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A PERFORMANCE MANAGEMENT FRAMEWORK FOR WATER UTILITIES IN DEVELOPING COUNTRIES

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ABSTRACT

Purpose: The purpose of the paper is to develop a performance management framework (PMF) for water utility companies in developing countries to ensure their organizational sustainability.

Design/Methodology/Approach: This is a conceptual paper based on a critical literature review. There are 3 research questions: Why are water utilities in developing countries so often and pervasively nonperforming and unsustainable organizations? Would a more structured and rational approach to performance management by means of a performance management framework (PMF) be warranted in dealing with nonperforming water utilities in developing countries? If the PMF were warranted, what would it comprise of?

Findings: There is a need for an effectual PMF for water utility companies in developing countries, as water utilities are natural monopolies with limited exposure to market risks. In the absence of competition and an alternative for utilities' services, the need arises for close oversight by the public to ensure performance adequacy and sustainability. In an environment of underdeveloped public accountability, common for developing countries, the efficacy of such an oversight would benefit from a structured PMF based on best international practices.

Such a PMF would need to be: (a) custom-tailored for the settings of developing countries; (b) user-friendly and intuitively coherent; (c) universally applicable in the conditions of developing countries; (d) sufficiently concrete and detailed to enable practical implementation.

Research limitations: The research is limited to urban drinking water utilities in developing countries.

Practical Implications: The proposed PMF could be embedded into the design of investment projects of international financial institutions (IFIs) with water utilities in developing countries.

Social Implication: The proposed PMF would contribute to mitigating significant social problems caused by deficiencies in drinking water supply, such as increased morbidity and mortality due to waterborne diseases.

Originality/value: Developed countries have established advanced practices and regulations for managing the performance of water utilities. However, for the circumstances of developing countries such regulations would be too diverse, complex and otherwise impractical. Most importantly, such regulations and practices are designed and conditioned for an environment with sound public accountability. Currently, there are no commonly accepted performance management guidelines for water utilities operating in environments with substandard public accountability.

Keywords: performance management, sustainability, public accountability, critical success factors, water supply, developing countries.

THEORETICAL BACKGROUND

"PM was first mentioned by Beer and Ruh in 1976. But it did not become recognized as a distinctive approach until the mid-1980s, growing out of the realization that a more continuous and integrated approach was needed to manage and reward performance" (Michael Armstrong, 2000).

Although performance management (PM) became a recognized distinct approach in the 80s (Michael Armstrong, 2000), there still does not seem to be a conventional definition of PM. Various authors of books and articles on PM introduce their own definitions, as briefly covered below.

Armstrong M. and Baron A. state that “performance management is a fairly imprecise term, and performance-management processes (or systems, as some people persist in calling them) manifest themselves in many different forms. There is no one right way of managing performance: the approach must depend on the context of the organization – its culture, structure, technology – the views of stakeholders and the type of people involved. But, it is still possible, and desirable, to define in very broad terms what performance management is about and to discuss generally the concerns and scope of fully realized processes of managing performance” (Michael Armstrong and Angela Baron, 1998).

Armstrong M. defines performance management as “...a strategic and integrated process that delivers sustainable success to organizations by improving the performance of the people who work in them and by developing the capabilities of individual contributors and teams. Performance management is strategic in the sense that it is concerned with the broader issues facing a business if that business is to function effectively in its environment, and with the general direction in which the business intends to go to achieve its longer-term goals” (Michael Armstrong, 2000).

Atkins defines performance management (PM) as “the framework for managing the execution of an organization’s strategy. It is how plans are translated into results. Think of PM as an umbrella concept that integrates familiar business improvement methodologies with technology. In short, the methodologies no longer need to be applied in isolation – they can be orchestrated. The whole is greater than the sum of the parts. Each methodology can give good results, but when you integrate them, you get more. This makes PM a value multiplier” (Tony C. Adkins, 2006).

From the authors’ point of view, the notion of PM is centred on the premise that an entity is a system or mechanism which can operate better or worse depending on how it is being managed. The entity could be an individual person, a team, an organization or even a country. In this article, we will be looking at PM at the institutional level, considering water utility enterprises as the entity in question.

Most of the literature on PM deals with human resource management (HRM) and profit-driven businesses. In both cases, highly competitive environments impose great pressure to succeed by enhanced effectiveness and efficiency in operations. Markedly, PM is mostly about efficacy and is centred on the notion of success.

In HRM and profit-driven businesses, the criteria for success and efficacy are clear and simple. They can often be narrowed down to an intuitively obvious “bottom line” towards which the competing parties are racing. PM in such cases becomes particularly relevant, acting as the tool to succeed in the race. That is why we talk about PM primarily in the context of HRM and profit-driven businesses.

PM is often considered less relevant for utilities and public entities for two main reasons: (a) the “bottom line”, i.e. criteria for success, is less evident and intuitively coherent; and (b) the non-competitive operating environment of a natural monopoly diminishes the relevance of efficacy. If the race involves a single runner, who cares how fast she/he is running towards the finish line? That is the most fundamental difference in

the concern for PM, i.e. efficacy of operations, between entities trying to survive in an intensely competitive environment and natural monopolies.

Does this mean that PM is inherently irrelevant for natural monopoly operations? Perhaps there is no need to overcomplicate operations with a PMF, sticking to the good old method of intuitive considerations and *ad hoc* problem solving, i.e. generic *modus operandi* for natural monopolies in developing countries.

To answer this question, we should consider the main operating cycle of performance management. Performance comprises actions intended to achieve some result. The main operating cycle of performance management could be characterized as the following (see Figure 1):



Figure 1. Operating Cycle of Performance Management
(developed by the authors)

Actions lead to results, which are evaluated against benchmarks (intentions, plans, competitors' results, etc.). Evaluation provides feedback on the efficacy of the actions. Based on the feedback, a decision is made on introducing corrective measures and/or refinements into continued actions, as needed, before proceeding with the next cycle of action. Since in the real world no performance is ever perfect, corrective measures and refinements are continuously warranted, affording a continuous improvement mechanism.

In a competitive environment competitors' performance makes benchmarks evident on a nearly continuous basis, affording frequent evaluations. Respectively, the feedback speed is quick, and decision-making on introducing corrective actions could be quick and frequent.

In a non-competitive environment, benchmarks for evaluating efficacy of actions are not easily available. How does one know if a utility is operating better or worse than it should or could by intuitive means? The differences between performing and nonperforming utilities becomes evident only in extreme cases, when system failures lead to profound public consequences from deficiencies in water supply. In the absence of such palpable cases, decision-making on evaluating and remedying the performance of water utilities is severely inhibited. Lack of public accountability and open information flows could further exacerbate the situation, by isolating and hiding information on the negative

consequences of system failures, and respectively deferring the introduction of the needed corrective actions.

Significance of the Topic

When it comes to urban drinking water supply, the globe is split into two worlds: (a) developed countries, where continuity, safety and propriety of water supply is excellent and taken for granted; and (b) developing countries, where water supply problems are chronic and persistent. The Centers for Disease Control and Prevention (CDC) states on its site: “In most developing countries, tap water should probably not be drunk, even in cities. This includes swallowing water when showering or brushing your teeth.” (Centers for Disease Control and Prevention, n.d.)

Basically, drinking tap water in developed countries is considered safe, while doing the same in developing countries would be considered reckless. The problem is not merely a matter of convenience. Substandard drinking water supply contributes significantly to increased mortality and morbidity, especially among children. Children are less aware of hazards and are less disciplined than adults, casually drinking tap water at whim, even when it is not safe.

According to Gro Harlem Brundtland, “Long before the advent of modern medical care, industrialized countries decreased their levels of water-related disease through good water management... In developing countries, preventable water-related disease blights the lives of the poor... 3.4 million people, mostly children, die annually from water-related diseases. Most of these illnesses and deaths can be prevented through simple, inexpensive measures. For instance, trachoma remains the leading cause of preventable blindness, accounting for 146 million acute cases around the world. But the disease is almost unheard of in places where basic water supply, sanitation and hygiene prevail.” (WHO and others, 2001). “Far more people endure the largely preventable effects of poor sanitation and water supply than are affected by war, terrorism, and weapons of mass destruction combined.” (Bartram, Lewis, Lenton, and Wright, 2005).

For developing countries, deficiencies in the drinking water supply have a defining effect on life and survival. According to Brady et al., “developing countries throughout the world... face a multitude of health-related issues due to a lack of adequate basic sanitation and the scarcity of clean water... Water-related illnesses caused by unclean water and poor sanitation are responsible for the majority of sickness in developing countries...”

According to an assessment commissioned by the United Nations, 4,000 children die each day as a result of diseases caused by ingestion of filthy water. The report says four out of every 10 people in the world, particularly those in Africa and Asia, do not have clean water to drink.” (Brady, Pfluger, Mauldin, and Starke, 2013). “The statistics and projections about the shortage of water are terrifying. The UN states that there is a risk that within 30 years one in four people is likely to live in a country affected by chronic or recurring shortages of fresh water. According to WaterAid, 650 m people live without safe water, one in three people does not have access to proper sanitation and 900 children a day die from diarrhoeal diseases caused by dirty water and poor sanitation. Across the world, women walk long distances to collect what is often dirty water.” (Arden, 2016) (Nino, n.d.) (“WaterAid UK - What we do - The crisis,” n.d.). “An evaluation by UNICEF found that in schools in 49 low-income countries, only 51% had access to adequate water and 45% had adequate sanitation facilities.” (Freeman et al., 2014) (UNICEF, 2012). “In developing

countries with poor water supply and sanitation systems, life expectancy is far lower than in industrialized countries. The causes of deaths are also quite different; infectious diseases account for more than 40 percent of deaths in developing countries, whereas they occupy only 1 percent in industrialized countries.” (Hidetoshi Kitawaki, 2002)

On 28 July 2010, the United Nations General Assembly legally recognized the Human Right to Water and Sanitation (HRWS) and every international financial institution (IFI), such as the World Bank, the Asian Development Bank, the European Bank for Reconstruction and Development (EBRD), and the Inter-American Development Bank, has massive designated programmes in billions of Euro towards improving the drinking water supply in developing countries. So why is there still such a sharp and vast difference in the settings and practices of the two worlds when it comes to urban water supply?

Inherently, urban water supply is an envious business. It is a natural monopoly with a concentrated and fixed customer base with virtually inelastic demand. After all, access to reliable and safe drinking water supply is a matter of survival, health and convenience. In developed countries water utilities typically have a sound financial position and performance. By contrast, in developing countries urban water utilities often constitute failed businesses, dependent on support from governments and IFIs for continued operations.

Research questions

3 research questions have been formulated:

1. Why are water utilities in developing countries so often and pervasively nonperforming and unsustainable organizations?
2. Would a more structured and rational approach to performance management by means of a performance management framework (PMF) be warranted in dealing with nonperforming water utilities in developing countries?
3. If the PMF would were warranted, what would it comprise of?

ANALYSIS

The following are the ingredients of operations of water supply utilities:

1. **Technology:** Developed countries certainly have technological superiority in urban water supply operations, with nearly universal usage of geographic information systems (GIS), hydraulic modelling, network zoning, supervisory control and data acquisition (SCADA) systems and the like. However, nowadays these technologies are commonly accessible at an affordable cost for developing countries as well. Furthermore, in most cases, application of such technologies is supported by IFIs and pays for itself by reducing operational losses and wastages. Barriers to accessing advanced technologies do not seem to be a source of the gap between the two worlds.
2. **Machinery, equipment, and materials:** Similarly, there are no barriers for developing countries in accessing machinery, equipment and materials used by developed countries. Additionally, most of such machinery, equipment and materials is produced in developing countries already, respectively enhancing convenient and cost-effective access.
3. **Capital:** Financing for the water supply and sanitation sector is copious, including payments from customers, subsidies from governments and other sources, and plentiful

soft financing from IFIs. Clearly, the availability of financing is not an obstacle for resolving the dire problem at hand.

4. **Knowledge, Skills and Expertise:** The Internet, globalization, and open sources of knowledge, including electronic libraries, have virtually eliminated barriers for developing countries in accessing advanced knowledge, expertise and skills related to urban water supply.

Basically, in terms of accessing critical resources and capabilities, there are no objective reasons for developing countries to perform so poorly with regard to drinking water supply, at least, not to the extent that millions of lives are lost per year for preventable reasons. So why do we still have this problem, despite the universal desire to eradicate it, massive financing, and enormous technological advancement? The answer may lie in the concept of performance management.

Water utilities are natural monopolies, with limited exposure to market risks, if any. Respectively, markets cannot be relied upon to correct utilities' performance. In the absence of competition and an alternative for the utility's services, the need arises for close oversight by the public for ensuring performance adequacy and sustainability. Normally, municipalities and/or other government institutions handle such an oversight in the name of the public.

Within the setting of developed countries, where the public has effective control over municipalities and other government institutions, such an arrangement works reasonably well, constituting an approximation of a performance management framework. The public can ensure adequate improvements at water supply operations with intuitive considerations, broad-based discussions, and continued involvement until a satisfactory performance is achieved.

In developing countries, the public often lacks effective control over municipalities and/or other government institutions. Consequently, oversight of utilities is left to the whims of unchecked public officers, who may or may not have the interest, time and resources for proper oversight. As a result, the utilities may be emboldened to act at their own discretion, without adequate corrective influences from an operating environment. Such a situation fosters negligence, corruption, operational lethargy, and indifference to customers' satisfaction and to the viability of the enterprise. The entailing degradation yields dysfunctional water utilities, all too common in developing countries.

The underlying problem here is the inherent immunity of water supply companies in developing countries to corrective influences from their operating environments. Such immunity could marginalize attention to institutional performance, inevitably leading to performance failures.

Often utilities in developing countries are locked in a vicious circle, with weak operational and financial capacity leading to performance failures and inefficiencies, which further leads to poor operational and financial performance, which in turn further worsens operational and financial capacity to provide the required performance. In all material respects, such utilities are dysfunctional institutions, requiring extensive external support and care to stay operational. Breaking the vicious circle and turning it into a virtuous circle would be the main objective of the PMF (see Figure 2).

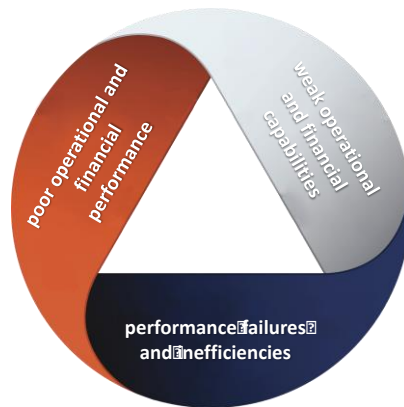


Figure 2. Vicious Circle of Nonperforming Utilities
(developed by the authors)

Furthermore, there is a common misperception that the performance of water utility companies could be intuitively understood, assessed and managed. Performance management in water utilities is a much more complex matter due to the following factors:

1. Drinking water supply operations are multifaceted, with many relevant parameters, including:
 - a. Continuity of water supply at source, key hubs, and points of delivery;
 - b. Pressure of water supply at various zones and points of delivery;
 - c. Quality of water supplied, including absence of all possible hazardous elements, such as physical particles; heavy metals; pesticides and other chemicals; biological contaminants; and radioactive elements;
 - d. Effectiveness and efficiency of repair and maintenance works;
 - e. Efficacy of operations in terms of nonrevenue water and leakage controls;
 - f. Customer relations and responsiveness to grievances;
 - g. Fiscal discipline, honesty and accountability;
 - h. Commercial sustainability of operations;
 - i. Technical soundness and sustainability of operations;
 - j. Efficacy of water resource management;
 - k. Diligence in environmental protection matters, including propriety of wastewater treatments and discharge;
 - l. Regulatory compliance and other risk management matters.
2. Inherently, drinking water supply presumes the operations of natural monopolies servicing a large number of customers with virtually inelastic demand. Everyone needs water to survive. Such a monopolistic position and a vast number of monetary transactions carry intrinsic risks of abuse. Proper control environments and internal control systems are of paramount importance for water utility operations.
3. Water utility operations are capital-intensive, with related complexities in long-term planning and investment handling considerations;

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4. Drinking water supply services are critically important to public wellbeing, with failures in operations potentially leading to massive health hazards, including increased morbidity and mortality, especially among children.

Basically, trying to manage the performance of water utilities by intuitive means would be naïve. Nevertheless, that is how performance management of water utilities is largely handled in developing countries.

On the other hand, management is done by people and institutions, which unescapably have a limited attention scope. It is simply impossible to manage anything effectively if hundreds of indicators and parameters are used for performance evaluation and rectification. In case of such a large number of parameters, usually there would be many indicators demonstrating sound performance and many parameters demonstrating profound failures, ultimately necessitating subjective and intuitive decision-making. So, the already complex matter of performance management is further complicated by the need to narrow down managerial attention to the necessary minimum, typically limiting considerations to a few dozen parameters of utmost importance. This situation makes performance management of water utilities a particularly challenging matter, requiring effective prioritization, strategic thinking, and substantive handling.

RESEARCH CONTRIBUTION

Developed countries already have established advanced regulations on the performance of water supply enterprises, with notable cases being: (a) the UK legislation based on mostly privatized water supply enterprises; (b) the French legislation with extensive reliance on PPP arrangements at publicly owned utilities, and; (c) the Swiss legislation with extensive direct municipal management of water supply operations. The applicability of such experiences in developing countries is constrained by: (a) the high level of complexity of the legislations of the respective countries; (b) the high level of diversity and incompatibility in competing schools of thought; (c) the lack of a universal approach and methodology, tailored to the circumstances of developing countries.

Given such a methodological vacuum for developing countries, three distinct schools of thought on performance management in water supply have recently ascended on the global arena:

1. Managing performance by defining, as is done by the International Water Association, the leading world authority on performance indicators in water supply and sanitation.
2. Managing performance by benchmarking, as is done by the International Benchmarking Network for Water and Sanitation Utilities (IBNET), with the support of the World Bank.
3. Managing performance by ranking, as is done by the Rating System for Water and Sanitation Service Providers (AquaRating), with the support of the Inter-American Development Bank.

These methodological ideologies currently dominate the school of thought on performance management of water utilities in developing countries. However, for decision-makers in developing countries, they are often too abstract, complex and

otherwise impractical. Most importantly, they fail to recognize that “performance management processes are part of a holistic approach”. (Michael Armstrong, 2000)

Hence there is a need for an effectual performance management framework (PMF) for water utilities in developing countries. Such a PMF should be: (a) custom-tailored for the settings of developing countries; (b) user-friendly and intuitively coherent; (c) universally applicable in developing market conditions; (d) sufficiently concrete and detailed to enable practical implementation.

PUBLIC ACCOUNTABILITY

Let’s take a closer look at public accountability and its effect on the operating cycle of performance. According to the definition of the International Organization of Supreme Audit Institutions, “Public accountability pertains to the obligations of persons or entities entrusted with public resources to be answerable for the fiscal, managerial and programme responsibilities that have been conferred on them, and to report to those that have conferred these responsibilities.” (Khan and Chowdhury, 2007) Smyth more emphatically points out the nature of the underlying relationship: “The essential core of an accountability relationship is that unless there is a form of control based on “reward or sanction” then the relationship is not one of accountability. This point is neatly summarised by Gray and Jenkins (1993:55): ‘in essence, accountability is an obligation to present an account of and answer for the execution of responsibilities to those who entrusted those responsibilities. On this obligation depends the allocation of praise and blame, reward and sanction so often seen as the hallmarks of accountability in action’”. (Smyth, 2007), (Gray, A and Jenkins, B., 1993)

Basically, public accountability presumes a vivid relationship between empowered public officials and the public, where the latter has legal rights and practical means to allocate praise and blame, rewards and sanctions on the former. How often do we see such a relationship in developing countries? Even if a developing country has a functional democracy, typically the public *en masse* is too impoverished, uninformed and undereducated to have practical means to oversee public officials in an efficacious manner. In general, it would be reasonable to assume that developing countries have substantively weaker public accountability than developed countries.

Strong public accountability of developed countries benefits the operating cycle of performance management of water utilities in the following ways:

1. Public accountability comes with open information flows. It is impossible to hold public officials accountable if there are restrictions on criticism and dissemination of negative information. Open information flows make it impossible to isolate and suppress information on the profound consequences of system failures, respectively shortening time for introducing corrective measures.
2. Efficacious public accountability forces public officers to be more attentive and responsible, enabling more frequent and expedient evaluations of the results of actions.
3. System failures in an environment of strong public accountability are subject to broader and more intensive public deliberations, resulting in better and more considered decisions.
4. Better-quality public deliberations typically lead to improvements in the regulatory framework, giving developed countries more elaborate and considered regulations

of the sector. The better-quality regulatory framework provides more clarity on benchmarks against which results are evaluated, leading to more expedient and better-quality feedback.

Basically, efficacious public accountability has the most fundamental effect on the operating cycle of performance management, increasing the speed and quality of movements along the cycle segments. In answering our first research question, on why water utilities in developing countries are so often and pervasively nonperforming and unsustainable organizations, we may conclude the following: There are many circumstances causing performance disadvantages for water utilities in developing countries, but the most fundamental and universal factor appears to be weaknesses in public accountability.

THE NEED FOR A PERFORMANCE MANAGEMENT FRAMEWORK

If the underlying problem is a deficiency in public accountability, then perhaps there is no need for a PMF. Why not focus directly on improving public accountability? That would be a logical course of action, if not for the following circumstances:

1. Building up efficacious public accountability in a country is a global and massively complex undertaking, typically requiring substantive societal reforms and generational changes. Problems with the performance of water utilities are dwarfed by such a great challenge.
2. Transforming nonperforming water utilities from failed businesses to sustainable operations is normally subject to greater urgency, presuming a relatively shorter timeframe of several years.
3. Transforming nonperforming water utilities into sustainable businesses is typically undertaken in the context of infrastructure investments funded by IFIs, governments or other financiers. Such financiers normally constitute the main clients for the underlying change management processes, demanding from utilities stronger financial and operational performance for ensuring debt repayments. Such change management settings require expedient and localized efforts and impact, rather than an overall improvement in public accountability in society.

Consequently, regarding the second research question, on whether a more structured and rational approach to performance management by means of a PMF would be warranted in dealing with nonperforming water utilities in developing countries, we may answer yes, it would be warranted. All urban water utilities in developing countries need massive investments for upkeep, upgrading, modernization and expansion of facilities, networks and other aspects of the infrastructure. Financiers of such investments have a need for a structured, rational and replicable methodological approach for transforming failed businesses of nonperforming utilities into sustainable businesses able to repay long-term loans.

What is more, management of utilities may not necessarily be interested in the PMF. When turnaround of a utility is undertaken in conjunction with investment projects, the financiers may be the main clients for such changes and the main beneficiaries of the PMF. Management of utilities may or may not be interested and supportive of changes introduced by implementing the PMF. Respectively, the PMF should be designed with a

certain level of rigidity in order to be viable and functional, even if the support and motivation of the utility's management and personnel is lacking.

This is a very fundamental notion, requiring the recognition that PMF implementation is a massive change management process, often constituting a complete overhaul of key management systems, business processes and operating procedures. Change management of such a magnitude would inevitably encounter resistance, at the least due to the behavioural inertia of the affected personnel. Occasionally, resistance may come from officials who previously benefited from a lax and wasteful mode of operation. Change management on such a scale would need to have its clients and agents. The change clients, i.e. stakeholders needing or genuinely interested in substantively improved performance, should be intensely engaged and should drive the change management processes. Such drive would be particularly important in case of strong resistance from a utility's personnel.

THE CONCEPTUAL FRAMEWORK OF PERFORMANCE MANAGEMENT

PM is a methodological approach for improving efficacy. As a methodological approach, it comprises two main components:

- a) School of thought and knowledge of advanced practices and approaches for achieving greater efficacy;
- b) Set of tools (guidelines, regulations, algorithms, instructions, procedures, templates, etc.) facilitating practical application of the school of thought.

A PMF is an operating framework based on a managerial school of thought and a range of tools to be used in defining, dictating and controlling the operating environment of a water utility.

THE PROPOSED PMF

The idea behind the PMF is to transform the whole operating environment of the utility as well as its management philosophy. The PMF is not about a set of KPIs reported occasionally. It is a management paradigm based on advanced conceptual notions, qualitative elements, quantitative parameters and management systems/tools.

The proposed PMF for water utilities companies comprises twelve pillars:

1. Public Accountability
2. Performance Definition
3. Mandate to Record and Report
4. Objectives-Based Management
5. Critical Success Factor Analysis
6. Mandate for Data Integrity
7. Independent Performance Verification
8. Performance Evaluation and Rectification
9. Motivation for Performance
10. Reformed Value Systems
11. Accounting and Billing MIS
12. Asset Management

PMF1: Public Accountability

Water utility operations are indispensably interweaved with public needs, property and interests. The public, comprising primarily of residents of the utility's service zone, is:

- ✓ the ultimate owner of assets;
- ✓ the main source of income;
- ✓ and the ultimate judge of the performance of the utility.

The position and opinion of the public on the integrity and efficacy of a utility's operations are of critical importance, especially in approving tariff increases. Nevertheless, the public is often treated as an irrelevant and dormant stakeholder, with respectively underserved information needs. This situation hurts both parties. In the absence of effective public reporting and information campaigns, the public develops distrust and discontent regarding the utility's operations. Such a situation undermines the financial position of a utility by reduced willingness of customers to pay for received services and by increased reluctance of regulators to approve tariff increases, in fear of a public backlash.

An effectual public accountability system must be the cornerstone of the PMF, including:

1. Systematic and efficacious public reporting;
2. Efficient grievance redressing and feedback systems;
3. Informational campaigns regarding public needs, interests, opinions and positions.

Specifically, the PMF1 would entail introducing a legally binding obligation for the utility to:

1. Create, maintain and regularly update the company website, providing all relevant information to the public in a timely and convenient manner, including information on the company's performance, tariffs, and billings.
2. Conduct quarterly open public hearings, which could be attended by all interested parties.
3. Establish a grievance redressing system for collecting, recording, responding to, analysing and reporting on all customer complaints and communications. The grievance redressing system should be based on modern IT solutions and should be compliant with ISO 10002:2014 Quality Management – Customer Satisfaction – Guidelines for Complaints Handling in Organizations. Such compliance with ISO 10002:2014 should be ensured by proper certification and regular audits.

PMF2: Performance Definition

For the PMF, it is necessary to define specifically the performance aspects to be managed. The International Water Association (IWA) and its publication "Performance Indicators for Water Supply Services, Manual of Best Practice" (the Manual) would be the most authoritative source for a methodology in defining performance of water utilities in developing countries. It is imperative that the PMF's implementation should unequivocally and diligently follow the guidelines of the Manual in selecting and defining key performance indicators (KPIs). Moderation is advised in selecting the number of KPIs to be used, as too many KPIs would dilute managerial attention and analytical procedures. More than 30-40 KPIs for water supply operations would not be advisable.

PMF3: Mandate for Data Integrity

The Manual states: “a system of performance indicators is not only aimed at providing the value of a few ratios, but also all the complementary elements (quality of the data, explanatory factors, context), which are needed in order to make appropriate decisions” (Helena Alegre et al., 2016).

The most important aspect of the IWA’s methodology is the fact that KPIs should not be considered without due regard to quality of the input data. Compromised quality of the input data could render the corresponding KPI value meaningless or misleading. Therefore, distinct consideration of input data and its confidence grading would be of paramount importance within the PMF system.

At the initial stage, the PMF would need to operate with whatever data could be reasonably collected from the existing system, with identification of data quality for each input. Over time, the operating systems related to collecting, recording and reporting data should be enhanced to achieve the necessary level of confidence grading for effective decision-making.

PMF4: Objectives-Based Management

The Manual states: “The implementation of any PI² system has to be objective-oriented. Performance indicators are the last step of a larger management strategy that should link the utility’s objectives to strategies, define critical success factors and only then bring performance indicators both as means to evaluate the success of these strategies and as a control mechanism to detect problems in advance... The definition of objectives should always be the first step of a well-defined performance measurement system.” (Helena Alegre et al., 2016). What is more, without effective formulation of objectives, prioritization of performance indicators towards a manageable set of a few dozen KPIs would not be possible.

Given the complex nature of the operations and challenges of struggling water utilities, many objectives could be selected. However, dealing with more than 4-5 objectives may be counterproductive, limiting managerial focus and commitment. Therefore, PMF implementation should commence with the formulation of the 4-5 objectives with the highest priority.

PMF5: Critical Success Factors

Once the objectives are selected, the critical success factors (CSFs) for each objective can be assessed. “Critical success factors are those few things that must go well to ensure success for a manager or an organization and, therefore, they represent those managerial or enterprise areas that must be given special and continual attention to bring about high performance. CSFs include issues vital to an organization's current operating activities and to its future success.” (Shank, Boynton, and Zmud, 1985). CSFs are distinctly different from KPIs. CSFs are not necessarily quantifiable, but they make or break the success in performance. Respectively, CSFs supplement KPIs in the most

² performance indicator

fundamental way. For each of the selected objectives the CSFs should be thoroughly analysed with the formulation of a respective work programme for each of the CSFs.

PMF6: Mandate to Record and Report

The PMF6 presumes establishing an explicit legal requirement and protocol for the utility to record and report its performance. The legal requirement could be introduced by adopting a public service contract (PSC) to be signed between a utility and its municipality or another master institution. Alternatively, the legal requirement could be introduced by government directives or regulations. Basically, utility officials should have an explicit legal mandate on recording and reporting relevant reporting parameters. Furthermore, the reporting requirement should include the explicit requirement to report on the company's website and at regular public hearing events.

PMF7: Independent Performance Verification

In order to be reliable, the reported performance has to be verified by an independent party. Resources should be budgeted for hiring such an independent technical auditor on a regular basis. Recruitment of the technical auditor should be undertaken in such a way that enables the auditor's independence from the utility's management.

PMF8: Performance Evaluation and Rectification

The culmination of the PMF is not reporting KPI values to the public and regulators. Rather, the culmination of the PMF should be a substantive analysis of the performance, including evaluation of:

1. Adequacy of the identified objectives;
2. Efficacy of performance in terms of CSFs;
3. Efficacy of performance in terms of KPIs.

A proper evaluation would inevitably identify performance shortfalls, because in the real world, perfect performance would be impossible. The objective of the PMF is not to achieve perfect performance, but to institute a continuous improvement mechanism centred around key performance considerations. The performance does not need to be perfect, but it has to improve reasonably and rationally with every reporting cycle. Consequently, the most important aspect of the PMF is a panel of stakeholders, where performance would be duly analysed, with a formulation of rectification measures and further improvement plans. In other words, in order for the PMF to function effectively, there should be a platform where key relevant stakeholders could converge for performance deliberations after every reported cycle.

PMF9: Motivation for Performance

The importance of motivation for performance improvements can hardly be overestimated. "The motivated employees' works best in the interest of the organizations which leads them towards growth, prosperity and productivity. Thus the employee motivation and organizational effectiveness are directly related." (Manzoor, 2011)

Although motivation could be achieved by various means, financial incentives are the most common and generic forms of motivation. There are two main ways to introduce financial incentives into management of water utilities:

1. Profitable public-private partnership (PPP) arrangements;
2. Incentive-based management contracts.

PPP arrangements are generally more complex and difficult to attain. Management contracts with bonus incentives linked to performance improvements are recommended as an easier and more practical way of introducing motivation into water utility operations. Such management contracts would need:

- a) Other aspects of the PMF in place and operational;
- b) A high level of reliability of input data;
- c) Objective assessment of baseline conditions;
- d) Realistic formulation of performance target values for future periods;
- e) An incentive system linked to attainment and/or exceeding of the targeted performance.

PMF10: Reformed Value Systems

The PMF is intended for turning nonperforming and unsustainable water utilities in developing countries into well performing and sustainable businesses. In undertaking such a turnaround, due recognition should be given to the preceding history and embedded behavioural patterns. “To gain maximum traction, the PM strategy needs to align with the organization’s culture and values, enable the organization’s priorities (e.g., customer focus, collaboration), and ideally, contribute to solving key business challenges (e.g., lack of agility, deficiency in global competitiveness, inconsistent innovation). In sum, in order to realize the outcomes PM promises, it is important to

- focus on driving the behaviours that matter,
- fit changes into the larger talent management ecosystem, and
- ensure that the business case for change is sufficiently compelling to attract and sustain the attention that is needed for change to occur.” (Pulakos, Hanson, Arad, and Moye, 2015)

Typically, nonperforming utilities have had years or decades of operation in dystopian settings, with deep-rooted chronic deficiencies in leadership, care, financial resources and other means for survival and fulfilment of duties. Such a history inevitably has a degrading effect on work ethics and workplace diligence. Over time, the value systems and norms of perception of such utilities evolve to justify and/or tolerate workplace nihilism, pervasive laxity and negligence, and broad-based lack of care for performance of workplaces and the company at large.

Better performance of a utility cannot be achieved if the personnel of the utility do not start caring strongly about performance improvements. Transformation from the old value systems and behavioural patterns to the new ones would not be easy and would not take place on its own. Conscientious efforts would be needed to transform the value systems, norms of perception, and ultimately behavioural patterns for better performance at the utility. In this regard, the following course of action would be required:

1. Recognizing that value systems, norms of perception, and commonly adopted behavioural patterns are highly relevant considerations for improving performance;
2. Identifying behavioural patterns and the underlying norms of perception which are incompatible with the new performance paradigm, such as:

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- a. Corruption and embezzlement;
 - b. Lax and negligent performance of duties;
 - c. Indifference to the company's overall performance;
3. Seeking out, exposing and penalizing behavioural patterns incompatible with sound performance. This must be done by a designated team of internal controllers;
 4. Establishing and empowering a designated team of internal controllers comprising three or more officers for seeking out, exposing and penalizing inefficiencies, wastages, thefts, and other counterproductive behavioural patterns. It is extremely important to make sure that such a team of internal controllers reports to true clients for changes. If the main clients for change are external financiers, then the team should report to external financiers, rather than to the management of the utility.
 5. Identifying and addressing causes for degradation in work ethics and workplace attitudes. If substandard remuneration, shortfalls in training and/or other human resource management practices, a defunct workplace environment, paucities in workplace equipment and organization, ineffective internal lines of communication or other operational circumstances appear to contribute to such degradations, they should be explicitly considered by the management, clients for change and other relevant stakeholders for effective resolution.

Most importantly, conscientious work on value systems and behavioural patterns should be commonly accepted as an indispensable part of work in transforming a nonperforming institution into a well performing one. "As Pulakos et al. (2015) have highlighted in 'Step 5. Evaluate,' it is critical to evaluate any new PM system or intervention at an organization with regards to perceptions of value and general attitudes from the workforce." (Roberson, Galvin, and Charles, 2007) (Pulakos, Hanson, Arad, and Moye, 2015)

PMF11: Accounting and Billing MIS

As previously noted, water utilities are natural monopolies with inelastic demand for services and a large number of cash transactions of small amounts. Inherent risks are high for misappropriation of collected funds, extortion of excessive amounts from customers, and other forms of financial abuse. Such risks are further exacerbated by substandard remuneration, typical for financially struggling water utilities, and by a pervasive culture of laxity, negligence and corrupt opportunism. The livelihoods of many officers in key positions may benefit from corrupt opportunism enabled by system failures of a nonperforming institution. Such officers would not be content with reduction in their incomes and living standards, which would be inevitable if opportunities for corrupt enrichment were eliminated. Naturally, they would resist and sabotage the PMF's implementation, especially if they are afforded discretion in system implementation. Ignoring such a resistance would be a grave mistake.

In order for the PMF to succeed, it is critically important to assume effective command of all financial data and records by instituting transparency, accountability and traceability over all financial transactions. This can only be done by implementing an effectual management information system (MIS) capturing all accounting, billing and

collection processes fully and effectively. This is one of the most difficult and technocratic parts of the work, because of the need for in-depth expertise in various fields, including accounting, internal controls, billing and customer relations, IT and database management, and change management. Finding proper resources and budgets for such work is usually a major challenge. Therefore, this aspect of the work is often neglected or its importance is underestimated. However, proper MIS implementation over accounting and billing practices is the most critical success factor in turning a nonperforming utility into a sustainable and well performing business.

PMF12: Asset Management

As previously noted, urban water utilities have extremely complex and multifaceted operations. What is more, they also have a complex and capital-intensive asset base, spread across the whole city. Converging the two highly complex considerations of performance management and asset management overly complicates decision-making and dilutes managerial attention. Segregating the two considerations would be advisable, where:

- A) Asset management is assigned to the assets' ultimate owner, typically a municipality; and
- B) Performance management is delegated to the utility's management.

Apart from more streamlined management processes, such a segregation of asset management from performance management would afford the positive externality of enabling elements of competition.

Assets of water utilities are vitally important for the wellbeing of the public and thus need to be kept in the public domain. Performance management, on other hand, is better handled on a competitive basis. Numerous successful experiences with public-private partnerships (PPP) in Europe and other advanced market settings suggest that performance management could be effectively outsourced to the private sector.

PMF implementation does not presume immediate adoption of a PPP arrangement, but it does entail segregating asset management from performance management in order to afford competitive and effective handling of performance by asset owners.

CONCLUSION

The PMF is a new paradigm for managing water utilities in developing countries. It has to be perceived and used based on a holistic approach, with due consideration to context and reliability of the reported values. What is more, for the PMF to work, the reported performance values have to be subjected to independent verification, public deliberations, proper analysis, and rectification and planning considerations.

Primarily, the PMF is intended as a methodological approach which IFIs and other financiers of investments in urban water utilities in developing countries could adopt to safeguard repayment of investments. Defining the PMF and breaking it down into the operating cycle and the twelve pillars would assist the utility's financiers by:

1. Drawing attention to critically important aspects of operations, which otherwise may not be apparent to financing officers;
2. Packaging performance issues into distinct components, which could be explicitly considered and formally negotiated within financing arrangements;

3. Providing concrete methodological guidance and instructions on how performance improvements could be targeted and achieved;
4. Enabling a common understanding amongst various stakeholders on handling performance improvement;
5. Providing a systematic and orderly approach to the intuitive and loosely defined concept of performance management.

Further research and elaboration of the subject matter would be warranted. Nonperforming water utilities in developing countries constitute a massive phenomenon with dire costs and consequences, especially in terms of excessive mortality and morbidity among children.

The situation can and should be improved by a more orderly, systematic and rational approach to performance management of natural monopolies operating in an environment with substandard public accountability.

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