

An Interpretive Structural Modelling Approach to Analyse Interaction between Performance Management Factors in the Current Business Ecosystem

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Abstract

This paper presents an overview on the change in the dynamics of the Performance Management process in the current business ecosystem which is majorly by technology in the post pandemic era. Be it work from home or Hybrid work options at the work place, every factor of Performance Management structure is critically analysed in this study and inter-dependencies of these factors in today's virtual business ecosystem is highlighted too. A total of 7 critical elements of performance management were identified basis the critical literature review and through discussion and brainstorming sessions with managers and employee representatives and structured using pair-wise comparison. Structural and reachability matrices were formed and yielded a level of influence of each factor through Interpretive Structural Modelling (ISM) approach. MICMAC analysis was conducted to determine the dependency and driving power of these elements. The present study can be differentiated from the past studies on identified Performance Management as factors like Biasness of Manager and Relatable Past Performance which do play a critical role in evaluation but has not been extensively categorised in the framework earlier. This will help the managers, researchers and organizational specialists to encompass overall factors in assessing the performance of their teams without any biasness.

Keywords

Performance Management, Feedback, Skills, Incentives, Bias, ISM

1. Introduction

In the current unprecedented times of pandemic, it has become essential for the organisations to adapt and manoeuver through this critical phase by keeping their workforce aligned with the strategic objectives of the enterprise. Performance management as a corporate management tool helps managers in evaluating and monitoring employees' tasks. Performance management's objective is to create an environment where people can perform to their optimum best and perform the highest-quality work efficiently and effectively. It also helps managers and employees to discuss and set expectations, goals, and assess how individuals' work aligns with the company's overall vision (Tardi 2021).

Organisations across industries are now moving towards a digital business environment, expanding their reach across different geographies and serving client needs that require digital innovation and transformation. Hence in these times, a performance management contour that fits in strategically and culturally for an organisation is indispensable. Though the workplace has now grown more analytical and enterprise technologies and tools have drastically improved but Performance Management (PM) as a process has not changed in that manner and has

not kept pace with the enterprise changes. Complaints related to the PM process such as rigidity, opacity, unfairness, arbitrariness, and an inherent backward-looking bias — persists (MIT Sloan review, 2019).

In the last few years, organizations are consistently changing the way they assess, recognize and evaluate employees' performance & so continuous performance management practices are being adhered to widely. New methods and practices are becoming clearer and standardized, and have effectively started working well like Agile goal management, frequent check-ins, continuous feedback are becoming more common, and new models of evaluation and rewards are being adopted as well (Solan et al. 2017). Experts in the area of human resource management define appraisal in different ways depending on their approach to this concept. The performance evaluation or appraisal of employees is seen as an activity, a process or system which concerns the relationship between the employee and his supervisor. Currently, other processes, activities or links are perceived as bureaucratic and burdensome procedures, based on fairly demanding paperwork, and from the perspective of management is more about emphasizing their superior power over subordinates (Lidinska and Jablonsky 2017). Traditional Performance Management that involved a process of non-frequent one-time yearly appraisal and goal setting combined with annual feedback and ratings to fit in the matrix is not an inclusive method. Such approach has been mired with limitations and in series of interviews and interaction with key leaders suggested specific key challenges which are inhibiting the effectiveness of performance management within the public sector like lack of clarity around the strategy and plan, delayed feedback processes, confusion regarding collective agreements, and limited Performance Incentives (Morican 2015).

Hence, the objective of this paper is to identify critical factors in the performance management process that would enable alignment with the strategic objectives of the organisation, provide clarity around the feedback process, brings fairness and transparency in the PM process in the current virtual business ecosystem. Also to understand inter-dependencies of these factors in today's business ecosystem through the application of Interpretive Structural Modeling (ISM).

Performance Management as a process is steadily getting re-aligned to the new-age companies and it's operations. The workforce of today needs faster results and consistent reviews of their work as it can certainly keep them aligned to their tasks set out by the leadership. Hence, through this paper the factors that keep the PM process still relevant is discussed in detail and their inter-relationship is established.

1.1 Objectives

To identify critical factors in the Performance Management (PM) process and understand inter-dependencies of PM factors in today's virtual business ecosystem. Also the present study can be differentiated from the past studies on identified Performance Management as factors like Biasness of Manager and Relatable Past Performance which do play a critical role in evaluation but has not been extensively categorised in the framework earlier. This will help the managers, researchers and organizational specialists to encompass overall factors in assessing the performance of their teams without any biasness.

2. Identification of Performance Management Factors

In this paper to identify the critical performance management factor, a thorough critical literature review was conducted, and through discussion and brainstorming sessions with industry experts, a total of 7 elements of performance management were identified and considered for this study. In this exercise, a total of 5 (five) experts were consulted. Each expert has more than 10 years of experience and was candid enough to share their views and opinions in identifying the factors and then highlighting the relationship between the variables. The factors for the research and study areas:

2.1 V- Virtues

Virtues are the Skills and abilities of the team members. Skill is a term that encompasses the knowledge, competencies, and abilities to perform operational tasks. Skills can be developed through training and learning and also through work experiences. Depending on the industries there are different types of skills/virtues needed based on factors like dexterity, physical abilities, and intelligence (Indeed 2021).

Hence virtues would certainly be different for teams across industries and would vary depending upon the experiences of each employee.

2.2 I-Incentivize

Incentives related to the performance of an employee and the motivation associated with the quantum of incentives is a well know linkage however with pandemic situations organisations need to re-think their

incentive strategy. Companies are forced to make changes in staffing, operations, supply chain, long term, and short-term plans. Organisations are re-setting business plans and priorities in response to the pandemic, compensation committees and senior management teams also began to assess the pandemic's impact on their incentive plans—both what had happened and what may yet happen (Kesner et al. 2021). The current workforce considers work-life balance over job security and in the current situation, this has been a critical factor for the employees. (French 2018). Working from home is no longer a luxury but instead a requirement. Employers may need to provide new types of benefits, especially programs that provide more flexibility to work from anywhere and security, to bring their workforce back once the pandemic settles. Flexibility to manage child care and otherwise too is an imperative (Sammer 2020).

2.3 B-Biasness in evaluation

Common prejudices in evaluation like Gender, Race & Age discrimination, Stereotypical approach, lack of acknowledgment of technical expertise, Central tendency bias, Recency bias, Spillover bias, leads to demotivation and certainly hits the productivity and quality standard of the deliverables (Aguinis 2013). Hence, the evaluator must take the holistic assessment of the team. Managers should prioritize the team's objectives rather than the individual-specific aspirations. Performance, team effectiveness, and value creation should always be prioritized during the evaluation

An Evaluator/Manager should be trained about effectively trained to be made aware of the biasness (Intentional or Unintentional biases) which can seep into the assessment. This is critical to make them conscious of the inadequacies that can rise out of biasness and its impact on team and project.

A biased free and conscious evaluation will build trust for the employee and look towards the process with seriousness for personal development and skill enhancement. An organisation should take the onus of educating, training, and enlightening the experienced and new team leaders of all the biases that may encounter and can seep into the evaluation. This will make the evaluation and assessment more effective and productive for the individual and the organisation as a whole. Through training, the implicitly biased decisions would reduce but it would not cease to exist. Bias exists. And learning about implicit bias can be a critical step in initiating behaviour change for some leaders, there is limited evidence that awareness alone is an antidote to the influence of implicit bias in evaluation (Ratcliff and Smith 2017)

2.4 G-Grading

For any manager quantification of an effort for meaningful measurement of performance by the team members is critical. Quantification will also help in assessing the value generated by the team members in their individual capacity, this is when the grading process will come to effect. Some organisations have points systems (1-5, 1 being Highly effective and 5 being least effective) approach, some have 20-70-10 adaption of grading (20% being the Top performers followed by 70% performers meeting the expectations and remaining 10% being the non-performers), 360-degree feedback approach is followed by some and forced rating in deadlocks can also be a way to grade and it persists in today's era.

The grading process which is followed without any two-way communication will not empower the teams or their members individually. Two-way communication between employees and the Manager/Team leader will facilitate transparent feedback and views for re-alignment to the goals and objectives of the teams. Hence, grading still plays a critical role in quantifying the performance which works well for comparisons for relatable past performance. Many enterprises have done away with the grading systems and looking for regular and consistent check-ins and continuous PM as an alternative (Nathan et al. 2017)

But also companies like Intel, Sun Communities, Medtronic, and many more are now getting the rating/grading process back as it created healthy competitions, clear outcomes, and documentation of formal feedbacks (Peter and Anna, 2016).

2.5 Y- Yardstick

Yardsticks are Goals, Visions, missions, or Norms that can help drive a team towards the set objective. It is important that the Yardsticks needs to be time-bound, measurable, and lucid to understand irrespective of being qualitative or quantitative. These yardsticks can be long-term or short-term curated tasks/projects but can only be the achievable basis of the consultation of employees and managers in tandem.

The frequency of setting these yardsticks should be more recurrent than a yearly process. This flexibility of not being driven only by a yearly process but consistently revised or setting a new yardstick within a year, makes it robust for all the critical stakeholders to be aware of the external factors which can impact the completion of the goal/task carved out. A rigid and long-term goal if not revisited or restricted would certainly miss the external political, financial, or even regulatory aspect of the yardstick. The cognizance of external factors can act as a cushion in making the yardstick more achievable and consistent with the environment in which it sustains.

2.6 O- Objective and Continuous Feedback

Today companies operate a network of teams, learning has become strategic, and hence the need to align goals, provide feedback, and coach for performance is real-time, continuous, and multi-directional (Nathan et al. 2017).

Discussion around capabilities and skill improvement, what to focus upon, and what to adopt is critical and hence Managers have to be objective in the feedback communication and this has to be a continuous process. A one-time feedback approach in a year during the evaluation period would not focus on the areas in a continuous way during the period which one could have improved upon and hence scope to improve and regular feedback will enhance the productivity of the project.

Documented feedback is a must for future references and will help in tracking the phases of improvement and will positively enrich the performance evaluation both for employees and managers. It has also been noted that a leader and team member's exchange of feedback also does play a significant role in increasing the satisfaction of the appraisal process conducted (Dusterhoff et al. 2014)

2.7 R- Relatable Past performance:

Areas of improvement, strengths, skills identified in the previous review cycle and their progress in the current review cycle is an important tool to compare and relate the individual's performance. For future assessments and personal development, this will also highlight the traits that an employee has honed or still needs to develop. Assessment of past performance reviews with current performance evaluation will help in creating a trend that would assist in tracking the performance improvement more objectively.

The PM-based system should guide through the previous data which can be relatable to an employee and notify the improvement trajectory. This measures the past performance with current and values the measurable difference. It can be tracked and fostered for a development and improvement perspective for an employee.

3. Methodology

The interpretive structural model (ISM) is an interactive and interpretive method in which the group's judgment decides whether and how items are related. ISM is structural because an overall structure is extracted from the relationships of the complex set of items and it portrays the specific relationships and the overall structure in a digraph model (Singh et al. 2007). ISM helps in identifying the interrelationships among variables. It is a suitable modeling technique for analyzing the influence of one variable on other variables. The method is interpretive as the judgment of the group decides whether and how the variables are related. It is structural as based on relationship, and overall structure is extracted from the complex set of variables. It is a modeling technique as the specific relationships and overall structure is portrayed in a digraph model (Ramesh et al. 2010). The model would depict order and direction on the complexity of relationships amongst the various elements, based on primacy, priority, and, cause and effect. (Sahney et al. 2010).

ISM acts as an appropriate tool in which a directed graph is generated after getting a hierarchical level of elements according to their importance. The advantage of using the ISM in this work is that the hierarchical level of indicators obtained shows the relative significance of each indicator (Gupta and Gandhi 2019). The basic idea of ISM is to capitalize on experts' expertise, practical experience, and knowledge to split and decompose a complex and complicated system into several sub-systems (elements) and construct a multilevel structural model which is comprehensive and holistic. ISM is often used to provide a fundamental understanding of complex situations, as well as to put together a course of action for solving a problem. Figure 2 presents the ISM methodology (Manoharan et al 2010).

The ISM methodology consists of the following important steps:

- (1) Development of structural self-interaction matrix (SSIM);
- (2) Construction of reachability matrix;
- (3) Carrying out level partitions;
- (4) Obtaining classification of factors; and
- (5) Formation of ISM (diagram)

3.1 Development of Structural Self-Interaction Matrix

Here, a contextual relationship of "leads to" is chosen. For developing contextual relationships among variables, the opinion of a total of 5 experts, 4 (four) from industry and 1 (one) from academia have been taken. For expressing the relationship between different critical Performance Management four symbols have been used to denote the direction of a relationship between the parameters i and j:

- (1) V – parameter I will lead to parameter j (A forward Relationship)

- (2) A – parameter j will lead to parameter I (A backward relationship)
- (3) X – parameters i and j will lead to each other (A mutual relationship) and
- (4) O – parameters i and j are unrelated (No relationship)

Based on contextual relationships the SSIM is developed in Table 1

Table 1. Structural Self Interaction Matrix (SSIM)

	Structural Self-Interaction Matrix (SSIM)						
	R	O	Y	G	B	I	V
V – Virtue (1)	X	X	X	X	O	V	X
I – Incentivize (2)	A	X	X	X	A	X	
B – Biasness (3)	V	V	V	V	X		
G – Grading (4)	A	X	X	X			
Y – Yardsticks (5)	X	X	X				
O – Feedback (6)	V	X					
R – Past performance (7)	X						

3.2 Construction of Reachability Matrix

The SSIM is converted into a binary matrix, called the reachability matrix by substituting V, A, X, and O by 1 and 0. The substitution of 1s and 0s are as per the following rules:

- If the (i, j) entry in the SSIM is V, the (i, j) entry in the reachability matrix becomes 1 and the (j, i) entry becomes 0.
- If the (i, j) entry in the SSIM is A, the (i, j) entry in the reachability matrix becomes 0 and the (j, i) entry becomes 1.
- If the (i, j) entry in the SSIM is X, the (i, j) entry in the reachability matrix becomes 1 and the (j, i) entry also becomes 1.
- If the (i, j) entry in the SSIM is O, the (i, j) entry in the reachability matrix becomes 0 and the (j, i) entry also becomes 0.

The initial reachability matrix for the factors is shown in Table 2, developed by using the above rules.

Final Reachability Matrix is established by taking into account the transitivity (highlighted by * mark) between the factors. The rule followed to establish transitivity is that if a factor A leads to another factor B and B leads to C, then factor A would lead to factor C as well.

Table 3 also highlights the driving power and dependence of each variable. Driving power for each variable is the total number of variables including itself, which it helps to achieve. Dependence power is the total number of variables including itself, which may help in achieving it. These driving power and dependencies will be later used in the classification of variables into the four groups: autonomous; dependent; linkage; and driver variables (independent).

Table 2. Initial Reachability Matrix

Elements	Initial Reachability Matrix (FRM)						
	V	I	B	G	Y	O	R
V	1	1	0	1	1	1	1
I	0	1	0	1	1	1	0
B	0	1	1	1	1	1	1
G	1	1	0	1	1	1	0
Y	1	1	0	1	1	1	1
O	1	1	0	1	1	1	1
R	1	1	0	1	1	0	1

Table 3. Final Reachability Matrix

Final Reachability Matrix (FRM)	Driving
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Elements	V	I	B	G	Y	O	R	Power
V	1	1	0	1	1	1	1	6
I	1*	1	0	1	1	1	0	5
B	0	1	1	1	1	1	1	6
G	1	1	0	1	1	1	0	5
Y	1	1	0	1	1	1	1	6
O	1	1	0	1	1	1	1	6
R	1	1	0	1	1	1*	1	6
Dependence Power	6	7	1	7	7	7	5	

3.3 Carrying out Level Partitions

In the Level Partitioning step, the reachability and antecedent sets (Warfield 1974) for each factor are found from the final reachability matrix. The reachability set consists of the element itself and other elements which it may help achieve, whereas the antecedent set consists of the element itself and the other elements which may help to achieve it this is based on the views and opinions of the experts as described previously in SSIM.

Then the intersection of these sets is derived for all elements. The element for which the reachability and intersection sets are the same is the top-level element in the ISM hierarchy. The top-level element of the hierarchy would not help achieve any other element above their own. Once the top-level element of the hierarchy is identified, it is separated from other elements. Then by following the same process, the next level of elements is found.

These identified levels help in building the digraph and final model. Factors found at level 1 would be positioned at the top of the ISM hierarchy (Ramesh et al. 2010). This iteration is repeated till the levels of each factor are found out as shown in Tables 3, 4, 5, 6, and 7. The identified levels help in building the final model of ISM.

Table 4. Iteration 1

Elements No	Reachability Set	Antecedent Set	Intersection	Level
1	1,2,4,5,6,7	1,2,4,5,6,7	1,2,4,5,6,7	I
2	1,2,4,5,6	1,2,3,4,5,6,7	1,2,4,5,6	I
3	2,3,4,5,6,7	3	3	
4	1,2,4,5,6	1,2,3,4,5,6,7	1,2,4,5,6	I
5	1,2,4,5,6,7	1,2,3,4,5,6,7	1,2,4,5,6,7	I
6	1,2,4,5,6,7	1,2,3,4,5,6,7	1,2,4,5,6,7	
7	1,2,4,5,6,7	1,3,5,6,7	1,5,7	

Table 5. Iteration 2

Elements No	Reachability Set	Antecedent Set	Intersection	Level
3	3,6,7	3	3	
6	6,7	3,6	6	
7	7	3,6,7	7	II

Table 6. Iteration 3

Elements No	Reachability Set	Antecedent Set	Intersection	Level
3	3,6	3	3	
6	6	3,6	6	III

Table 7. Iteration 4

Elements No	Reachability Set	Antecedent Set	Intersection	Level
3	3	3	3	IV

3.4I SM Modeling

Basis the final reachability matrix and level partitioning, the final graphical model is developed for the performance Management Factors in Figure 1:

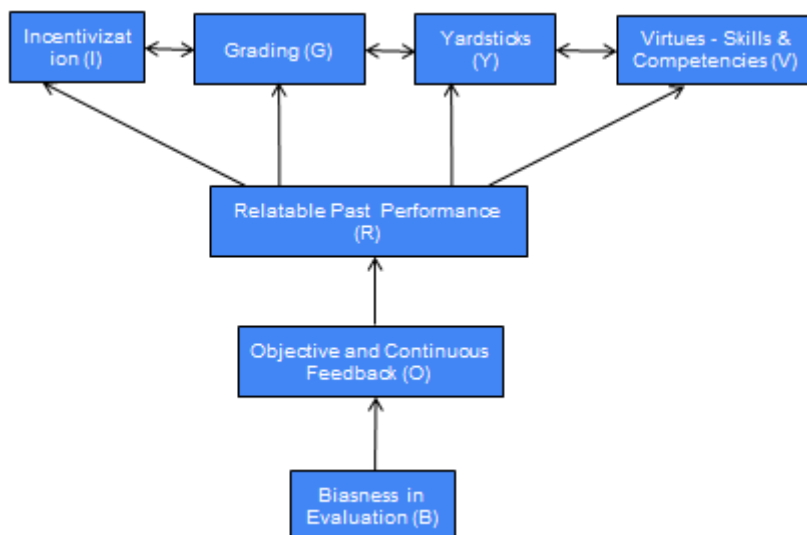


Figure 1. Graphical Representation- Interpretive Structural Model (ISM)

Incentives related to the performance of an employee be it monetary or non-monetary, grading of performance by the manager and yardsticks (Goals, Mission and Vision) for the team or an individual employee along with Virtues (Skill and Competencies) of an employee are at top of the model as they can not determine any other performance management factor. Relatable past performances are placed at the second level as they help achieve the first level performance factors.

On the third iteration, Objective and continuous feedback is derived as a result which can be influenced by the biases in the evaluation by the team manager or management, as applicable.

3.5 MICMAC Analysis – Classification of Factors

MICMAC (Matrice d’Impacts Croises – Multiplication Appliquée à un Classement or cross impact matrix-multiplication applied to classification analysis) was developed by Duperrin and Godet (1973). This analysis is used to determine the driving and the dependency of all the factors used in the study.

The factors defined and described earlier are classified into four clusters as shown in Figure 2. The first cluster consists of the “autonomous factors” that have weak driving power and weak dependence. These factors are relatively disconnected from the system, with which they have only a few links, which may not be strong. The “dependent factors” constitute the second cluster which has weak driving power but strong dependence. The third cluster has the “linkage factors” that have strong driving power and strong dependence. The fourth cluster includes the “independent factors” having strong driving power but weak dependence. The driving power and dependence of each of these factors are shown in Figure 2.

In Table 2, an entry of “1” added along the columns and rows indicates the dependence and driving power, respectively. Consequently, the driver power and dependence power diagram are constructed as shown in Figure 2.

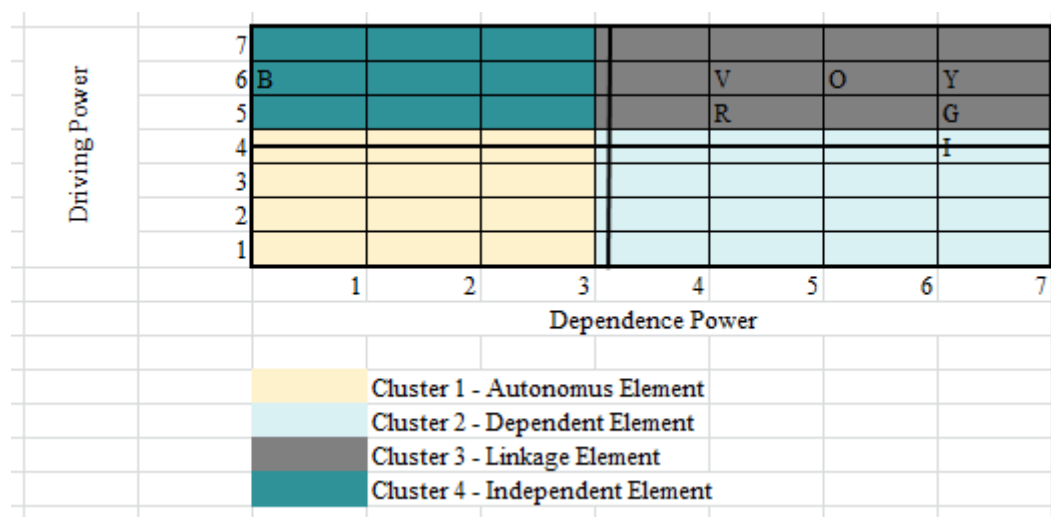


Figure 2. Driver – Dependency Diagram

4. Results

Using the ISM approach, this paper has attempted to model the criticality of performance factors and to be able to present their driving and dependence power in the performance management process. Biasness in evaluation by the manager has a critical driving power but is an independent factor that can not be influenced but can influence the objectively delivered feedback as seen in the ISM model. Incentives, yardsticks, grading, and Virtues of an employee in the performance management process are the most dependent factors followed by her/his reliable past performance.

However, the effectiveness of the performance management process which is dynamic can only be maintained if the factors like regularity of feedback are maintained, biases in evaluation to be minimized by consistent training and awareness of the managers. Maintaining the skill enhancement process and educating the teams about the goals and yardsticks of the organisation will also enforce the right impetus in delivering effective performance management. This exercise has highlighted the interrelationships between the various factors and certainly calls out for actions to be taken for making the overall performance management process efficient and value-driven.

5. Conclusion and Discussions

Through this paper, researchers wanted to emphasise that the above-mentioned seven parts of performance management are dynamic and simple to execute, either via the use of a PMS tool or manually. Performance Management programmes with the above characteristics and tool functionality can be implemented by organisations with capital expenditure feasibility. A user-friendly interface and appropriate training to gauge the functionality of the tool can bring in more accessibility and adaption. However, in mid-sized or small organisations where it is tough for PMS application implementation of top-line/bottom-line pressures if the framework's elements are put to use and implemented effectively even manually but with proper records, it can generate a lot of value and bring in productive changes for both employees and organisation. This ISM model was developed based on inputs from academicians and practicing managers. The iterative process of the proposed ISM model helps the managers to identify the interrelationship between the Performance Managements' factors and frame strategies for effective implementation. This has enormous feasibility of strategic decision for policy formulation of the organisation. In addition to that, the proposed ISM model acts as an ideal guide for a future investment decision. The results are more generic and can be duplicated to other specific industries also shortly have to be considered as future scope of the study. Also, the factors of the performance management used in this study identified through the inputs from the literature and expert opinions can get impacted in the times to come basis the external environment changes like government policy alterations and even working environment changes pertaining to the pandemic situation.

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