
Strategic Performance Measurement System and Its Impact on Organizational Effectiveness: A Study of UAE Based Organizations

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Abstract:

Purpose: The purpose of this paper is to review the performance measurement framework (Input-process-output), their application in the UAE based organizations in quality enhancement and to identify gaps in knowledge and practice that suggest future research.

Design/Methodology/Approach: Performance measurement has been subject to a considerable amount of research and attention over the past 15 years. The inadequacy of traditional financially based performance measurement systems and the introduction of nonfinancial measures have been the triggers for much of this research. The paper draws on the study of performance indicators used in the 6 UAE based organizations. The design of indicators has been covered by many publications, but the design of measures specific and appropriate to UAE based organizations has not been well addressed.

Findings: Based on the study of these organizations, a conceptual model is proposed that treats performance measurement as an integrated system, based on the TQM philosophy of continuous improvement cycles.

Practical Implications: Organizations must understand the direct link between performance and competitiveness to survive and succeed in the modern competitive marketplace where measuring and monitoring customer satisfaction is highly crucial.

Originality/Value: Quality performance indicators are defined as performance measures, either qualitative or quantitative in nature, which are utilized to study and assess a process at a specified time period in order to determine and analyze if quality requirements have been achieved and organization targets are met. The chief objective and purpose of indicators is: to appraise and control performance of processes and resources, to provide and share performance outcomes as results to internal and external stakeholders, and to detect performance gaps between expected and actual outcomes in order to improve the quality.

Keywords: Performance measurement, quality management, performance indicator, indicator properties.

JEL codes: M10, M41, L 25, D23, O53.

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1. Introduction

Designing a performance measurement system requires a multidisciplinary approach that integrates knowledge from different process areas, people and information technologies and suitable scientific methods to ensure appropriate academic rigor. While quality standards have become central operational tools for organizations, performance indicators are the communication protocol of their health state.

Organizations nowadays are faced with a multitude of challenges, from increased competition to changing external demand, prompting them to investigate and enhance their management systems and strategies. This was emphasized in the study of David and Jenson (2014), entailing that the value of performance measurement (PM) is grounded on the need for enterprises to monitor and understand their performance.

The authors further noted that PM, which is defined as a tool that enables companies to assess their supply chain, is one of the most widely explored topics among researchers and practitioners. Just like any other concept in business and management, PM has also evolved over the years. According to Goshu and Kitaw (2017), there are four phases of PM development: (1) productivity management; (2) budgetary control; (3) integrated PMS; and (4) integrated performance management. In the last two stages, the strategic transformation of performance measurement system (PMS) became more pronounced and progressive.

In the 2000s, PMS focused on effectiveness, efficiency, flexibility, creativity, sustainability, and productivity (Goshu and Kitaw, 2017). Performance accountability has been a necessity for most of the organizations to know and understand the drivers behind their operations and performance. Understanding this would help organization measure their performance and monitor its important aspects to improve accordingly.

By looking at an organization's performance you will be able to determine its ability to ensure long-term profits, the efficiency of its processes, and how effectively it can transform inputs into outputs. Therefore, performance is a reflection of an organization's stability and how well it adapts and responds to changes in strategy and external influences. Organizations must understand the direct link between performance and competitiveness to survive and succeed in the modern competitive marketplace where measuring and monitoring customer satisfaction is highly crucial.

Moreover, companies are thought to be successful if they are able to attract new customers and retain existing ones which can only be achieved by identifying the right customers, their needs and achieving or exceeding their expectations (Striteska and Jelinkova, 2015). A widely used tool in performance management is the Quality Management System (QMS) which helps in the control and improvement of quality

in all organizations' aspects such as human resources, knowledge, technologies, practices and processes (Franceschini *et al.*, 2010).

2. Measuring Process Quality through Key Indicators

Alongside with the growth and extensive adoption of PMS in organizations today, several performance indicators had also emerged. These indicators vary according to the type of PM model used and the nature of the organization. Commonly, these indicators are both internal and external. For instance, under the balanced scorecard, the external indicators are focused on stakeholders while internal indicators are on the processes of the business as well as on innovation learning and development (Ivanov and Avasilcăi, 2014).

There are also qualitative and quantitative performance indicators. Qualitative indicators are divided into three types: outcome, process and impact while quantitative indicators include input, output and impact (Markić, 2014). The IPO (Input-Process-Output) model, for one, is a framework that is commonly used as basis for performance indicators. It is beneficial in effectively identifying goals and objectives for the organization; however, it does not take into account the external environment dynamics (Yadav, Sushil, and Sagar, 2013; MacCusprie *et al.*, 2014).

Quality performance indicators are defined as performance measures, either qualitative or quantitative in nature, which are utilized to study and assess a process at a specified time period in order to determine and analyze if quality requirements have been achieved and organization targets are met. The chief objective and purpose of indicators is to appraise and control performance of processes and resources, to provide and share performance outcomes as results to internal and external stakeholders, and to detect performance gaps between expected and actual outcomes in order to improve the quality.

For an indicator to be effective, it must correctly represent the function or process for which it would be measured; it must be sensitive to internal and external organizational forces, and it must indicate time trends properly. Also, indicators must be simple to comprehend and interpret, while providing ease in data collection, which as a result enable organization to be swift in data processing, updating and controlling.

In recent years, the use of indicators as a vehicle to transmit information, behavioural codes and rules of governance has dramatically increased. Indicators often accompany the daily life of public and private organizations in many fields: from the stock exchange to the meteorology and from the manufacturing processes to the sport specialties. Indicators regulate and influence organizations and their behaviour. In the broadest sense, they often give the impression to be the real driving force of social systems, economy and organizations. The need to establish long-term objectives, rules and behaviours in order to achieve the planned results puts

indicators in the spotlight of stakeholders of organizations. Indicators take on the role of real “conceptual technologies”, capable of driving organizational management in intangible terms, conditioning the “what” to focus and the “how”. In other words, they become the beating heart of the management, operational and technological processes.

2.1 The IPO (Input-Process-Output) Model

Input indicators are measures that assess the quality of raw materials and resources that are used as inputs in the manufacturing process of a product or service. According to quality gurus and scholars, it is highly essential to develop input indicators which can observe and analyze the availability and functions of resources because these indicators will identify and detect any variations, errors or defects during the input stage of manufacturing. This will be crucial in saving time, costs and the product quality at the end of the production cycle (Vos, 1996).

Process indicators, also known as intermediate indicators, are measures that are used to evaluate the processes and steps of production to ensure that planned activities are carried out adequately. If intermediate indicators are not developed and utilized, there will be a major gap between the planned/expected results and the actual results. (Parsons, Gokey, and Thornton, 2013). Cayzer, Griffiths, and Beghetto (2017) argue that process indicators depend on time, quality, and compatibility inputs. Thus, if quality materials are provided at the right time, the organization achieves efficiency and satisfaction of the customers.

Output indicators, or final/result indicators, are indicators related to the end product and enable organizations to appraise the result of the output. They are also responsible for measuring customer satisfaction, customer service, technical assistance and delivery of the product/service. Output indicators are crucial and must be habitually monitored in order to determine a process’s efficiency and target achievement. (Parsons, Gokey, and Thornton, 2013)

The best set of indicators is reached after understanding the possible impact they will produce on the system. According to Micheli and Mura (2017), such indicators influence the system’s overall behavior with uncontrollable consequences.

2.2 SPMS and QMS

Strategic Performance Measurement Systems (SPMS) measure the performance of a company against its set goals, targets, and objective. The strategic goals, objectives, and targets of a company are determined by its execution strategy and how the firm sees itself as gaining competitive advantage in the market. SPMS plays a key role in orienting the company according to its target objectives and enhances the company’s market performance in regard to its customers, competitors, and internal processes (Yuliansyah *et al.*, 2019).

In order to implement proper SPMS, companies must first set their objectives according to their core competencies and make an informed decision about the selection of their strategic choice (Yuliansyah *et al.*, 2019). Moreover, the literature on the subject shows that companies that use multi-dimensional performance indicators are more successful in achieving their set goals than companies that use only a few basic indicators (Baird, 2017).

Multi-dimensional performance indicators measure the company's performance related to its suppliers, strategic decisions, growth and improvement, systems, processes, human resources, and customers. A company that measures its performance in these areas and tries to improve upon these variables will be successful in the market because it would not be missing out on the small things that are missed by general indicators of performance and quality.

Similarly, Quality management systems (QMS) are a set of systems and processes that continually measure the quality performance of a process according to set targets. QMS systems are based on a set of principles that ensure that all relevant dimensions of strategic importance in a business are measured and compared with optimal values (Bacoup *et al.*, 2018).

3. Performance Indicators in UAE Based Organizations

A review of the performance measurement framework (Input-process-output) in the 6 UAE based organizations has been done. The role played by the performance indicators pertaining to the IOP (Input-process-output) framework in enhancing quality in these organizations has further been studied and an attempt has been made to identify gaps in knowledge and practice. Based on the identified gaps, a conceptual model has been proposed that treats performance measurement as an integrated system.

Following UAE companies have been studied and performance indicators based on the IOP model have been identified.

3.1 DEWA (Dubai Electricity and Water Authority)

Dubai Electricity and Water Authority (DEWA) was formed after the merger between Dubai Water Department and Dubai Electricity Company in 1992. The company provides utility services where it distributes water and electricity in Dubai. The company is committed to offering reliable and excellent services.

Indicators of Quality of Materials or Services Provided by Suppliers:

Notably, input indicators help the company measure and understand human and capital resources (El Khatib, Al Zeyoudi, and Shaqar, 2020). DEWA's quality systems ensure that the company notes the accuracy and efficiency of industrial processes. In other words, the quality systems ensure that the suppliers and other

partners comply with the standards when supplying raw materials. In this case, the quality of the materials is assessed in terms of defect rate, lead time, and contract compliance. According to DEWA (2021b), the suppliers of materials from Italy, France, and Germany used for the expansion to triple its electricity generation and water desalination experienced a default of less than 1%. This implies that the number of materials used during the expansion project was reliable, trustworthy, and high quality.

The lead time for most suppliers of materials and services is about 15 hours. In fact, if the supplier fails to comply within the required time after the tender approval, it leads to cancellation. The contract compliance for suppliers is 100%. According to DEWA (2021b), the suppliers promise to deliver in compliance with the standards stipulated by the DEWA quality manager during the procurement and tendering process. Given that DEWA must achieve standards as provided under ISO 9001, quality management must ensure that suppliers adhere to delivery time.

Indicators of Process State:

At DEWA, the process indicators include machine design, efficiency, and environmental protection. According to DEWA (2021c), DEWA has increased its operational efficiency through a state-of-the-art energy management system within the processing unit. Through its R7D Centre, DEWA developed monitoring underground cables using an Artificial Intelligence (AI) machine capable of storing data on manufacturing. In this regard, state-of-the-art sensor technologies help in monitoring medium voltage in the underground distribution network. Such data is critical in ascertaining efficiency level as well as detecting any default. According to DEWA (2021c), AI helps in cable repair and replacement, ensuring that the organization attains its highest reliability and accountability standards.

The environmental safety indicator is achieved through an on-grid PV inverter. Through the Shams Dubai Initiative, the company has built and installed a solar photovoltaic rooftop energy system connected to the DEWA's grid. The system does measure not only Harmonic Voltage and Emission but also the quality of electricity produced. DEWA (2021b) confirms that the system has improved assessment procedures, reduced harmful emissions, and analyzes data to increase productivity.

According to Cayzer, Griffiths, and Beghetto (2017), the process design indicator considers equipment productivity, capacity, and maintenance. In this case, the quality management systems at DEWA verifies the machine or equipment's capacity and design as required under IS/ISO 10005: 2005. For example, at the connection process, there are four stages which include stage A, no objection certificate (NOC), stage B, design approval, stage C, inspection and connection, and stage D, generation.

During these stages, the quality management systems must engage contractors or consultants to ensure that the PV system complies with DEWA's standards (DEWA,

2021d). Given the standard procedure in approving system design, the company produces water and electricity efficiently, cheaply, and reliably.

Output Indicators:

DEWA's output indicators can be measured in terms of customer satisfaction and production cost. According to DEWA (2021e), they received ISO 10004: 2012 certification, which was a recognition for an enhanced track record for achieving customer satisfaction. Additionally, DEWA received a score of 99.7% by the International Customer Experience Standards (ICXS) at the global state (DEWA, 2021a). The highest performance demonstrates that the company is committed to exceptional customer care and services. The high quality of services for customers is a beneficial indicator to DEWA because they can measure and increase revenue and customer base.

The production cost can be related to processes. According to DEWA (2021c), the production cost has reduced significantly because DEWA invested heavily in solar energy. Additionally, carbon emission has been reduced by 19%. According to Al Nuseirat *et al.* (2019), process efficiency enabled DEWA to reduce production. Given that the company has increased the use of clean energy in the production of electricity and water supply, the reduced cost has assisted them in investing in other areas. For example, the organization anticipates increasing an investment of AED 144 billion for the next five years to produce 11,400 megawatts of electricity.

The Best Set of Indicator:

In the case of DEWA, the best set of indicators to measure the quality and success of the company include contract compliance (input), machine design (process), and customer satisfaction (output). Contract compliance is a viable measure because it means the suppliers must comply with the material standards laid down by the quality department. Pinna *et al.* (2018) noted that quality supply is a key performance indicator (KPI) since it helps the quality manager know if the supplies address the customer's need.

Once DEWA receives standard and quality supplies, the nature of machine design measures the process's success. That is, the design should increase efficiency and reduce redundancy. If the machine design facilitates production, then the companies reduce production costs. For example, installing an Artificial Intelligence machine can store data appropriate to detect any malfunction hence enabling the company to be robust, unique, and compatible with the current production system.

Finally, customer satisfaction is a good indicator because it determines the level of success. According to Pinna *et al.* (2018), customer satisfaction is a critical success factor because it determines where the company needs to pay more attention. DEWA was voted the best in customer quality services because they provide unique, robust, and integrated customer care, leading to customer satisfaction.

However, the best set of indicators should be selected based on the indicator properties of uniqueness, non-redundancy, usefulness, compatibility, and being economically viable. (Franceschini, et.al. 2010).

3.2 EMMAR Properties

Emaar Properties, simply known as Emaar, is a UAE-based real estate development company which is growing fast in the Middle East and in the world. For more than two decades, Emaar has proven its competency in megaprojects including shopping malls, hotels and many other retail, hospitality and leisure properties.

Performance Measurement Indicators of Emaar:

There are various performance measurement indicators used by Emaar Properties in order to achieve its current success and growth. One of its input indicators is the competency of people it employs. Considered its biggest asset, the employees of Emaar are a major contributor to its ongoing development and transformation. The strength of its people is rooted on the company's initiatives of supporting and furthering their growth, as it aims to create a career-driven and committed workforce (Emaar Properties, 2021b).

For example, in its Burj Khalifa Tower project, over 65 separate consultants and more 12,000 professionals and skilled employees were involved. Another input indicator of Emaar is its strategic partnerships. With the goal of creating value-added experiences for its stakeholders, the company had forged strong relations with its partners such as Xiaomi where said partnership had resulted in the launching of the Emaar Smart Home. In the report of Emaar Properties (2020), it was revealed that the Emaar Smart Home, which is powered by AI, is expected to improve customer experience. The third input indicator that Emaar uses is its well-designed internal policies.

True to its values and mission, Emaar has imposed effective policies which have guided its operations. For example, the company upholds the highest environmental sustainability standards which focuses on education and raising awareness among the stakeholders regarding the environmental impacts of its business activities. These standards and policy also aim to reduce wastes and improve resource use (Emaar Properties, 2021c).

Aside from input indicators, Emaar also utilized certain process indicators. One of which was the deployment of automation in the pursuit of increasing business efficiency. Through its partnership with IBM, Emaar adopts the Robotic Process Automation tools which enabled automation of about 86 percent of its transactions.

According to IBM Corporation (2019), the use of automation tools was motivated by the need to address challenges relating to staffing costs, productivity and efficiency. As a result, the company was able to achieve 86 percent process automation, 50

percent faster turnaround and cost reduction of about 40 percent. These results which could be identified as output indicators of the company had contributed to the increased performance level of Emaar (IBM Corporation, 2019). In line with automation and cost reduction, another process indicator adopted by Emaar was the implementation of cost management initiatives.

As mentioned in the report of Construction Week (2020), the real estate development company has made significant steps to control its operational costs while maintaining the quality of its services. The report further notes that amid the COVID-19, the company was able to achieve a profit increase due to its cost control methods. With its high regard for the growth and development of its people, Emaar also provides training to its staff.

One of its subsidiaries, the Emaar Hospitality Group, launched the Dubai Way training program which aims to increase knowledge and resourcefulness of its tourist-facing workforce. The program includes a variety of activities, courses and assessments that cover a multitude of topics including culture, safety and security, transportation, and customer service, among others (Sreenivas, 2018).

The output indicators of Emaar Properties are identified into two: revenues and profit and number of projects. In terms of revenues and profit, Emaar has a strong cash position which is attributed to its easy access of land, strong project demands and conservative financial accounting methods (Bateman and Majdalawieh, 2009). Even during the pandemic, Emaar takes pride in its financial resilience as noted by its property sales of \$879 million and profit of \$282 million in the first half of 2020. Aside from sales and profit, the number of projects that Emaar Properties handles is also an important output indicator for the company (Construction Week, 2020). Being the leading real estate developer in the UAE, Emaar has taken over many megaprojects like the Burj Khalifa whose construction required more than 12,000 people and over 22 million-man hours to complete.

Conclusion:

The main emphasis in the discussions presented is that Emaar Properties remains to be highly focused on improving its performance through specific and well-designed performance indicators. These indicators have helped to improve the quality of its services and the overall experience of its stakeholders which is important in attaining continued growth and sustainability. The continued strong financial performance of Emaar attests to the effectiveness of its initiatives. However, the implementation of performance indicators successfully involves the aspect of change management which is not visible in the case of EMAAR.

3.3 Jumeirah Group

Jumeirah Group is a widely known international hospitality management group based in Dubai, United Arab Emirates. It was founded in 1997 in the aim to become

the global leader of the hospitality industry in terms of world class luxury. Jumeirah’s statement and commitment to stay different incorporated with their hallmarks and guiding principles have led to their growth and success in the past. As of today, they have a diverse portfolio with more than 5,000 luxury rooms, suites and residences along with various resorts, restaurants, wellness facilities, theme parks, retail centers, educational facilities and leased offices. Through this portfolio of unique brands, Jumeriah has put itself in a competitive luxury advantage all throughout the hospitality market.

In the aim to sustain Jumeriah’s success and continuous growth, they are committed to improve through strategic approaches to various aspects such as their corporate responsibility, corporate governance, management of risk, and lastly through performance indicators (International, 2020).

Performance Management and Measures:

As mentioned above, one of the strategic approaches of Jumeirah for sustaining their success is the use of performance indicators. As part of their sustainability strategy, they have grouped their key performance indicators into five pillars namely the Sustainable Supply Chain Management, Environmental Protection, Workers Welfare, Community Welfare, and Resource Conservation. These pillars are established to show and monitor the progress in the mentioned sections.

Table 1 shows the performance indicators of Jumeirah accordingly to the five pillars they have developed (Jumeirah Group, 2013).

Table 1. Performance indicators of Jumeirah group based on the five pillars

No.	Category	Pillar	Performance Measure	Indicator
1	Input	Sustainable Supply Chain Management	Working hours as per law	Total Hours of Work
			Supply Chain Management – MSDS compliance	Compliance rate of suppliers
			Quality of product and services	Rate of Local Sourcing
			Health and Safety – Minimizing Risk Exposure	Rate of Accidents or Injury
2	Process and Outcome	Environmental Protection	Monitoring CO2 emissions	Level of CO2 emissions
3	Process and Input	Workers Welfare	HR Performance	Total hours of training to workers
				Employment Type Percentage
				Percentage of workforce by

				nationality
				Percentage of workforce by nationality
4	Outcome	Community Welfare	Quality of rehabilitation and educational services to children with special needs	Percentage of students with special needs enrolled
5	Input	Resource Conservation	Resource Consumption	Level of Water Consumption
				Level of Electricity Consumption
				Level of Gas Consumption
				Level of Fuel Consumption
			Waste Disposal and Recycling	Recycling Rates

Source: Own study.

The indicators in the above table are explained as below:

A. Sustainable Supply Chain Management:

In this pillar, Jumeirah has various strategies to assure that all aspects of the supply chain are reviewed, monitored and improved through the use of KPIs.

The first KPI of Total Hours of Work is used to make sure that the weekly working hours along with the overtime hours are not exceeding the 60 hours with the one day off. The second KPI of Compliance rate from suppliers is to make sure that suppliers are using the approved cleaning chemicals as per the Dubai Municipality and the MSDS are submitted and documented. The third KPI which is the Rate of Local Sourcing is for making sure that the food supplies taken from the local sources to ensure freshness and endangered species are excluded in their menus. The last KPI is about health and safety to minimize the number accidents by knowing the Rate of Injury and avoiding such risks if it occurs.

B. Environmental Protection:

In this pillar, Jumeirah views toward a more sustainable environment which is vital in their line of business. They committed to reducing the effects of greenhouse gasses causing the global climate change. To assure this, they have developed a program of waste recycling and resource management to reduce their facilities' emission of CO₂ in the environment. As part of monitoring this program, they have developed a KPI to know their emission levels and monitor accordingly.

C. Workers' Welfare:

In this pillar, Jumeirah have a current HR strategy that supports its operations globally. This is vital since they are in a service industry and this plays a role in the success and growth of the entire organization. Jumeirah wants to ensure that they are practicing as per the HR Standards. They have developed principles and priorities as

part of their overall HR strategy. With that, they have various HR performance KPI to ensure strategy is implemented and monitor as well as improve their performance. Amongst this KPI are the training hours of the employees, Employment Type Percentage and percentage of employed workforce depending on certain categories.

D. Community Welfare:

In this pillar, Jumeirah aims give back to the community. They wish to help and be part of community improvement as part of their corporate social responsibility. Jumeirah has given support to the international arts community and educational institutions to let others be given the opportunity and to know the importance of arts and education. Further they have established a residential and day care facility for children with special needs. They aim to expand this Senses School to reach as many children and offer them the best quality of services. They have a KPI to know the number of enrollees which let them know how well their services are.

E. Resource Conservation:

In this last pillar and as part of Jumeirah's sustainability strategy as mentioned earlier in the pillar for environment protection, they further aim to conserve the main resources namely the water, electricity, gas and fuel. In line with that, the associated cost and other process will be improved. Certain KPIs have been assigned to report and monitor their yearly consumption thereby demonstrating their improvements overtime.

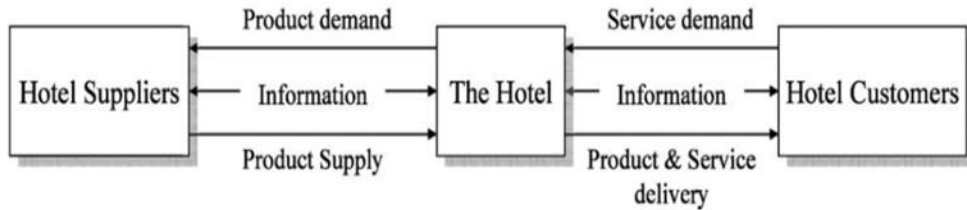
In conclusion the study of indicators used at the Jumeirah group can be clearly classified under the IOP framework, however the process of selection of best set of indicators is not visible in the implementation phase.

3.4 International Group of Hotels

The InterContinental Hotels Group PLC. Or IHG in short is a multinational hospitality company based in Buckinghamshire, England. IHG has about 889,582 guest rooms and 977 hotels in almost 100 countries. It owns several brands, including InterContinental Hotels and Resorts in UAE which is considered one of its Luxurious brands. (IHG Hotels and Resorts, 2021). The IHG's purpos is to create brilliant and memorable experiences for the guests by caring about, recognizing and respecting their needs; they would go to great lengths to ensure that every guest feels comfortable and cared for. They encourage and train promising talents in the hospitality industry to help enhance customers' experience. (IHG Hotels and Resorts, 2021)

Designing Key Indicators:

A basic hotel supply chain would consist of products or services transferring from suppliers to the hotel and those inputs be used to offer hospitality services to the hotel guests, and it can be presented as such:

Figure 1. Hotel Supply Chain

Source: Awadallah and Saad, 2017

After identifying the three levels of the supply chain and the value-adding processes, the next step of performance measurement will be assigning process indicators to each level in order to maintain certain levels of quality and practice continuous improvement.

Initial (Input) Indicators:

IHG has divided its suppliers into four procurement divisions which are: Marketing, Hotel, Corporate, and Global Technology. In this report, the focus will be on the Hotel division which is responsible for the procurement of food, beverages, non-food materials, engineering services, and hotel utilities (InterContinental Hotels Group, 2021). The following table demonstrates a possible set of indicators categorized by process dimensions with representation targets and indicators.

Table 2. Indicators to Measure IHG's Suppliers' Performance

Dimensions	Representation-target	Indicators
Quality	Produce freshness	Percentage of spoiled orders
	Beverage freshness	Number of days left until expiration of received batch
	Utility reliability	Number of times maintenance was called-in for utilities provided by suppliers
	Conformance to order specifications	Percentage of faulty or mistaken orders
Speed	Ordering process time	Time taken between ordering online and receiving the order
	On-time deliveries	Percentage of deliveries that were on-time
Cost	Cost of products	Total cost of products supplied
	Cost of services	Total cost of services provided by supplier
	Maintenance costs	Total cost of maintenance on utilities provided by supplier

Source: Own study.

These indicators can be used to control the quality of input materials, reduce costs and to make sure that suppliers adhere to time targets. In a luxurious hotel, it is important to search for ways to reduce input costs without jeopardizing the quality of the food provided in the restaurants, the room service or the performance of

utilities in guest rooms. Therefore, it is crucial to measure and manage the performance of key suppliers with a similar performance management system that centers on quality and promotes continuous improvement in both procured products and services. By knowing how their performance is measured, suppliers can quickly identify root problems in their services, eliminate them and improve on their processes (Bryce, 2018).

Intermediate (Process) Indicators:

IHG offers reservation services that allow customers the freedom of choosing their hotel brand preference, in any location worldwide, with special offers and packages on both their website and new IHG App. Customers can also edit their reservations at any point in time before the time of their arrival (InterContinental Hotels Group, 2021). Jasinskis, et.al. (2016) found that technical quality is defined in literature as what the customer receives during their stay in the hotel. Guests in a hotel usually receive accommodation, whereas restaurant visitor receive food. Technical quality is often related to measures of material and technology which are determined by the quality of the goods provided by the hotel.

However, a customer’s opinion of the technical services is also influenced by the manner in which those technical services are presented to them; the attitude of service providers, attention to detail, politeness and ability to find quick solutions to problems faced by customers during their stay in the hotel (Jasinskis *et al.*, 2016).

Table 3 demonstrates a set of possible indicators of IHG’s booking and room-service processes categorized by process dimensions with representation targets and indicators:

Table 3. Indicators to Measure IHG’s Booking and Room-service Processes Performance

Process Dimensions	Representation-target	Indicators
Reach	Network	Number of hotels per one Emirate in the UAE
	Network variety	Number of channels available for customers to book
Speed	Front desk service time	Average time taken by receptionist to complete room reservation service
	Check-in service time	Average time taken to check in guests (greeting, registration and room cleaning)
	Check-out service time	Average time taken to check out guests (greeting, registration and room cleaning)
	Room servicing time	Average time taken to fulfill room service orders
	Operational costs	Paid costs of equipment and Cleaning services Total paid salaries of hotel staff
Features	Easiness of using online website and App	Level of easiness from a scale of 1 to 5 (Customer rating)

	Customer satisfaction with service staff	Percentage of customer complaints from total given services
	Employee knowledge	Number of completed hospitality courses taken by each employee in a year

Source: Own study.

Final (Output) indicators:

For IHG to measure how well they have been working towards the goal of giving customers excellent and unforgettable experience, they can use the following indicators of process outputs.

Table 4. Indicators to Measure IHG's Service Processes Outputs

Dimensions	Representation-target	Indicators
Hotel Turnover	Number of bookings	Total number of successful guest bookings
	Customer retention	Percentage increase in customer retention
Loyalty	IHG loyal customers	Percentage increase in loyalty program membership holders
Customer Satisfaction	Positive reviews	Percentage of positive IHG reviews

Source: Own study.

Measure of Indicators' Impact and Basic Properties:

The above set of indicators comply with the various properties as shown below:

- **Exhaustiveness:** All the selected indicators need not be further distinguished or detailed by other indicators because they either measure the conformance or non-conformance of the measure rather than a broad count.
- **Non-redundancy:** None of the suggested indicators are redundant, and each one is crucial for representing the process performance and allows IHG to identify points of improvement.
- **Monotony:** The fluctuation of each basic indicator in the set whether an increase or a decrease corresponds with their derived indicators.
- **Compensation:** The changes in the selected basic indicators compensate for each other and will not make the value of the derived indicators change.

Overall, the mentioned sets of indicators show that IHG's performance measurement system is more simplistic and with easy to collect data for, which will increase employees' engagement in measuring and improving the company's performance. But the reward and recognition system is missing in the performance measurement system of IHG group.

3.5 Al-Futtaim Group

Al Futtaim Group of company is a large conglomerate of more than 200 international companies formed in 1930 at Dubai (Al-Futtaim Group, 2021). The company has more than 42,000 employees serving in different continents in more than 20 countries around the world. The group does not specialize in any one sector but serves a multitude of sectors by investing in various opportunities around the world. The major industries of operation for Al-Futtaim are the automotive industry, financial services, real estate, retail, and health (Al-Futtaim Group, 2021).

The purpose of the group is to provide relentless support and care to its customers around the world providing them with the most high-quality products and services that enrich their experience. The group values “Respect, Excellence, Collaboration and Integrity” in its operations and dealings around the world. Al-Futtaim group takes corporate social responsibility very seriously and strive hard to adopt sustainable practices. The group has had great success in its growth and expansion activities, but the main goal for the group is not to only benefit itself, but the people and environment are among the most important areas that attracts the company’s focus (Al-Futtaim Group, 2021).

The Al-Futtaim group serves a multitude of businesses and more than 200 companies worldwide that include automotive industry, retail including large department stores, health services, financial services with several large banks and insurance companies, and real estate. As such, it is impossible to combine KPIs from several different industries into a single KPI, and for the purpose of this paper, we chose to analyze the large automotive sector serviced by the group.

Al-Futtaim performs large scale operations in the automotive industry including manufacturing, services, aftersales, distribution, logistics, and financial services like leasing and insurance. The first step in finding out the performance indicators of quality is the process identification (Parmenter, 2015). The process identification helps to outline all the different aspects involved in a process. The different important processes must be identified and categorized first.

Indicators of quality of materials/services – Inputs:

The inputs of the automotive industry are its raw material, input capital, the design of the vehicles, the human resources, and the technology required to manufacture the cars. The raw materials of the automotive industry come from its suppliers and each part usually have different suppliers. The quality of the incoming raw material is tested through various tests performed on receiving the materials.

Any fault in the starting stage of the manufacturing will lead to this fault travelling through the whole process and doing a lot of quality damage. The first quality indicator is the quality of incoming raw materials measured through quality tests, like heat and pressure tests, crack, and flexibility testing, etc. The second is the

virtual design of the target car. The design of the car is an input that is fed to the computers and employees to make the desired car. The design of the car must be according to the specifications and requirements of the consumer. It would be a good measure to know how much the design of the car is in accordance with customer aspirations. The second quality measure is the design specification of the car.

The next, and vital, input to the car manufacturing process is the human resources. The different dimensions of HR cannot be measured through a single KPI. The first is the skill of the employees, then the motivation and happiness, and the quality of leadership in the plant. The three indicators would be HR skill, HR motivation, and Leadership Quality at the plant. The measurement of these variables will grant insight into the quality of the finished product and the company can see if anything is below or above the required threshold.

Indicators of Quality of process state:

The indicators of quality for the process state involve the measure of those processes that are performed from the start of manufacturing to the product completion phase. The important part in this stage is that the car is built according to the required characteristics, attributes, design, performance, and quality. Important indicators at this point are the time required to finish a process, the number of cars made per day in a plant, the cost required per car per processes, idle time of factory, setup time for processes, training and learning time invested in HR, percentage of plant capacity utilized, breakdowns and inventory stockouts.

Indicators of Quality of output Framework:

The indicators at the output stage measure how well the car has been built according to the set objectives by the firm. The quality of a finished product may be measured by performing multiple tests on the product. These can include the mileage or fuel efficiency of the car, its design and technical features, its comfort, pollution emissions, and the performance in a road test for braking, steering, handling, acceleration, resilience under maximum torque, corner performance (for turning around corners), wheel balancing and vibrations.

Conclusion:

The key performance indicators in a company play a crucial role in determining its success in the market. The modern competitive markets are based on smart customers that measure various aspects of the final product and service before making a final purchase decision. The key goal of the company is to deliver the best performance and the most accurate product specifications to the consumer without compromising on the quality. The various faulty indicators used in the automotive industry can help companies like the AI-Futtaim Group to consolidate their position in the market and make continuous improvements in their products and services. However, the best set of indicators should be selected based on the indicator properties of uniqueness, non-redundancy, usefulness, compatibility, and being economically viable.

3.6 GEMS Education

As defined by the gurus of Quality such as Deming, Juran, and Ishikawa, “Total quality management (TQM) is a management approach that was established in the 1950s to seek sources of continuous motion of improvement to provide quality products and services to customers or clients” (Zehir, Ertosun, Zehir, and Muceldilli, 2012). In the last three decades, the education industry has recognized the need for quality excellence and has adopted TQM techniques to enhance their processes and quality of services.

As defined in a study from 2015, “There are quite a number of areas in education which can be a source of quality. Amongst these can be excellent examination results, outstanding teachers, well balanced and challenging curriculum, and application of latest technology, strong and purposeful leadership and plentiful resources” (Nawelwa, Sichinsambwe, and Mwanza, 2015). Performance measurement is a concept of TQM which fundamentally enables organizations to identify performance gaps and links a connection between organization strategy and management actions (Muchiri, Pintelon, Gelders, and Martin, 2010).

Moreover, performance and quality, as studies show, are directly impacted by process management. The reason being that the final product or service quality depends highly on the series of steps that were followed to produce the product or service. Thus, process management aims at enhancing manufacturing processes and augmenting product quality. (Zehir, Ertosun, Zehir, and Muceldilli, 2012).

Input indicators:

In the education industry, input indicators are used to measure the resources that are utilized to achieve school objectives such as providing good and valuable education to pupils and achieving parent satisfaction with the provided educational services. GEMS Education is accredited by New England Association of Schools and Colleges (NEASC) and GEMS schools strictly abide by education standards enforced by NEASC.

As a result, GEMS Education group meticulously divides its input indicators into five types based on the 5Ms of management: money, materials, machinery, manpower and methods. First, information is gathered on the activity and indicators evaluate how the resources are exploited at the beginning of the value chain. These include financial resources such as funds, students on scholarships, and tuition costs; physical resources such as teaching supplies, equipment, physical facilities, classrooms, and school buildings; and raw material procurement such as number of uniforms, textbooks, whiteboards, and stationery; and human resource such as number of teachers, supervisors, counsellors and nurses.

Last, indicators also indicate the organizational performance at the input stage based on the structure of the organization and strategies implemented, and how plans will

be transformed into actions and results (OECD, 2019; Ogawa and Collom, 1998). All of these indicators in place enables GEMS schools to determine the progress and performance of the input stage. For instance, indicator of construction costs will signify how much funds are expended to set up school buildings in order to provide good quality facilities.

Similarly, the level of qualifications of educators will denote the quality of education that will be delivered through skilled teachers and the level of MIS implemented at schools indicates whether the schools are modern and advanced rather than backward and lack use of technology. Table 5 shows these input indicators.

Table 5. *Input indicators at GEMS education*

Dimension	Representation target	Indicator
Money	Cost & Expenditure	<ul style="list-style-type: none"> • Construction costs • Salaries of Educators and other staff • Legal and marketing costs
Materials	Educational Resources	<ul style="list-style-type: none"> • Number of uniforms & textbooks • No. of stationery, chairs, desks procured
Machinery	Infrastructure & Technology	<ul style="list-style-type: none"> • Level of IT/MIS implemented • Physical systems/smart systems
Manpower	Teachers	<ul style="list-style-type: none"> • Qualification of executive team • Qualification of educators
Methods	Strategy & Curriculum	<ul style="list-style-type: none"> • Organization structure & hierarchy • Code of conduct • Design of Curriculum

Source: Own study.

Process indicators:

In the education industry, intermediate indicators link the input indicators with the output of the entire education process by taking into account how the process is designed, who is responsible for each step and what could be the areas of concern. At GEMS Education, intermediate indicators determine how the process of providing education by schools is conducted and the extent of quality standards followed. They are usually measured and obtained through qualitative approaches and physical observations (Learning Portal, 2019).

Process Indicators at GEMS schools assess the effectiveness of school policies, academic calendar, code of conduct, and design of the curriculum. These indicators aid schools to monitor processes by studying how effectively education is provided and whether the activities performed constitute to the overall school objectives and goals. Following are a few examples of standards and indicators set by NEASC which are followed by GEMS Schools (NEASC, 2014). As seen in Table 6, the indicators from each category are aimed at evaluating routine performance and are useful to identify gaps between desired and actual results.

Table 6. *Process indicators at GEMS education*

Standard	Indicator
Curriculum Design	<ul style="list-style-type: none"> • The structure of curriculum and course development with respect to curriculum. • Alignment of taught curriculum with stated curriculum. • The extent to which curriculum design is effective in student learning experience.
Admission	<ul style="list-style-type: none"> • Number of new admissions registered per year • Maintaining a set of admission requirements in accordance with ministry standards • The school's promotional activities are aligned with the actual services provided
Teaching & Learning Guidelines	<ul style="list-style-type: none"> • Teaching methods are in accordance to ministry regulations and teaching techniques varied and depended upon different courses and special students. Also, student to teacher ratios. • Number of periods per day, class sizes, and class durations. • Method of assessments and grading system reflect students' learning
Support Materials	<ul style="list-style-type: none"> • Use of adequate teaching materials and distribution of textbooks • Access to student learning material such as case studies and library • Number of extracurricular activities per semester

Source: Own study.

Output indicators:

In the education industry, output indicators enable the management to appraise how well the education system is performing and progressing and the relevant effects of the services provided such as employee and parent satisfaction, graduate rates, merit rates, and student assessments. (Porter, 1991) At GEMS Education, output indicators are essential to assess the success of the school in delivering quality education, and this is reflected by measuring the students' literacy rate, graduation rates, fail rates, students' IQ and EQ levels, and teacher turnover rate.

Conclusion:

The performance measurement system at GEMS education has adequate indicators to capture the performance of the processes as per the IOP framework. However, change management and reward and recognition system is lacking.

4. Discussion

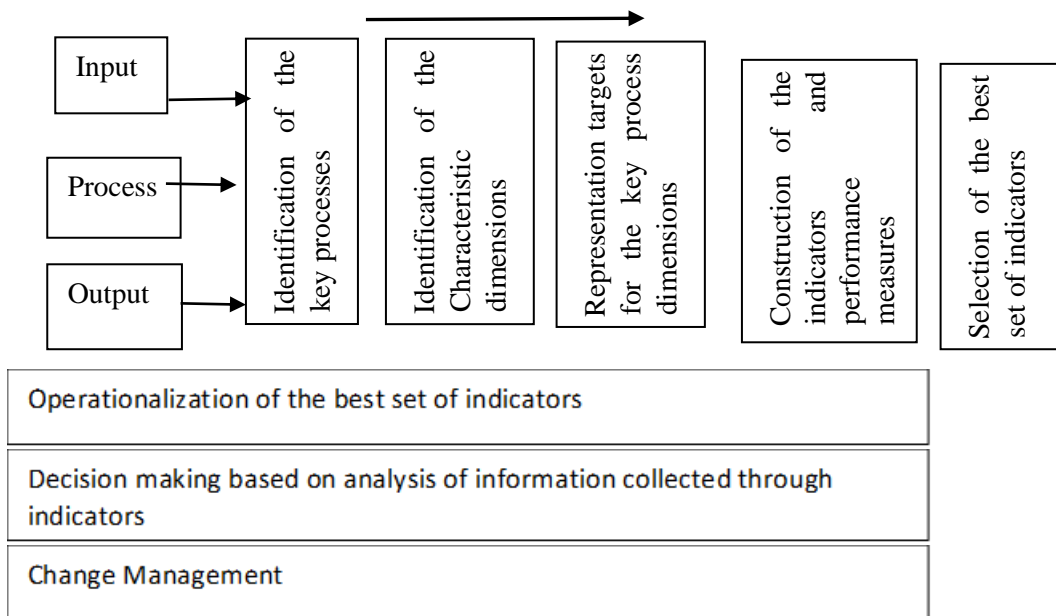
From the discussion of the 6 different organizations in the UAE, it can be concluded that the selection of the performance indicators in some organizations is not based on the best set of properties of the indicators. In some other organizations, they lack the change management that is required with the implementation of the best set of indicators for organizational effectiveness. The reward and recognition system is

also missing in some other organizations to complement the entire performance measurement system.

4.1 The Conceptual Framework

Based on the study of these UAE based organizations and the identified gaps, a conceptual model as shown below has been developed. Our descriptive model treats performance measurement as an integrated system, based on the TQM philosophy of continuous improvement cycles. The identification of suitable processes in the input, process and output framework has to be done first. The process of indicator construction then follows through a series of systematic steps starting with the identification of characteristic dimensions, representation targets for the identified process dimensions and then leading up to the selection of best set of indicators.

Figure 2. *Conceptual framework of performance measurement for organizational effectiveness*



Operationalization of the selected indicators would then result in performance measurement. Analysis of the information would result in appropriate decision making and then change management would be required. The need to accept change in performance measurement is especially important in organisations that have implemented TQM, where responsiveness to changing customer requirements is paramount. The reward and recognition systems were rather poorly integrated in our case study organisations. The application of such modelling techniques to their own organisations may perhaps help managers to maintain a consistent level of

integration, ensuring that all elements contribute to overall success and organization effectiveness.

5. Conclusion

In conclusion, the above study has reviewed the performance measurement based on the Input-process-output framework and its application in the 6 UAE based organizations. The study shows how the performance measurement system plays role in quality enhancement in these various organizations. However, certain gaps have been identified in the implementation of these performance measurement systems. To bridge the identified gaps, a conceptual framework has been developed. This can enhance better implementation of performance measurement system, thereby enhancing quality improvement and organizational effectiveness. Though the model has been developed with the study of UAE based organizations, however future research can be extended to other geographical areas as well.

References:

- Al-Futtaim Group. 2021. About Us. <https://www.alfuttaim.com/about-us/>.
- Al-Futtaim Group. 2021. Corporate Social Responsibility (CSR). <https://www.alfuttaim.com/about-us/csr-sustainability/>.
- Al Nuseirat, A.A., El Kahlout, Z.M., Abbas, A., Adebajo, D., Punnakitikashem, P., Mann, R. 2019. An analysis of a structured benchmarking project: The case of Dubai Electricity and Water Authority's benchmarking project. *Benchmarking: An International Journal*, 26(5), 1431-1450.
- Awadallah, N., Saad, S.G. 2017. E-Procurement as a New Trend in Hospitality Industry: A Descriptive Study in Egyptian Hotels. *Journal of Hotel & Business Management*, 6(2).
- Bacoup, P., Michel, C., Habchi, G., Pralus, M. 2018. From a quality management system (QMS) to a lean quality management system (LQMS). *The TQM Journal*, 30(1), 20-42.
- Baird, K. 2017. The effectiveness of strategic performance measurement systems. *International journal of productivity and performance management*, 66(1), 3-21.
- Bateman, R., Majdalawieh, M. 2009. Megaprojects and risk management: Emaar Properties. *International Journal of Teaching and Case Studies*, 2(1), 56-75. <http://dx.doi.org/10.1504/IJTCS.2009.026299>.
- Bryce, I. 2018. How to track the performance of your key vendors. Retrieved from Gatekeeper: <https://www.gatekeeperhq.com/blog/how-to-track-the-performance-of-your-key-vendors>.
- Cayzer, S., Griffiths, P., Beghetto, V. 2017. Design of indicators for measuring product performance in the circular economy. *International Journal of Sustainable Engineering*, 10(4-5), 289-298.
- Construction Week. 2020. Emaar: "significant steps to control costs" with \$282m profit for H1 2020. <https://www.constructionweekonline.com/business/266534-emaar-significant-steps-to-control-costs-with-282m-profit-for-h1-2020>.
- David, R., Jenson, J.E. 2014. Study on performance measurement systems – Measures and Metrics. *International Journal of Scientific and Research Publications*, 4(9), 1-9. <http://www.ijsrp.org/research-paper-0914/ijsrp-p33102.pdf>.

- Dubai Electricity and Water Authority. 2021a. DEWA receives highest score worldwide of 99.7% in the International Customer Experience Standard. <https://www.dewa.gov.ae/en/about-us/media-publications/latest-news/2021/02/dewa-receives-highest-score-worldwide-of-997-in-the-international-customer-experience-standard>.
- Dubai Electricity and Water Authority. 2021b. DEWA's robust infrastructure is a key element of Dubai's development. <https://www.dewa.gov.ae/en/about-us/media-publications/latest-news/2020/02/dewas-robust-infrastructure-is-a-key-element-of-dubais-development>.
- Dubai Electricity and Water Authority. 2021c. The R&D center enhances DEWA's leadership and excellence through Tatweer collaboration Programme. <https://www.dewa.gov.ae/en/about-us/media-publications/latest-news/2021/07/the-rd-centre-enhances-dewas-leadership>.
- Dubai Electricity and Water Authority. 2021d. Connection process. <https://www.dewa.gov.ae/en/consumer/solar-community/connection-process>.
- Dubai Electricity and Water Authority. 2021e. DEWA receives ISO 10004: 2012 certificate for customer satisfaction. <https://www.dewa.gov.ae/en/about-us/media-publications/latest-news/2016/08/dewa-receives-iso>
- El Khatib, M., Al Zeyoudi, A., Shaqar, S.B. 2020. The Influence of Integrating ISO and TQM on Project Risk Management. *American Journal of Industrial and Business Management*, 10(12), 1886.
- Emaar Properties. 2020. Emaar Partners With Global Technology Leader Xiaomi For 'Emaar Smart Home'. <https://properties.emaar.com/en/press-release-listing/emaar-smart-home/>.
- Emaar Properties. 2021a. About Emaar. <https://properties.emaar.com/en/about-emaar/>.
- Emaar Properties. 2021b. Careers. <https://properties.emaar.com/en/careers/>.
- Emaar Properties. 2021c. Upholding the Highest Standards in Environmental Sustainability. <https://properties.emaar.com/en/about-emaar/environmental-policy/>.
- Franceschini, F., Galetto, M., Maisano, D. 2010. *Management by Measurement: Designing Key Indicators and Performance Measurement Systems* (1st ed.). London: Springer.
- GEMS Education. 2020. About Our Company. Retrieved from GEMS Education: <https://www.gemseducation.com/organisation/about-us/our-company/>.
- Goshu, Y.Y., Kitaw, D. 2017. Performance measurement and its recent challenge: A literature review. *International Journal of Business Performance Management*, 18(4), 381-402. <http://dx.doi.org/10.1504/IJBPM.2017.087103>.
- IBM Corporation. 2019. Emaar Properties PJSC. Retrieved from: ibm.com/case-studies/emaar-properties-gbs.
- IHG Hotels & Resorts. 2021a. About Us. Retrieved from: IHG Hotels & Resorts: <https://www.ihgplc.com/about-us>.
- IHG Hotels & Resorts. 2021b. Our purpose and culture. Retrieved from: IHG Hotels & Resorts: <https://www.ihgplc.com/en/about-us/our-purpose-and-culture>.
- InterContinental Hotels Group. 2020. IHG Supplier Code of Conduct. Retrieved from: IHG Hotels & Resorts: https://www.ihgplc.com/media/ihg/files/pdf/policies/en_supplier_code_of_conduct_feb2020.pdf?la=en&hash=7310809AF0B0142161BB75842496440D.
- InterContinental Hotels Group. 2021a. Suppliers. Retrieved from: IHG Hotels & Resorts: <https://www.ihgplc.com/business/suppliers>.
- InterContinental Hotels Group. 2021b. Planning & reservations. Retrieved from: IHG Hotels & Resorts: <https://www.ihg.com/content/us/en/reservations>.

- International, J. 2020. About Jumeirah. Retrieved from: <https://www.jumeirah.com/en/jumeirah-group/about-jumeirah>.
- Ivanov, C.I., Avasilcăi, S. 2014. Performance measurement models: an analysis for measuring innovation processes performance. *Procedia - Social and Behavioral Sciences*, 124, 397-404. <http://doi.org/10.1016/j.sbspro.2014.02.501>.
- Jasinskas, E., Streimikiene, D., Svagzdiene, B., Simanavicius, A. 2016. Impact of hotel service quality on the loyalty of customers. *Economic Research-Ekonomska Istraživanja*, 29(1), 559-572. doi:10.1080/1331677X.2016.1177465.
- Jumeirah Group. 2013. Sustainability Report, 34.
- KPI.ORG. 2021. Retrieved from: What is a Key Performance Indicator (KPI)? <https://kpi.org/KPI-Basics>.
- Learning Portal. 2019. Quality and learning indicators. Retrieved from [Unesco International Institute for Educational Planning: https://learningportal.iiep.unesco.org/en/issue-briefs/monitor-learning/quality-and-learning-indicators#:~:text=Input%20indicators%3A%20primarily%20measure%20the,all%20levels%20of%20the%20system](https://learningportal.iiep.unesco.org/en/issue-briefs/monitor-learning/quality-and-learning-indicators#:~:text=Input%20indicators%3A%20primarily%20measure%20the,all%20levels%20of%20the%20system).
- MacCuspie, R.I., Hyman, H., Yakymyshyn, C., Srinivasan, S.S., Dhau, J., Drake, C. 2014. A framework for identifying performance targets for sustainable nanomaterials. *Sustainable Materials and Technologies*, 1-2, 17-25. <https://doi.org/10.1016/j.susmat.2014.11.003>.
- Markić, D. 2014. A Review on the Use of Performance Indicators in the Public Sector. *TEM Journal*, 3(1), 22-28.
- Micheli, P., Mura, M. 2017. Executing strategy through comprehensive performance measurement systems. *International Journal of Operations & Production Management*, 37(4), 423-443.
- Muchiri, P., Pintelon, L., Gelders, L., Martin, H. 2010. Development of Maintenance Function Performance Measurement Framework and Indicators. *International Journal of Production Economics*, 131(1), 295-302.
- Nawelwa, J., Sichinsambwe, C., Mwanza, G.B. 2015. An Analysis of Total Quality Management (TQM) Practices in Zambian Secondary Schools. *The TQM Journal*, 27(6), 716-731.
- NEASC. 2014. Journey to Excellence in International Education - Standards and Indicators. New England Association of Schools & Colleges. Retrieved from New England Association of Schools & Colleges.
- OECD. 2019. Introduction: The indicators and their framework. Retrieved from OECD iLibrary: oecd-ilibrary.org/sites/f8ed1a29-en/index.html?itemId=/content/component/f8ed1a29-en.
- Ogawa, R.T., Collom, E. 1998. *Educational Indicators: What Are They? How Can Schools and School Districts Use Them?* University of California, Riverside: California Educational Research Cooperative (CERC).
- Parmenter, D. 2015. *Key performance indicators: developing, implementing, and using winning KPIs*. John Wiley & Sons UK.
- Parsons, J., Gokey, C., Thornton, M. 2013. *Indicators of Inputs, Activities, Outputs, Outcomes & Impacts*. UK: Department for International Development.
- Porter, A.C. 1991. Creating a System of School Process Indicators. *Educational Evaluation and Policy Analysis*, 13(1), 13-29.
- Pinna, C., Demartini, M., Tonelli, F., Terzi, S. 2018. How soft drink supply chains drivesustainability: Key performance indicators (KPIs) identification. *Procedia CIRP*, 72, 862-867.

-
- Striteska, M., Jelinkova, L. 2015. Strategic Performance Management with Focus on the Customer. *Procedia - Social and Behavioral Sciences*, 2010(2015), 66-76.
- Sreenivas, S. 2018. Emaar implements DCT's Dubai Way training programme for employees. *Hotelier Middle East*.
<https://www.hoteliermiddleeast.com/people/33359-emaar-implements-dcts-dubai-way-training-programme-for-employees>.
- Vos, R. 1996. *Educational Indicators: What's To Be Measured?* Washington DC: Inter - American Development Bank.
- Yadav, N., Sushil Sagar, M. 2013. Performance measurement and management frameworks: Research trends of the last two decades. *Business Process Management Journal*, 19(6), 947-971. <http://dx.doi.org/10.1108/BPMJ-01-2013-0003>.
- Yuliansyah, Y., Khan, A., Fadhilah, A. 2019. Strategic performance measurement system, firm capabilities and customer-focused strategy. *Pacific Accounting Review*, 31(2), 288-307.
- Zehir, C., Ertosun, G.Ö., Zehir, S., Müceldilli, B. 2012. Total Quality Management Practices' Effects on Quality Performance and Innovative Performance. *Total Quality Management Practices' Effects on Quality Performance and Innovative Performance*. Kocaeli, Turkey: Elsevier Ltd.