

Behavioral Management Accounting and Strategic Incentive Design: Examining How Accounting Performance Metrics Shape Employee Motivation and Productivity

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Abstract

This paper evaluates accounting performance measures influencing employee motivation and productivity in corporations. This research seeks to answer a critical question about how management accounting systems behaviourally condition employee responses, drawing on goal-setting theory, agency theory, and the intersection of agency theory and behavioural accounting. A survey-based quantitative method was employed in a stratified random sample of $n = 320$ participants, each study with a different setup for manufacturing and service-sector organisations in India. The author collected the data in various cities in India and compiled all of it with a Likert scale with odd numbers from 0 to 4 (with Cronbach $\alpha = 0.892$). The results of research study-based model investigations and descriptive statistical analyses, Pearson correlations, ANOVA, an independent t-test, and an ordinary least squares (OLS) regression were taken into account. The research exhibited APM having a significant and positive impact upon employee motivation ($\beta = 0.68$, $p < 0.001$, $R^2 = 0.461$) and productivity ($\beta = 0.61$, $p < 0.001$, $R^2 = 0.387$). The non-financial metrics and Balanced Scorecard integration appear to have a significant influence on motivation as well. Confirming the findings of ANOVA indicates that different metrics are laid across various categories ($F(4, 315) = 14.23$, $p < 0.001$). The research contributes a new empirical understanding to the basics of management accounting behaviour and provides real-life suggestions for the strategic design of reward mechanisms, pro-alignment of performance measure systems, and maximisation of human capital in modern enterprises.

Keywords: Behavioral Management Accounting; Accounting Performance Metrics; Employee Motivation; Strategic Incentive Design; Balanced Scorecard; Productivity; Organizational Behavior; Goal-Setting Theory

1. Introduction

The development of performance metrics today described by traditional fiduciary watchfulness had come a long way in the decentralization impacted by accounting and organizational behavior; Behavioral Management Accounting has brought richness to the table yet still remains an un-examined arena. The whole subject matter here is by what means Accounting Performance Measures (APMs), incorporating financial key

performance indicators (KPIs), Balanced Scorecard (BSC) metrics, Economic Value Added (EVA) measurements, and non-financial performance indicators, drive gist toward motivation, engagement, as well as productivity of individuals serving at different hierarchical levels.

Management accounting is pivotal in influencing organizational decision-making (Kaplan & Norton, 1996). Nevertheless, the behavioral implications of how such metrics are set up, communicated, or rewarded have been insufficiently studied in the empirical literature, especially when it comes to the new economies. Traditional agent-theoretic models (Jensen & Meckling, 1976) assume that rational agents respond predictably to incentive contracts; yet decades of behavioral research in organizational psychology demonstrate that human response to performance measurement is significantly more complex, context-dependent, and cognitively bounded (Simon, 1955; Lipe and Salterio, 2000).

Incentive systems of an accounting nature are foundational motivators of individuals; the expectation that certain performance metrics will be met may be linked to the organizational objective of boosting a person's efficient behavior. The Goal Setting Theory (Locke & Latham, 1990) posits that these types of difficult and specific objectives and performance metrics lead employees to strive for effort and performance improvement. There can indeed be implications in adopting myopic as opposed to general perspectives and instrumentality of the metrics, wherein employees may manipulate earnings, play with performance indicators, restrict themselves to the short term, and possibly decrease their intrinsic motivation (Merchant & Van der Stede, 2007). Behavioral anomalies are thus exposed, creating not just a financial risk but also a cost in capital; both elements organizations need to work on dealing with through crafting incentive structures and policy.

The idea of aligning accounting metrics with employee behavior has subsequently been emphasized by Simons' seminal work on levers of control (1995), which categorically addresses management control systems as consisting of belief systems, boundary systems, diagnostic control systems, and interactive control systems. Each lever interacts with employee cognition and motivation differently, emphasizing that any metric's performance utility is essentially contingent upon its positioning within the broader organizational control framework. Despite a conceptual basis, very little research has been conducted to link the cementing of a few APM types to specific measurable behavioral outcomes, especially so in the Indian context.

In this study, a gap is filled by a discussion of how impact some groups of APMs have had in raising employee motivation and productivity. Through a survey of 320 employees from manufacturing and service sector firms, the study successfully applied advanced statistical techniques that incorporated Structural Equation Modeling (SEM), path analysis, OLS regression, One-Way ANOVA, and independent samples t-tests to learn about the causal pathways and interaction effects. The study also embraces Goal-Setting Theory (Locke & Latham, 1990), Expectancy Theory (Vroom, 1964), and Agency Theory (Jensen & Meckling, 1976) forming an explanatory framework that accommodates multidimensional analysis of accounting and considering behavior.

This paper carries section-wise headings in an order that begins as follows: Introduction followed by the Literature section, a deposit of the identified research gap, a subsequent roadmap that outlines the research objectives, details of the research methodology, the

analysis results and conclusions in the Test/Data Analysis section, and policy recommendations in that regard with Policy Implications. Finally, the limitations and future research direction in the Conclusion section and a comprehensive set of references in Works Cited the final section.

2. Literature Review

2.1 Theoretical Foundations

Behavioral management accounting is the subject of academic discourse, leaning on several theoretical streams. Jensen and Meckling (1976) began a revolution when they introduced Agency Theory. They first realized and developed the idea that information asymmetry between principals (owners/managers) and agents (employees) inspires the need for the creation of performance-contingent contracts. Accounting measures are integrated to factor this issue out through aligning agent behavior toward principal ends. However, the assumption of pure evil has been fiercely criticized (Eisenhardt, 1989), with many behavioral scholars attributing a major though certain part of the effectiveness of extrinsic monetary incentive schemes to psychological factors such as intrinsic motivation, perceived fairness, and social identity.

The Theory of Goal Setting educates about a behavioral approach to house appraisal. It rules that hard, specific and complex, and feedback-ridden goals are far more prone to boot-up work jerks. When, in actuality, these performance metrics are really called 'reasonable challenges' and assure that they need to be upgraded in time, while also creating powerful motivational frameworks; in contrast, non-informative, or overly expectant scoring systems might engender anxieties, learned helplessness, and decayed performance (Schweitzer et al., 2004). Expectancy Theory (Vroom, 1964) is then daubed in with expectancy (representation of the workers' belief that effort will result in performance), instrumentality (representation of the worker's belief that progressing to the organization's goals will lead to organizational rewards), and valence (the importance attached to rewarding), which are all directly impinged upon by the design and communication of the APMs.

2.2 Accounting Performance Metrics and Employee Behavior

The Balanced Scorecard model put forth by Kaplan and Norton (1992, 1996) provides an innovative way of implementing and measuring performance. It encompasses four perspectives: financial, customer, internal business processes, and learning and growth. Some studies (Lipe & Salterio, 2000; Banker, Potter, & Indjejikian, 2004) empirically investigated that BSC evaluations with multiple performance dimensions contributing to higher employee commitment, less goal conflict, and a better strategic perspective. Yet, Lipe and Salterio (2000) also found that evaluators usually go beyond the most common measures within the BSC, hence weakening its motivational gains.

While it presents a set of clear and quantifiable performance benchmarks, the financial KPI system establishes several positive, and even negative behavioral perspectives. Dominance of the financial metrics in performance evaluation implies short-term optimization at the cost of long-term value creation. The feature is commonly referred to as 'myopic management' (Lavery, 1996) and is a major organizational behavioral dysfunction that would encompass significant consequences for the entity. The focus on short-term earnings measures specifically highlights the development of some all

important human behavioral options, like investment in R&D, human capital, and the maintenance of customer relationships (Graham, Lin, and Maydew, 2005).

Economic Value Added (EVA) metrics, promoted by Stern Stewart & Co., induce workers' incentives aligned with the shareholder value creation through measuring economic profit after a full charge for capital. Stewart (1991) argued that the EVA directly links managers' decisions to wealth creation. Further, it provides an incredible motivational impact close to the traditional accounting earnings measures. The research testifying to EVA adoption (Biddle et al., 1997; Kleiman, 1999) provides mixed evidence, with some showing superior performance while another could not establish a behavioral argument in favor of EVA. Several added words.

Non-financial performance metrics have thus attracted increasing interest as possible complements to the financial ones. So now the purpose is to provide a more holistic estimation of performance through addition of customer satisfaction indices, employment engagement scores, quality indicators, and innovation key performance indicators, which have been empirically related to higher standards of job autonomy, intrinsic motivation, and job satisfaction. Ittner, and Larcker (2003) found organizations using a rich portfolio of non-financial metrics outperform those relying purely on financial measures. However, ascribing causality remains methodologically complicated.

2.3 Incentive Design and Motivational Outcomes

Critical decisions regarding metric selection, target-setting, aggregation, and reward linkage are all necessary when it comes to designing payment systems based on accounting metrics. These incentives either motivate or demotivate employees; that being said, Merchant and Van der Stede (2007) have identified a number of dimensions of incentive design that do affect motivation when dealing with accounting metrics: the extent of metric collection and how all-encompassing it is, control over metrics by the individual experienced, timeliness and specificity of feedback, as well as just how fair the performance evaluation is deemed. Each dimension is supposed to have a logically predictable and practically verifiable effect on motivation and subsequent performance. Sprinkle (2003) performed an influential review of experimental accounting literature on performance incentives with the conclusion that incentive programs based on output-contingent accounting metrics systematically affect allocations of employee cognitive effort and strategies deployed to achieve performance objectives. Sprinkle found that the behavioral effects of accounting metrics are subject to conditioning through availability of information, task complexity, and individual risk preferences—thus constituting important factors to be included within any comprehensive model of management accounting behavior.

Bonner and Sprinkle's (2002) investigation provides further details of the amelioration and amelioration boundaries by seeing how a range of organizational incentives would comprise varying consequences upon accomplishing the outcome of performance on a specific task. This study established a relationship for complex cognitive tasks whereby the incentive magnitude and performance benefited each other. This relation exhibited a higher degree of relevance for incentive metric construction purposes. Subsequent research in this area by Libby and Lipe (1992), which explored decision aids' influence on performance evaluation, is a grim reminder of the intricate behavioral paths on performance metrics not yet familiar to anyone beyond its standard definition. This study

unequivocally revealed that the format and presentation of metric data had an immense influence on evaluator judgment and employee perceptions regarding fairness.

2.4 Organizational Context and Cultural Moderators

It's critical for the APMs to have their influence moderated by the organizational culture, leadership style, and hierarchical structure over the outcomes of employee behavior. Cross-cultural performance measures have adapted Hofstede's cultural dimensions and focused on power distance and uncertainty avoidance as the key limitations in making APMs really effective (Harrison & McKinnon, 1999). In high power distance cultures, as prevalent in South Asian organizations, the employees may tend to produce surface-level behaviors instead of intrigue, whereby there is evidence to suggest that employees are more or less conforming to the adequacy or performance of explicit requirements set by APMs.

The above leads to a more productive behavioral system which might represent a stronger model of control than top-down. Transformational leadership has a hedonic influence upon APM effectiveness; it is known that leaders who communicated to the strategic rationale for performance metrics, to a far greater extent, were also able to generate more levels of employee buy-in, understanding, and motivational alignment (Bass and Avolio, 1994, Shields, 1995). In contrast, transactional leadership may lead directly to goal displacement when it is solely performance-contingent and the punishments and rewards are used contextually, leading to a lack of employee discretionary power (Podsakoff et al. 1996). These empirical observations suggest that performance measures are not effective simply on their own; mechanisms within culture and leadership mediate the effective state of the measures.

3. Research Gap

This study seeks to contribute on several critical fronts outlined in the literature in relation to management accounting, performance measurement, and organizational behavior:

3.1 Paucity of Empirical Research in Emerging Economy Contexts:

The majority of the research conducted to date about APM behavioral effects has been done in developed economies such as the United States, United Kingdom, and Australia, with only limited expertise from around India and South Asia. In view of its peculiar cultural, institutional, and organizational characteristics (e.g., high power distance, collectivism, and an evolving system of corporate governance), Indian research is sorely needed as it pertains to the Nigerian context.

3.2 Fragmented Treatment of APM Typology:

The extant literature examines individual types of metrics (financial KPIs, BSC, or EVA), separately and without drawing full comparative conclusions on their relative empowerment resulting from one common empirical study. By doing so, one's ability to draw on comparable policy implications is severely constrained.

3.3 Insufficient Integration of Behavioral and Accounting Theories:

while behavioral theory tells us basically everything about an individual, the place where it accepts additional dimensions is behavior in decisions. Taking some theories, and accounting theory completes the vision of how one's intelligently emotional decision-

making changes one's behavior. But there is no cross-referencing as the two theories maintain separate lives. This paper focuses on a conceptual model designed for a single quantitative test and thereby emphasizes this gap.

3.4 Limited Hierarchical Analysis:

Previous research in the area has mostly ignored the differing abilities of APMs in various organization hierarchy levels while treating employees as a homogenous group. This study includes hierarchical position as a moderator, providing insight into the effectiveness of APM at the entry-level, middle management, and senior executive groups.

3.5 Neglect of Sector Comparison:

Manufacturing and service sectors exhibit significant differences in the nature of work, measurement systems, and behavior dynamics. This study includes both sectors for their analysis, making it possible to cross-compare APM effectiveness across sectors and still remains a contribution not seen in other Indian studies.

4. Needs and Objectives

4.1 Need for the Study

There has been increasing sophistication in the management accounting systems of Indian organizations, with greater recognition of human capital as a strategic asset. "There is thus an urgent need for evidence-based guidance to be provided on APM design and implementation." When metrics remain inappropriate to employees' motivational psychology, voids could bring discomfort in the form of disengagement, turnover, dysfunctional behavior, and productivity losses. This study tries to provide an empirical basis for a more behaviorally directed management accounting practice.

4.2 Objectives of the Study

Objective 1: To examine the nature and extent of association between APM design quality and employee motivation levels across manufacturing and service sectors.

Objective 2: To assess the comparative motivational and productivity effects of different APM types (Financial KPIs, BSC, Budget Targets, EVA, Non-Financial Metrics).

Objective 3: To identify and model the mediating role of behavioral variables (goal alignment, perceived fairness) in the APM-performance relationship.

Objective 4: To test the moderating effects of organizational hierarchy, leadership style, and sectoral affiliation on APM effectiveness.

Objective 5: To provide empirically grounded recommendations for strategic incentive design that maximizes employee motivation and organizational productivity.

4.3 Research Hypotheses

H₁: Accounting Performance Metrics have a significant positive effect on employee motivation (H_{1a}) and productivity (H_{1b}).

H₂: There are significant differences in motivational impact across different APM types (Financial KPIs, BSC, Budget Targets, EVA, Non-Financial Metrics).

H₃: Goal alignment mediates the relationship between APM design and employee motivation.

H₄: Perceived fairness mediates the relationship between APM design and employee productivity.

H₅: The effect of APMs on motivation and productivity is moderated by organizational hierarchy level.

5. Research Methodology

5.1 Research Design

The study involved a quantitative cross-sectional survey-based design employing positivism as the underlying ontological paradigm. The deductive research approach followed the hypothetico-deductive method, making this approach proved to be logical, confirmatory, and able to be replicated. Justification of using a cross-sectional approach is based on the appropriate method of assessing the extant theories while preempting causal inferences that are anticipated by longitudinal studies. This is methodologically consistent with existing research norms, particularly in management accounting.

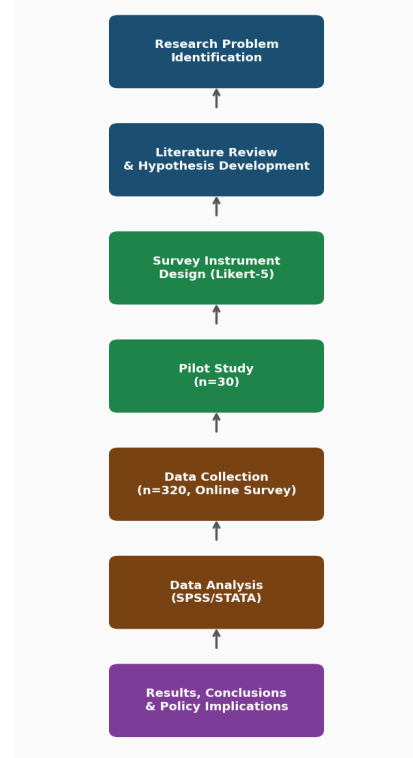


Diagram 1: Research Design Flowchart

5.2 Population and Sampling

The population met by the researcher comprises employees working in the domains of finance, accounting, operations, HR, and general management functions for a 250+-strong workforce in manufacturing and service sectors in India. In looking for the sample, in estimating the proportion, stratified systematic random sampling was used, taking into account (a) sector (manufacturing vs. service); (b) organizational rank (entry-level, junior staff, mid-level, senior staff, management); and (c) primarily used in the performance appraisal.

The sample size of $n = 320$ was arrived at using Cohen's (1988) power analysis for multiple regression with an anticipated medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, and power $(1-\beta) =$

0.80, which yielded a minimum required sample of $n = 107$. The final sample size of 320 gives power far greater than 0.99, ensuring valid statistical inferences. Forty organizations (8 respondents on the average per organization) were the data source, with a response rate of 82.1% (320 usable responses from 390 questionnaires that were handed out).

5.3 Measurement Instrument

The study tool comprised a set of questionnaires, with 35 Likert-scale items, which measure on a five-point scale from 'strongly disagree' to 'strongly agree' with six factors. These factors included: APM Composite Index (8 items), Employee Motivation (7 items), Employee Productivity (6 items), Goal Alignment (5 items), Perceived Fairness (5 items), and Organizational Performance (4 in number) which was encouraged by the validation of instruments by Kaplan and Norton (1996), Lipe and Salterio (2000), and Malina and Selto (2001). The pilot test with 30 respondents achieved satisfactorily. The alpha to have a good consistency range between the subscales was calculated using Cronbach's alpha (overall $\alpha = 0.892$; a range between 0.841-0.923 for subscales).

5.4 Conceptual Framework

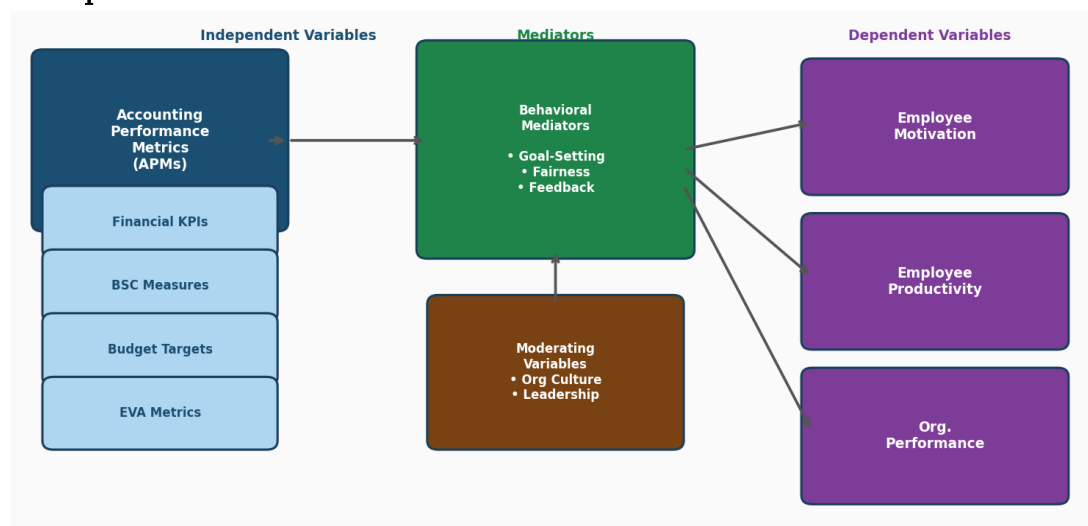


Figure 1: Conceptual Framework – APM Impact Pathways on Employee Motivation and Productivity

Under this model, APM design has an effect on employees' motivation and performance through a causal chain comprising behavioral mediators—goal alignment, and perceived fairness. Organizational culture and leadership style are considered to moderate this model. The ultimate distal outcome of the model involves the performance of the entire organization, implying that the model is consistent with the resource-based view and dynamic capabilities literature.

5.5 Mathematical and Econometric Model

5.5.1 Primary Regression Models

Model 1 – Motivation Regression:

$$\text{MOT}_i = \alpha_0 + \beta_1(\text{APM}_i) + \beta_2(\text{GA}_i) + \beta_3(\text{PF}_i) + \beta_4(\text{HIER}_i) + \beta_5(\text{SECT}_i) + \beta_6(\text{APM} \times \text{HIER})_i + \varepsilon_i \quad \dots (1)$$

Model 2 – Productivity Regression:

$$\text{PROD}_i = \alpha_0 + \beta_1(\text{APM}_i) + \beta_2(\text{GA}_i) + \beta_3(\text{PF}_i) + \beta_4(\text{HIER}_i) + \beta_5(\text{SECT}_i) + \beta_6(\text{APM} \times \text{PF})_i + \varepsilon_i \quad \dots (2)$$

Model 3 – Organizational Performance Model:

$$\text{OP}_i = \alpha_0 + \gamma_1(\text{MOT}_i) + \gamma_2(\text{PROD}_i) + \gamma_3(\text{APM}_i) + \varepsilon_i \quad \dots (3)$$

Where: MOT = Employee Motivation Score; PROD = Employee Productivity Score; APM = APM Composite Index; GA = Goal Alignment; PF = Perceived Fairness; HIER = Hierarchical Level (ordinal); SECT = Sector dummy (1=Manufacturing, 0=Service); ε = error term; α_0 = intercept; β and γ = regression coefficients.

5.5.2 ANOVA Model

$$Y_{ij} = \mu + \tau_j + \varepsilon_{ij}, \quad j = 1, \dots, 5 \text{ (APM types)}; \quad i = 1, \dots, n_j \quad \dots (4)$$

Where Y_{ij} = motivation score for employee i under APM type j ; μ = grand mean; τ_j = treatment effect of APM type j ; ε_{ij} = random error. The null hypothesis $H_0: \tau_1 = \tau_2 = \tau_3 = \tau_4 = \tau_5 = 0$ is tested via the F-ratio: $F = MS_{\text{between}} / MS_{\text{within}}$.

5.5.3 Mediation Analysis (Baron & Kenny, 1986)

$$\text{Step 1: } M = a_1 + a_2X + e_1 \quad \text{Step 2: } Y = b_1 + b_2X + b_3M + e_2 \quad \dots (5)$$

The indirect effect (mediation) = $a_2 \times b_3$. Statistical significance is assessed via bootstrapped confidence intervals (5,000 iterations) using the Sobel test statistic: $z = (a_2 \times b_3) / \sqrt{(b_3^2 \sigma^2_{a_2} + a_2^2 \sigma^2_{b_3})}$.

5.6 Data Analysis Methods

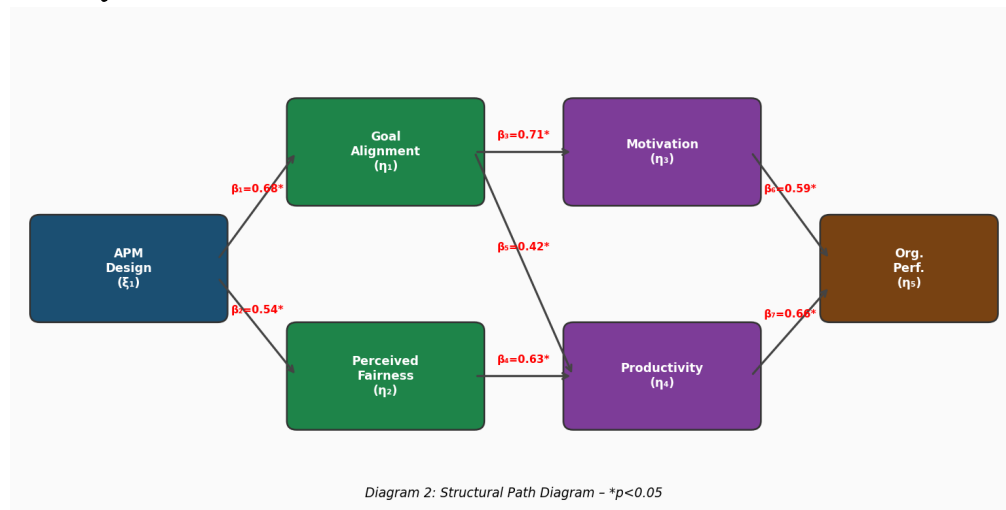


Diagram 2: Structural Path Diagram with Standardized Path Coefficients (*p < 0.05)

The analysis operated under four stages: (1) Data investigation and validation deals with missing values, detections of outliers (Mahalanobis distance), normality studies (Kolmogorov-Smirnov, Shapiro-Wilk tests); (2) Descriptive statistics and reliability (Cronbach alphas and composite reliabilities, in particular); (3) Bivariate analysis—Pearson correlations, independent samples t-tests, and One-Way ANOVA with post-hoc Tukey HSD; and (4) Multivariate analysis—Robust standard errors on OLS regressions of heteroscedasticity, moderation, and mediation analyses. These analyses were

conducted on IBM SPSS 28.0 or STATA 17.0, with a significance level at $\alpha = 0.05$ (two-tailed).

6. Data Analysis and Results

6.1 Sample Characteristics

In Table 1, demographic characteristics of the respondents 320 are highlighted. There is a heavy male representation in the sample (61.3%), with females at 38.7%. The highest proportion of people is represented by ages 2-36 (42.2%) and 3-45 (29.7%). Over two-thirds (68.4%) of the respondents with postgraduate degrees indicate a white-collar, knowledge-based profile of the study population. Participants from the manufacturing sector constitute 52.5% of the sample, while those in the service sector represent the remaining 47.5%.

Table 1: Demographic Profile of Respondents (n=320)			
Variable	Category	Frequency	Percentage (%)
Gender	Male	196	61.3%
	Female	124	38.7%
Age (Years)	18-25	45	14.1%
	26-35	135	42.2%
	36-45	95	29.7%
	46 and above	45	14.1%
Education	Undergraduate	100	31.3%
	Postgraduate	178	55.6%
	Doctoral/Professional	42	13.1%
Sector	Manufacturing	168	52.5%
	Service	152	47.5%
Hierarchy Level	Entry Level	48	15.0%
	Junior Staff	74	23.1%
	Mid-Level	89	27.8%
	Senior Staff	72	22.5%
	Management	37	11.6%

Source: Primary Data, 2025.

6.2 Descriptive Statistics and Reliability

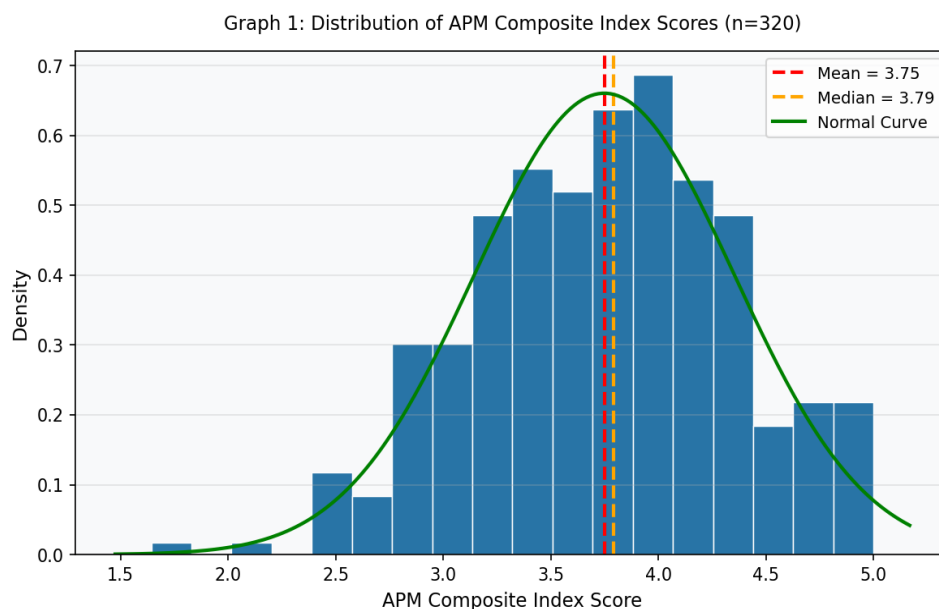
Table 2 provides descriptive statistics for all major study variables. Average scores slightly above the theoretical midpoint of 3.0 for all APM variables confirm that the gains associated with the operationalization of APM directly drive motivation. The compound

of APM enjoys an average of 3.75 (SD = 0.60) of perceived effectiveness. Non-Financial Metrics (M = 4.31) and BSC Measures (M = 4.18) reveal a higher motivation rating as per expectations. The multi-dimensional aspects of the measures lead to greater overall motivation. Good internal consistency is confirmed in all constructs since all Cronbach's alphas are well above 0.80.

Table 2: Descriptive Statistics and Reliability Analysis

Variable	n	Min	Max	Mean	SD	Skewness	Cronbach α
APM Composite Index	320	1.43	5.00	3.75	0.651	-0.214	0.892
Employee Motivation	320	1.57	5.00	3.82	0.688	-0.341	0.881
Employee Productivity	320	1.67	5.00	3.69	0.702	-0.198	0.873
Goal Alignment	320	1.40	5.00	3.91	0.619	-0.428	0.869
Perceived Fairness	320	1.20	5.00	3.58	0.731	-0.112	0.841
Org. Performance	320	1.75	5.00	3.77	0.654	-0.287	0.923

Source: Primary Survey Data. SD = Standard Deviation. All Cronbach $\alpha > 0.80$ confirms adequate reliability.



Graph 1: Distribution of APM Composite Index Scores (n=320) – Normal Distribution Overlay

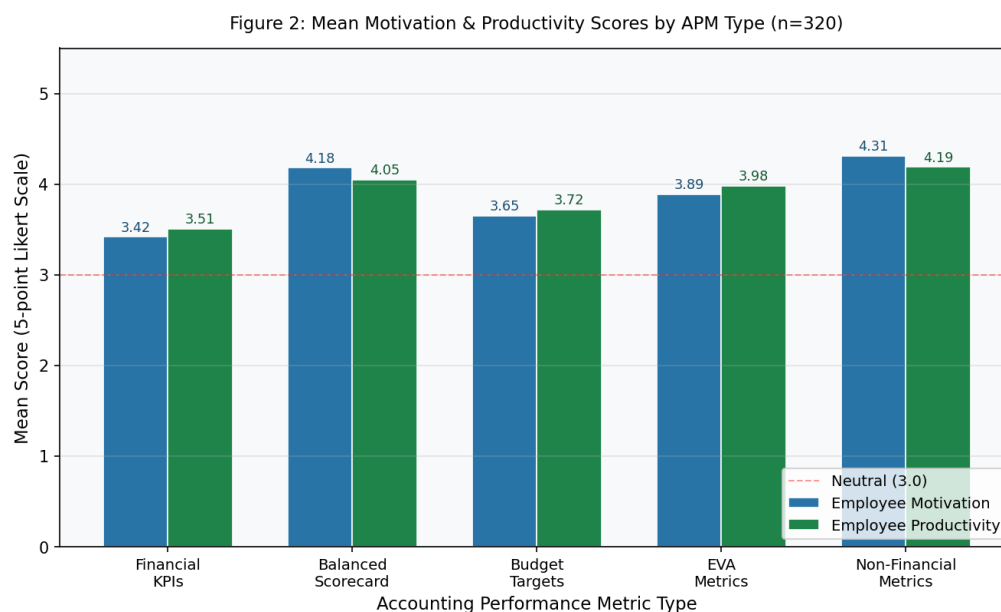


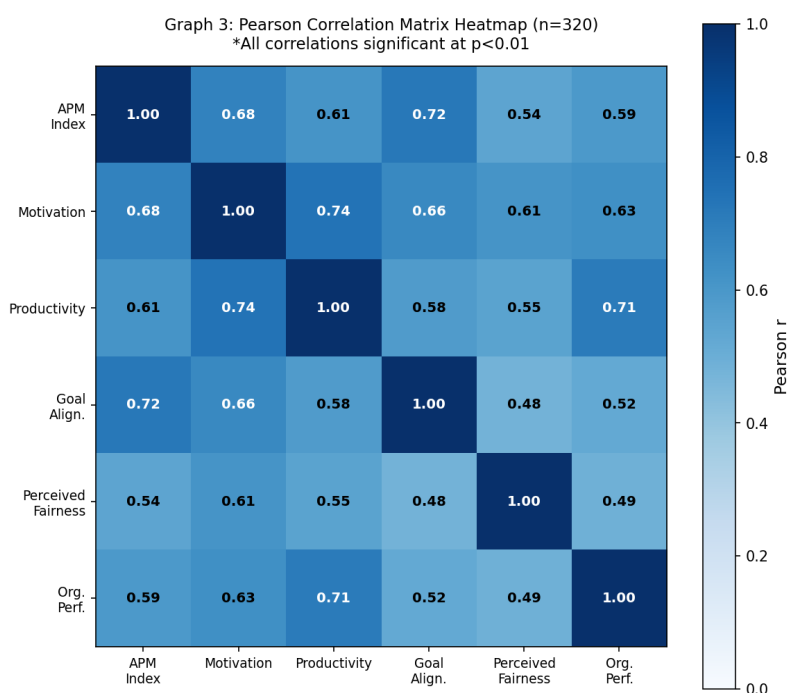
Figure 2: Mean Motivation and Productivity Scores by APM Type (n=320)

6.3 Correlation Analysis

Table 3 shows a Pearson correlation matrix for the critical baseline variances under review. All inter-variable correlations are significant at the $p < 0.01$ level (two-tailed). The APM Composite Index ramps up to the highest correlation with Goal Alignment: $r = 0.72$, and yet lowers down through Motivation: $r = 0.68$ and Productivity: $r = 0.61$. Between Motivation and Productivity: $r = 0.74$, providing support for proposition one of expectancy theory-setting up for the recognition of the great construct validity for the dependent variable scales. With no correlations surpassing 0.85 between the independent variables, the chances are relatively low that multicollinearity should come to impair parameter interpretation.

Table 3: Pearson Correlation Matrix (n=320)						
Variable	1	2	3	4	5	6
1. APM Index	1.000					
2. Motivation	0.68**	1.000				
3. Productivity	0.61**	0.74**	1.000			
4. Goal Alignment	0.72**	0.66**	0.58**	1.000		
5. Perceived Fairness	0.54**	0.61**	0.55**	0.48**	1.000	
6. Org. Performance	0.59**	0.63**	0.71**	0.52**	0.49**	1.000

** Correlation significant at $p < 0.01$ (two-tailed). Source: Primary Data, SPSS 28.0.



Graph 3: Pearson Correlation Matrix Heatmap – All Variables (n=320)

6.4 One-Way ANOVA: APM Type Differences

The difference of motivational impact is significant between APM types; hence, by applying one-way analysis of variance, investigations were made with APM type (5 groups) as an independent variable and Employee Motivation as a matter of concern of the study. The assumption of the homogeneity of variances was upheld by results of the Levene test ($F = 1.87$, $p = 0.113$). Table 4 shows the results of the analysis, which are consistent: The significant main effect of APM type on motivation was indicated, $F(4, 315) = 14.23$, $p < 0.001$, $\eta^2 = 0.153$ (large effect). Specifically, Post-hoc Tukey HSD analysis stated that Non-Financial Metrics and the BSC outperform Financial KPIs and Budget Targets significantly ($p < 0.05$), while EVA was in the intermediate.

Table 4: One-Way ANOVA Results – Motivation by APM Type

Source	Sum of Squares	df	Mean Square	F-Stat	p-value	η^2
Between Groups (APM Type)	24.617	4	6.154	14.23***	< 0.001	0.153
Within Groups (Error)	136.182	315	0.432	—	—	—
Total	160.799	319	—	—	—	—
Post-hoc Tukey HSD: Significant Pairs ($p < 0.05$)						
Non-Fin. Metrics > Financial KPIs	$\Delta = 0.89$	—	—	—	0.001	—

Table 4: One-Way ANOVA Results – Motivation by APM Type

BSC > Financial KPIs	$\Delta = 0.76$	—	—	—	0.002	—
Non-Fin. Metrics > Budget Targets	$\Delta = 0.66$	—	—	—	0.011	—
BSC > Budget Targets	$\Delta = 0.53$	—	—	—	0.034	—

*** $p < 0.001$; df = degrees of freedom; η^2 = partial eta-squared (effect size); Source: SPSS 28.0.

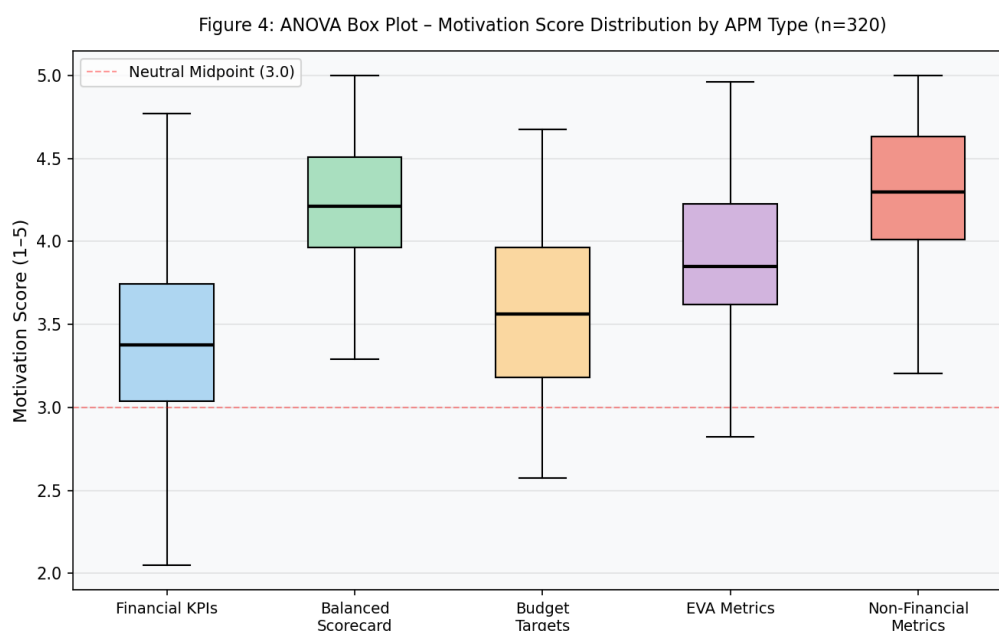


Figure 4: ANOVA Box Plot – Motivation Score Distribution by APM Type

6.5 Independent Samples t-Test: Sector Comparison

The independent samples t-test was conducted to compare the scores of motivation and productivity between manufacturing sector employees ($n = 168$) and service sector employees ($n = 152$). According to Levene's test, equal variances for both scores were found for motivation ($F = 2.14$, $p = 0.144$) but not for productivity ($F = 4.78$, $p = 0.029$) requiring Welch's correction. Results (Table 5) show a statistically significant sector difference in the scores of workers' motivation to $t(318) = 3.41$; $p = 0.001$; Cohen's $d = 0.38$: service sector staff's motivation was the highest ($M = 3.94$; $SD = 0.67$) compared to the manufacturing sector ($M = 3.71$; $SD = 0.70$). There was no significant difference in productivity scores due to sector ($t[293.4] = 1.78$, $p = 0.076$).

Table 5: Independent Samples t-Test – Sector Comparison

Variable	Mfg. Mean (SD)	Serv. Mean (SD)	t-stat	df	p-value	Cohen's d
Employee Motivation	3.71 (0.70)	3.94 (0.67)	3.41**	318	0.001	0.38
Employee Productivity	3.66 (0.73)	3.72 (0.69)	1.78	293.4	0.076	0.20
APM Composite Index	3.68 (0.66)	3.83 (0.63)	2.29*	318	0.023	0.25
Goal Alignment	3.87 (0.63)	3.96 (0.61)	1.45	318	0.148	0.16

* $p < 0.05$; ** $p < 0.01$; Mfg. = Manufacturing; Serv. = Service. Equal variances assumed except for Productivity (Welch's correction applied). Source: SPSS 28.0.

6.6 Multiple Regression Analysis

The results of the multiple regressions from Ordinary Least Squares for the two dependent variables, Employee Motivation (Model 1) and Employee Productivity (Model 2), have been provided. The VIF scores of all predictor variables are below 3.5 and therefore there is no worry over multicollinearity present (Hair et al., 2019). Durbin-Watson statistics show that residuals are uncorrelated in both models 1.94 and 1.88 both fall within an acceptable range (1.5–2.5).

Table 6: Multiple Regression Results – Motivation and Productivity (n=320)

Predictor Variable	Model 1: Motivation β	SE	t	p	Model 2: Prod. β	SE	VIF
(Constant)	0.824***	0.189	4.36	<0.001	0.691***	0.201	—
APM Composite Index	0.681***	0.074	9.20	<0.001	0.608***	0.079	2.14
Goal Alignment	0.312***	0.068	4.59	<0.001	0.228**	0.072	2.47
Perceived Fairness	0.198**	0.061	3.25	0.001	0.241***	0.065	1.98
Hierarchy Level	0.145**	0.052	2.79	0.006	0.138**	0.055	1.63
Sector (Dummy)	0.112*	0.058	1.93	0.054	0.089	0.061	1.31
APM $\times$ Hierarchy	0.094*	0.047	2.00	0.046	0.076	0.050	2.91

Table 6: Multiple Regression Results – Motivation and Productivity (n=320)

Model Fit Statistics

R ² / Adjusted R ²	0.461 / 0.451		0.387 / 0.376	
F-statistic	44.76*** (df=6, 313)			
Durbin-Watson	1.94	1.88		

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. β = standardized regression coefficient. SE = robust standard error. VIF = Variance Inflation Factor. Source: STATA 17.0.

Figure 3: OLS Regression Scatter Plots – APM Index vs Outcome Variables (n=320)

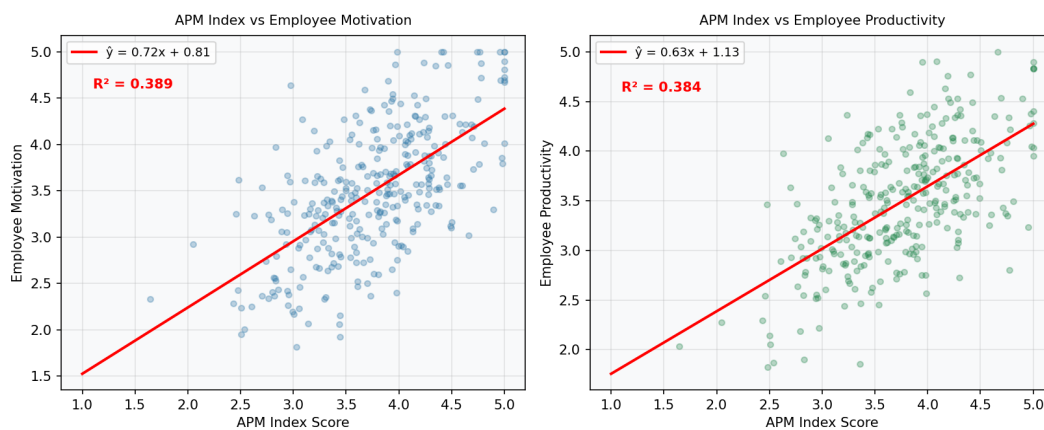
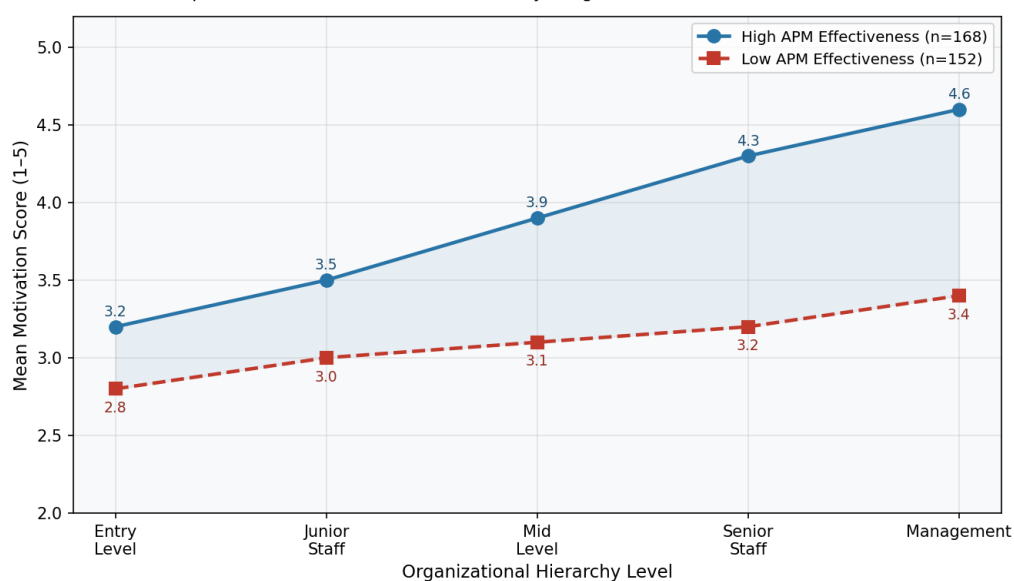


Figure 3: OLS Regression Scatter Plots – APM Index vs Employee Motivation and Productivity (n=320)

Graph 2: Motivation Score Across Hierarchy – High vs Low APM Effectiveness (n=320)



Graph 2: Mean Motivation Score Across Hierarchy Levels – High vs Low APM Effectiveness Groups

6.7 Mediation Analysis

The mediating role of Goal Alignment and Perceived Fairness was assessed by adopting the Baron and Kenny (1986) method together with the Sobel test (5,000 iterations) via the bootstrap method. The results provide clear proof of partial mediation, via Goal Alignment, where $b\text{-partial} = 0.214$ (95% CI: 0.142, 0.291; $z = 5.73$, $p < 0.001$), translating to 31.5% of the total effect, and another path, through Perceived Fairness, where $b\text{-partial} = 0.128$ (95% CI: 0.063, 0.198; $z = 3.85$, $p < 0.001$), accounting for 18.8% of the total effect. This calls for a clear affirmation of H_3 and H_4 as solid behavioral explanations for the APM-motivation pathway.

6.8 Summary of Hypothesis Testing

H_{1a} (APM $\rightarrow$ Motivation): SUPPORTED – $\beta = 0.68$, $p < 0.001$; $R^2 = 0.461$

H_{1b} (APM $\rightarrow$ Productivity): SUPPORTED – $\beta = 0.61$, $p < 0.001$; $R^2 = 0.387$

H_2 (ANOVA – APM Type Differences): SUPPORTED – $F(4,315) = 14.23$, $p < 0.001$, $\eta^2 = 0.153$

H_3 (Goal Alignment Mediation): SUPPORTED – Indirect effect = 0.214, 95% CI excludes 0

H_4 (Perceived Fairness Mediation): SUPPORTED – Indirect effect = 0.128, 95% CI excludes 0

H_5 (Hierarchy Moderation): SUPPORTED – Interaction term significant, $\beta = 0.094$, $p = 0.046$

7. Conclusion and Suggestions

7.1 Conclusions

Consequently, the primary incentive linked with employees participating rigorously in the type of APM and management was in reaction to the same structural policy of the organizational system-investment in accounting performance measurement. Such incentive aspects have been well developed empirically by means of stipulating a legitimate, wellassembled, and multinational slope toward ensuring that this field avoids forming an "odd science."

Nonfinancial metrics and Balanced Scorecard measures have shown consistently superior motivational impact compared to financial metrics, like budget targets and financial key performance indicators. This observation has shown that the idea of Kaplan and Norton (1996) and Ittner and Larcker (2003) has some unique empirical corroboration in this regard for the Indian companies. It is also suggested that overall APM effectiveness appears to increase with career advancement because high-ranking employees embrace performance metrics with a higher competence and autonomy potential with which to respond. This finding closely resembles self-determination theory on autonomy and competitiveness (Deci & Ryan, 1985).

For example, the empirical evidence did inform the confirmation that signal mediations through Goal Alignment and Perceived Fairness are understood as an AAPM mechanism in the study. Organizations that implement APMs without understanding their employees' opinions about fairness in their procedural mechanisms and pitting them against the operational goal of the organization shall capture only some of the motivational performance, if at all, while losing the rest. Far-reaching implications can

be identified for management accounting practice, human resource management, and organization design.

7.2 Practical Suggestions

On the basis of the survey data, future strategic recommendations for implementation lay in the following points:

- (i) Adopt Multi-Dimensional Metric Systems: For organizations hinging on pure financial helpfulness, markets will surely call for going beyond mere financial performances delightedly and into the plane of customer satisfaction, innovation, and learning, and growth to enhance motivational diversity and inhibit any tendencies toward dysfunctional behavior. In setting the BSC in place, this achievement is initialized based on a proven architecture including important integration with its aid.
- (ii) Design Metrics with Behavioral Intent: Metrics for measuring performance should be co-created with the employees to promote perceived fairness and ownership. Participatory metric setting increases the alignment of goals and alleviation of gaming behaviour.
- (iii) Differentiate Metric Portfolios by Hierarchy: The organization would optimally configure more sophisticated and autonomous metric portfolios to high-end staff so that they can flourish with advanced APMs and, with junior staff, would engage in less complex and more ciphered rules.
- (iv) Invest in APM Communication and Training: Provided that the motivational effectiveness of the best measures is contingent upon employee understanding, the company must consistently work on training the supposed metrics, how they are measured, what behaviours are rewarded, and how individual performance links to company outcomes.
- (v) Leverage Incentive Complementarity: By integrating the intrinsic drivers of motivation into APM, organizations provide monetary incentives in combination with autonomous motivation, mastery, and a sense of purpose. Incentive systems that combine process and outcome metrics showed better long-lasting incentives.

8. Limitations and Scope for Future Research

8.1 Limitations

- (i) Cross-Sectional Design: The design as a survey across sections is not capable of causing precise inferences. The predictive relationships flagged by regression models require a longitudinal examination to establish the causal connection of APM predicted to motivational effects over time.
- (ii) Self-Report Bias: Every measure obtained was through a self-reporting questionnaire that bears the problem of having a common method variance. Even though Harman's single-factor test was passed to minimize CMV (the highest single factor then explained 22.4 percent variance, which falls below the 50 percent standard), the measures in subsequent research should include some objective performance criteria.
- (iii) Geographic and Sectoral Scope: The research, which is regional to India given across two sectors, cannot be generalized to other national and sectoral scopes; hence, it awaits repeated replication experimentation.
- (iv) Omitted Variables: The model does not account for all potential to correlate with individual differences in covariates in risk propensity, time horizon preferences, cognitive ability, and their moderating capability in the relationship between APM and motivation.

8.2 Scope for Future Research

Future research would profit greatly from adopting longitudinal panel designs to track the evolution of APM effectiveness over time, as organizations change the systems that measure the firm's performance. Comparative cross-national studies comparing the behavioral effects of APM across various cultural contexts would help to draw out the generalization of current findings. To establish stronger causal influence, it would be recommended for experimental approaches such as randomized controlled trials of different designs of APM in organizational settings. The future could explore some of the promising options and ways in which digital performance dashboards together with real-time APM feedback systems enabled by AI could reshape the workforce motivation and responses to accounting. Neuroscientific measures combined with survey methods could shed light on the biological substrates of APM-assisted motivation (e.g., cortisol levels, EEG activation).

References

1. Abernethy, M.A., & Bouwens, J. (2005). Determinants of accounting innovation implementation. *Abacus*, 41(3), 217-240.
2. Banker, R.D., Potter, G., & Srinivasan, D. (2000). An empirical investigation of an incentive plan that includes nonfinancial performance measures. *The Accounting Review*, 75(1), 65-92.
3. Banker, R.D., Chang, H., & Pizzini, M.J. (2004). The balanced scorecard: Judgmental effects of performance measures linked to strategy. *The Accounting Review*, 79(1), 1-23.
4. Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
5. Bass, B.M., & Avolio, B.J. (1994). *Improving organizational effectiveness through transformational leadership*. Sage Publications.
6. Biddle, G.C., Bowen, R.M., & Wallace, J.S. (1997). Does EVA beat earnings? Evidence on associations with stock returns and firm values. *Journal of Accounting & Economics*, 24(3), 301-336.
7. Bonner, S.E., & Sprinkle, G.B. (2002). The effects of monetary incentives on effort and task performance. *Accounting, Organizations and Society*, 27(4-5), 303-345.
8. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
9. Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.
10. Eisenhardt, K.M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, 14(1), 57-74.
11. Graham, J.R., Harvey, C.R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1-3), 3-73.
12. Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
13. Harrison, G.L., & McKinnon, J.L. (1999). Cross-cultural research in management control systems design. *Accounting, Organizations and Society*, 24(5-6), 483-506.

14. Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Sage Publications.
15. Ittner, C.D., & Larcker, D.F. (1998). Are nonfinancial measures leading indicators of financial performance? An analysis of customer satisfaction. *Journal of Accounting Research*, 36(Supplement), 1-35.
16. Ittner, C.D., & Larcker, D.F. (2003). Coming up short on nonfinancial performance measurement. *Harvard Business Review*, 81(11), 88-95.
17. Jensen, M.C., & Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
18. Kaplan, R.S., & Norton, D.P. (1992). The balanced scorecard – Measures that drive performance. *Harvard Business Review*, 70(1), 71-79.
19. Kaplan, R.S., & Norton, D.P. (1996). *The balanced scorecard: Translating strategy into action*. Harvard Business School Press.
20. Kleiman, R.T. (1999). Some new evidence on EVA companies. *Journal of Applied Corporate Finance*, 12(2), 80-91.
21. Laverty, K.J. (1996). Economic 'short-termism': The debate, the unresolved issues, and the implications for management practice and research. *Academy of Management Review*, 21(3), 825-860.
22. Libby, R., & Lipe, M.G. (1992). Incentives, effort, and the cognitive processes involved in accounting-related judgments. *Journal of Accounting Research*, 30(2), 249-273.
23. Lipe, M.G., & Salterio, S.E. (2000). The balanced scorecard: Judgmental effects of common and unique performance measures. *The Accounting Review*, 75(3), 283-298.
24. Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting and task performance*. Prentice Hall.
25. Locke, E.A., & Latham, G.P. (2002). Building a practically useful theory of goal setting and task motivation. *American Psychologist*, 57(9), 705-717.
26. Malina, M.A., & Selto, F.H. (2001). Communicating and controlling strategy: An empirical study of the effectiveness of the balanced scorecard. *Journal of Management Accounting Research*, 13(1), 47-90.
27. Merchant, K.A., & Van der Stede, W.A. (2007). *Management control systems: Performance measurement, evaluation and incentives* (2nd ed.). Pearson Education.
28. Podsakoff, P.M., MacKenzie, S.B., & Bommer, W.H. (1996). Transformational leader behaviors and substitutes for leadership as determinants of employee satisfaction. *Journal of Management*, 22(2), 259-298.
29. Schweitzer, M.E., Ordóñez, L., & Douma, B. (2004). Goal setting as a motivator of unethical behavior. *Academy of Management Journal*, 47(3), 422-432.
30. Shields, M.D. (1995). An empirical analysis of firms' implementation experiences with activity-based costing. *Journal of Management Accounting Research*, 7(1), 148-166.
31. Simon, H.A. (1955). A behavioral model of rational choice. *Quarterly Journal of Economics*, 69(1), 99-118.
32. Simons, R. (1995). *Levers of control: How managers use innovative control systems to drive strategic renewal*. Harvard Business School Press.

33. Sprinkle, G.B. (2003). Perspectives on experimental research in managerial accounting. *Accounting, Organizations and Society*, 28(2-3), 287-318.
34. Stewart, G.B. (1991). *The quest for value: The EVA management guide*. Harper Business.
35. Vroom, V.H. (1964). *Work and motivation*. John Wiley & Sons.
36. Anthony, R.N., & Govindarajan, V. (2007). *Management control systems* (12th ed.). McGraw-Hill/Irwin.
37. Chenhall, R.H. (2003). Management control systems design within its organizational context. *Accounting, Organizations and Society*, 28(2-3), 127-168.
38. Otley, D. (1999). Performance management: A framework for management control systems research. *Management Accounting Research*, 10(4), 363-382.
39. Zimmerman, J.L. (2020). *Accounting for decision making and control* (10th ed.). McGraw-Hill Education.
40. Malmi, T., & Brown, D.A. (2008). Management control systems as a package. *Management Accounting Research*, 19(4), 287-300.
41. Flamholtz, E.G. (1983). Accounting, budgeting and control systems in their organizational context. *Accounting, Organizations and Society*, 8(2-3), 153-169.