has a defined scope of work spanning the whole procurement cycle from initiation with requisition to final delivery and contract closure.

12. Procurement passes through a similar five-phase project life cycle of initiation with requisition, planning the execution of the authorized procurement, implementation of the procurement plan, control by measuring actual against planned performance, taking corrective action when necessary to keep the procurement

progress on track with the plan, and formal contract closure upon completion. Tasks making up the procurement process—requisition, sourcing, solicitation, submission, evaluation, selection, awarding, contracting, logistics and finance—share the common attributes of discreteness, internal hierarchy, interdependence, complex network of dependency relations, ease of time and cost estimation, and independent task assignment.

13. The UN Procurement Practitioner's Handbook associates procurement with project and contract management with project management. "Contract management is similar to project management. Each contract is a mini-project. It has a unique goal, consumes resources, has a beginning and end date, and requires coordination and planning of relevant activities ..."¹.

14. In conclusion, procurement embodies all the essential attributes of projects to qualify as the quintessential project and its veritable clone. But it has not been managed as such—hence, the asymmetry in the status quo business model between the mainstream project nature of procurement, travel and visa, and the method of their management as ongoing regular operations. And the remedy lies in a symmetric new business paradigm that matches and integrates what is managed with how it is managed: projects with project management within the broader context of integrated supply chain.

Project Management for Procurement

15. Project management is the application of sound management principles and best practices to projects in the context of distinctive characteristics of projects. The aim of project management is to ensure the successful completion a project according to plan—on schedule, within budget and according to specifications—the same desired goal by services

¹ United Nations, UN Practitioner's Handbook, November 2006, p. 3-90.

in procurement, travel and visa.

16. To achieve this aim project management performs two essential functions: planning and control. Project implementation falls outside the scope of project management for good principles: separation of powers in governance and the separation of functions in management such as requisition from procurement and accounting from auditing. The project plan is central to both project implementation and project management. The project plan provides the standard of implementation and control. As implementation progresses, the control function involves tracking actual performance at regular intervals, evaluating actual against planned performance, and taking corrective action as necessary.

17. A project is described by three attributes, known as the project triangle: scope, time and cost. The project scope refers to the boundary of necessary work that must be performed to reach the project goal, without including unnecessary, and excluding necessary, tasks. The performance of these tasks takes time and cost, making schedule and cost the descriptive attributes of project tasks. The functions of project management are the planning and controlling of cost and schedule to ensure project completion according to the cost budgeted and the work scheduled. This is achieved by comparing planned and actual performance with respect to cost and schedule. Their cost and schedule coordinates in a two dimensional space describes the whole project and system of component both in terms of planned and actual performance. Figure 4 captures the essence project management in a nutshell.

Cost-Schedule Control: Earned Value Analysis

18. The earned value analysis is a method of performance measurement and evaluation incorporating the project scope,

cost and time to inform about the status of progress: whether ahead or behind schedule, and over or under budget. Project implementation is the translation of plan to performance: the work scheduled (WS) to the work performed (WP), and the budgeted cost (BC) to actual cost (AC). The relations between the work scheduled and performed with the cost budgeted and incurred yield the three inputs required for the earned value analysis—the actual cost of work performed (ACWP), the budgeted cost of work performed (BCWP), and the budgeted cost of work scheduled (BCWS)—to measure and evaluate cost-schedule variances and performance indices.

19. The cost variance is the difference between the budgeted cost of work performed (BCWP) and the actual cost of work performed (ACWP), or the difference between the budgeted and actual cost (BC-AC) for the work performed (WP). Positive cost variance means progress so far is under budget, because the actual cost is less than the budgeted cost ($AC < BC$) for the work performed (WP) up to the status date.

20. The schedule variance is the difference between the budgeted cost of work performed (BCWP) and the budgeted cost of work scheduled (BCWS), or the difference between the work performed and the work scheduled (WP-WS) for the budgeted cost (BC). A positive schedule variance means progress is ahead of schedule, because the work performed is more than the work scheduled ($WP > WS$) for the budgeted cost (BC).

Project Planning: The Work Breakdown Structure (WBS)

21. As a common standard of project implementation and control—the conversion of planned to actual performance and the evaluation of actual against planned performance, respectively—the work breakdown structure is very central to project planning and project management, a very compelling

reason for plea of commensurate attention from the project stakeholders. The work breakdown structure is a method of project planning designed to facilitate the generation of reliable inputs. It is the systematic analysis and synthesis of the project scope, and proceeds top down for task decomposition and bottom up for time and cost estimation to enhance data reliability at lower level of aggregation.

22. The project plan is a documented and detailed answer to four successive questions about project tasks: what tasks must performed to complete the project (task identification and decomposition), how tasks must be organized effectively (sequencing tasks by serial and parallel dependency relations), how long in time and how much in cost it takes to complete tasks (time and cost estimation), and when tasks must be performed (task scheduling).

23. Task identification is the elaboration of the project scope and tries to answer what tasks must be performed to accomplish to project goal. Task identification must be explicit and complete without excluding necessary tasks and including unnecessary ones. Tasks are decomposed top-down to form the work breakdown structure. In the context of supply chain, the major phases of requisition, procurement, logistics and finance would be a good starting point for the first level of the work breakdown structure.

24. The task sequence addresses the order of task performance. For effectiveness and efficiency, there is a sensible way of organizing tasks by their logical dependency relations. Sequencing is the identification of tasks performed in series, one after the other, and in parallel, at the same time. The serial or parallel order of performing tasks has far reaching implications.

25. The time required to complete each task is estimated under conditions of uncertainty. The risk surrounding the time required to complete a task is factored in with a three point-estimate—optimistic best-case, normal average-case, and pessimistic worst-case scenarios—with respective normal probability distribution of $1/6$, $4/6$, and $1/6$. The best and worst case scenarios correspond respectively to the shortest and longest time required to complete a task. The weighted sum of the three scenarios is the expected value of the time it takes to complete a task, and sets the standard of the time required to complete a task in the project plan against which the time it actually took is compared to ascertain the status of schedule performance.

26. The answer to how long it takes to perform a task begets the question of when it is going to be performed. Given the expected value of the time required to complete each task and its dependency relations with other tasks, the project schedule wedges the task between the starting and ending dates. The task schedule depends on three variables: the expected value of the time required to complete each task in man-periods, the starting or finishing date, and the immediate predecessors. With these three inputs, a project management application such as MS Project generates the project network diagram, the equivalent of the project architecture.

27. By virtue of serial and parallel dependency relations among tasks, the duration to complete the whole project is less than that of the sum of separate tasks. The critical path traces the chain of critical tasks and the longest time it takes to complete the whole project. The so-called critical path signifies the fact that delay in the completion of a task along the critical path holds up the project completion on schedule in chain reaction, because the successor task cannot start until its immediate predecessor finishes. (See the generic template for

the work breakdown structure in Table 12.)

Integrated Supply Chain for Procurement

28. The measure of synergy is the difference between the results of an all-for-one-and-one-for-all good team and every-one-for-himself-and-God-for-us-all no team. The same idea applies to the value added to effectiveness and efficiency by synergy from the integration of interdependent functional units and sub-units into a coherent system.

29. Although procurement and logistics are interdependent functions, shipping is grouped with protocol and visa, registry and transport. Procurement and logistics—shipping, central stores and inventory—while integral links in the supply chain, are scattered under three units. The supply chain framework with its logical extension travel chain offers the answer to the problem of integration.

30. Supply chain takes a holistic systems perspective of the acquisition of goods and services, unlike a narrow and fragmentary view of procurement. Supply chain is a metaphor for the network of interdependent links, both internal and external, directly involved in the acquisition of goods and services from initial requisition to final delivery.

31. To get a sense of supply chain, consider the procurement of a four-wheel drive diesel bus (UNCCS Code 491115) as it moves across organizational boundaries, internal and external, on a virtual conveyor belt of the procurement process from initial requisition to final delivery. The same bus is requisitioned by the Transport Unit; ordered by the Procurement Unit; consigned by the vendor; transported by the carrier; protected by the insurer, duty-free sanctioned by the government, cleared and delivered by assistants or agents, stored by the transit warehouse,

inspected and received by the storekeeper, recorded by the inventory controller, and finally delivered to the requisitioning customer. All the functional nodes in the supply of the bus make up the links of the supply chain (See Figure 6).

32. The internal supply chain is grouped under four clusters: (1) requisition, (2) procurement, (3) logistics (shipping, central stores, inventory control) and (4) finance. The links of the internal supply chain correspond to the major phases of the procurement process, and serve as the first level of the work breakdown structure. Events marking the start and end of each phase must be clearly defined such as when requisition begins and ends and procurement begins, and when procurement ends and logistics starts, etc.

33. Supply chain management proceeds from the proposition that the supply chain is a system of interdependent links, and when the links in the supply chain work together for a common goal of customer satisfaction as an integrated whole, rather than as separate parts, all stakeholders stand to gain from the value-adding power of synergy intrinsic to teamwork. Working together produces a multiplier effect on individual contributions through the coordination of separate efforts.

34. Material, financial and information make up the three types of flows across the supply chain. Information flow permeates the whole supply from initial requisition to final delivery, for it mirrors the other two flows. Logistics is primarily associated with material flows.

35. The concept of “travel chain” is corollary to supply chain and its logical extension to international travel, for which air ticket and visa are required. The same international traveler links the air ticket and the visa handled by two interdependent units through a primary key identifying the common subject,

similar to the bus example for supply chain. The links in the travel chain include the requisitioning customer, travel, visa, human resources, travel agency, airlines, and embassies.

Fusion of Project Management with Supply Chain

36. From the analysis of the status quo business model, the asymmetry between the project features of services in procurement, travel and visa and the system of their management as ongoing regular operations without defined beginning and end, and the arbitrary organization of units and sub-units without regard to the integration of related functions to produce synergy effect have been identified as the primary causes of the effectiveness-efficiency deficit in service delivery. The proposed design solution is a symmetric and integrative new paradigm merging project management with the supply chain, and by extension the travel chain

The Organization System

37. The principle of form following function in architectural design is the equivalent of the structure following the process in organizational design. Accordingly, the design of the organization system flows from the two pillars of the new business model: project management, to facilitate prompt and cost-effective service delivery; and supply chain, to knit together related functions into an integrated whole.

38. The four functional units and six sub-units are clustered under three groups: supply chain, travel chain, and the rest outside the two. Supply chain consists of procurement and logistics. Logistics is a group of functions primarily concerned with the two physical states of consignments—transport in motion and storage at rest—and includes shipping, central stores and inventory control as interrelated links in the supply chain. As an

integral part of supply chain and with overwhelming share of handling organizational consignments, shipping is by far more closely related to procurement than to protocol, visa, registry or transport.

39. The travel chain subset integrates the functions of travel and visa under the same organizational unit linked by the same international traveller. Transport and registry make up the residual third cluster. Transport substantively can come under travel chain for two reasons: travel by air and road are just two modes of transport and most transport activities are devoted to protocol services during big conferences. Registry remains the odd man outside supply chain or travel chain.

40. Project implementation—the translation of the project plan to actual performance—and project management—the planning and control of implementation to ensure project completion according to plan—are separate functions. Project management implies the position of a professional project manager with the proficiency in project management and related application software. In addition to planning and controlling the implementation of an authorized procurement project, the project manager will be responsible for overall procurement planning at all phases and contract management.

41. A project team implements a project, including a team of one person. The matrix form of organization is associated project management, with the project team as its most prominent feature. A project team is formed and dissolved for each project; it draws on cross-functional comparative advantage such as requisition, procurement and logistics for a supply chain project, and travel and travel for travel chain. (For organizational scenarios based on the supply chain and project management framework see Figures 9 and 10.)

The Information System

42. The two pivotal issues of asymmetry and integration in the makeup of the status quo business model permeate the organization and information systems. After building the form for the function and the organization structure for the business process comes the mirror image information system as the picture of the whole edifice. The existing information system does not remotely approximate, much less mirror, the business process. In fact, it would not be an overstatement to describe the mirror as broken and the image as distorted. Consider the procurement database as a case in point.

43. The procurement database has a structure of 8 databases (requisition, bids, quotations, purchase order, receipt and inspection report, rejection letter, purchase amendment, and code,) 39 database tables and 116 data fields. The most striking feature of the database is the redundancy of data fields to the tune of ninety percent (103 out of 116). In the extreme case Date Raised recurs 35 times across 39 data tables.

44. The problem of redundancy is compounded by the inconsistency of field names among different database tables. The same field is given two to four different names in different tables, similar to giving multiple names to the same person. After adjustment for the redundancy of fields and the inconsistency of names, the number of data fields shrinks by 80 percent, from a redundant nominal number of 116 to an effective number of 24 fields. To have a sense of the level disparity between the complexity of the procurement process and the puny number of 24 data elements used to represent it, juxtapose the number of measurements a good dressmaker takes to make the dress fit the dresser. Only 24 effectively to cover the procurement business process are grossly inadequate. Data tables outnumber data

fields by 39 to 24, for an average of less than two fields for each data table.

45. There is no single currency field in the entire procurement database, as if procurement is allergic to money or immune from the best value for money principle. All statistical series and the so-called key performance indicators are expressed in terms of simple physical frequency count by type of transaction such as the number of requisitions, bids, quotations, etc.—hardly complete and meaningful information for good decisions. The closest thing to monetary value that the system offers is the number of transactions by value threshold.

46. Procurement and other databases were developed on Lotus Notes platform in-house more as an ad hoc collection of databases, and not as an integrated system, in effect leaving interdependent functional units and sub-units on non-speaking terms. Granting the advantage of relational over hierarchical database architecture such as Lotus Notes, the database problem points primarily to the lack of resourcefulness in design more than the shortcoming of the software resource. There is no evidence of collaboration between the developer and the user.

47. The procurement database is an ineffective improvisation rather than serious design actively involving the user and the developer. Without belaboring the charge against the existing database, the jury is already in with the wholesale replacement of close to three hundred legacy systems across the UN system of institutions by the ERP. The ERP is an integrated business suite of enterprise applications planned for implementation over five years in two “waves”, beginning in 2009. The crucial question to be addressed remains the way forward in the interim, taking into account the notorious track record of such complex projects for time overrun.

48. If the proposed project management business model for supply chain were to be implemented before the ERP kicks in, Microsoft Project (MSP) would be a plausible provisional candidate. Some of the general features of MSP include planning, tracking managing and closing projects; flexibility according to need; Microsoft Project Central for collaborative planning among workgroup members.

The Planning System

49. The last chapter on the procurement planning is classified into four successive phases: requirement planning, (2) consolidated planning, (3) operational or program planning, (4) and project planning. The problem of procurement planning happens at the nexus between requirement and consolidated planning, arising from non-compliance with generic specification and the late submission of requirement plans. The description of goods entails the task of conversion from non-generic to generic specification before consolidation.

50. The same problems recurs at the nexus between requisition and procurement in the requisition phase. Requisitions in non-generic form have to loop back to the sender for correction before final approval for procurement action. Since requisition lies on the critical path of the supply chain, late submission and non-generic specification lead to longer delivery lead time.

51. The solution to the problem of generic specification lies in a simple mix of effectiveness with total quality management: by doing the right thing at the very beginning with proactive prevention rather than reactive cure. Instead of composing the description of goods and services like an open-ended essay, the user will be restricted to menu choice from the United Nations Common Coding System (UNCCS), the common protocol for the generic specification of goods and services procured by

the United Nations (accessible at www.ungm.com). The system contains the codes and descriptions of one million goods and services, half and half, at six levels of hierarchy. With some discipline, the simple and sensible procedure would save time by eliminating the unnecessary task of conversion and simplifying consolidation to a step of sorting on code or description fields.