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**Development of Performance Management System  
incorporating Dual Perspectives of Enterprise and  
Customers'**

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## Development of Performance Management System incorporating Dual Perspectives of Enterprise and Customers'

### Structured Abstract:

**Purpose:** Performance measurement and management (PMM) literature is highly abundant with numerous PMM frameworks encapsulating various aspects of enterprise performance that are largely driven by enterprise viewpoint. Considering dynamic nature of Indian telecom industry where customers hold high bargaining power in the industry, flexible strategy game-card has been adopted as a theoretical basis with an attempt to capture an “outside-in view” of enterprise performance by incorporating performance measurement from customers’ perspective.

**Design/Methodology/Approach:** Rigorous empirical data analysis tools have been used on the data collated through opinion survey to develop strategic performance management model for Indian telecom service providers where mediation effects of customers’ based strategic factors have also been captured.

**Findings:** The findings reinforce the fact that financial performance indicators are lagging indicators, with additional findings that ‘situation’, ‘actor’, and ‘process’ related strategic factors act as leading indicators, whereas the subscriber’s strategic factors in terms of ‘value in offerings’ and ‘value in relationships’ mediate the relationships of leading and lagging performance indicators, thus present holistic picture of Performance management system (PMS). Customers’ perspective of enterprise performance is the center point of discussion in this study.

**Research Limitations/Implications:** The set of performance indicators identified is in the context of Indian telecom service operators, which should be used in another context with full caution. The generalization of the empirically validated strategic performance management model in other country context is limited. However, the process of development of PMS could be taken as an example to replicate in any other context.

**Originality/Value:** Measuring an enterprise performance from customers’ perspective is the major contribution of this study. With the diverse set of performance indicators, effective PMS can be developed and deployed where tangible measures act as lagging indicators, situational, operational, and strategic measures act as leading indicators, and subscribers’ crucial assessment measures act as enabling indicators.

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3 **KEYWORDS:** performance management system, leading performance indicators, lagging  
4 performance indicators, enabling performance indicators, flexible strategy game-card, mediation  
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9 **Article Classification: Research Paper**

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11 **1. Introduction**

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13 In the competitive business environment, developing an effective performance management  
14 system (PMS) is the central concern of enterprises. Since the mid-1980s, much attention has  
15 been paid to study the PMS as a tool for effective strategy implementation (Gimbert *et al.*, 2010;  
16 Srivastava and Sushil 2013). It should play a key role in strategy implementation by translating  
17 organizational strategies into desired measures and targets; communicate objectives; monitor  
18 progress and provide feedback (Kaplan and Norton, 2001; Chenhall, 2003; Ittner and Larcker,  
19 2003). The literature identifies defining a consistent set of measures that are linked to the  
20 operational strategy of the enterprise as a major challenge (Kaplan and Norton, 2000; Franco-  
21 Santos and Bourne, 2003; Pinheiro de Lima, E. *et al.*, 2010).  
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30 Post-2000, numerous PMM frameworks were conceptualized to overcome the criticisms  
31 of the balanced scorecard (BSC). Some of those criticisms were a lack of stakeholder focus,  
32 static nature, lack of cause-effect relationships, a closed system approach, etc. (Norreklit, 2000;  
33 Ahn, 2001; Akkermans and van Oorschot, 2005; Sushil, 2008). Besides this, a critical review of  
34 BSC approach (Oakes and Oakes, 2016) prompts authors to look beyond the classical four  
35 perspectives of BSC (financial, customer, internal business process, learning, and growth).  
36 Numerous PMM frameworks exist that attempt to present a balanced view of enterprise  
37 performance as BSC (Kaplan and Norton, 1996), performance prism (Neely *et al.*, 2001),  
38 integrated performance management system (Bititci *et al.*, 1997), flexible strategy game-card  
39 (Sushil, 2010), etc. However, the operationalization of customer view is often misinterpreted. In  
40 many cases, there is difference between customer perspective of how enterprise satisfies its  
41 customers' requirements and enterprise perspective of how it satisfies its customers'  
42 requirements. Thus, existing knowledge base does not discuss differences between enterprise and  
43 customers view point of performance, so our research question is how incorporation of  
44 customers' assessment of enterprise performance presents a holistic PMS?  
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3 Indian telecom service industry where rapid transformations and consolidation are taking  
4 place, there is a need to incorporate “situation” (environmental context) related aspect in PMS  
5 that has crucial impact on enterprise performance in this context. Besides this, merely capturing  
6 customers’ perspective as customer satisfaction, delight, or retention does not reflect customers’  
7 viewpoint of enterprise performance. Given the nature of Indian telecom service industry, where  
8 customers hold high bargaining power in the industry, assessing enterprise performance from  
9 customers’ viewpoint is of paramount importance.

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12 With an aim to capture dynamics of the situation, customers’ viewpoint and use of an  
13 alternative approach to BSC to develop PMS, this article adopts the theoretical structure of  
14 *flexible strategy game-card* (Sushil, 2010). This structure captures both enterprise and  
15 customers’ perspectives of PMS, capturing an “outside-in” view of enterprise performance.  
16 These perspectives help to capture the non-financial performance measures linked with internal  
17 and external business environment, internal and external actors influencing the performance, and  
18 internal and external business processes, thus incorporate integrated leading performance  
19 indicators. Here, financial performance measures act as lagging performance indicators.

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22 The remainder of the article is organized as follows: After detailing the background and  
23 rationale of this study, the next section builds the theoretical background and development of  
24 research hypotheses. The next section describes the research methodology regarding identifying  
25 performance indicators, development of data collection instrument, and data collection  
26 procedure. Following this, the results and discussion of the opinion survey are presented. In the  
27 final part of the article, the implications of this study to academia and management are presented,  
28 specifying its limitations and future scope.

## 23 24 25 **2. Theoretical background and hypothesis development**

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28 ‘*What gets measured, gets done*’ does not portray the whole picture of enterprise performance.  
29 With the changing business ecology and market dynamics, transformations happened in the way  
30 enterprise performance was measured. Financial figures and annual reports are not the only  
31 means to measure enterprise performance (Ghalayini and Noble, 1996). Traditional management  
32 accounting and financial measures have been dominantly used and highly abused in the literature  
33 due to lacking in the corporation of strategy, innovation and continuous improvements (Hayes  
34 and Abernathy, 1980; Dixon *et al.*, 1990; Bititci, 1994). During the early 1990s, myriad of

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3 business improvement and innovation techniques, methodologies and approaches have been  
4 developed (McAdam and McCreedy, 1999). Some of these approaches are learning organization  
5 (Senge, 1990); business process re-engineering (Hamer and Champy, 1994); total quality  
6 management (Deming, 1982); BSC (Kaplan and Norton, 1992); business excellence model  
7 (EFQM, 1991); six sigma; knowledge management (Nonaka and Takeuchi, 1995); and so on.  
8 Besides these developments, three transition phases—management accounting perspective,  
9 financial perspective, and integrative perspective were explicitly visible in performance  
10 management practices (Yadav *et al.*, 2013).  
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18 Incorporating non-financial performance measures as complementary to financial  
19 measures in BSC, Kaplan and Norton (1992) argue that financial performance measures are  
20 lagging indicators that depend on leading indicators such as operational and strategic  
21 performance measures. With some other innovations in performance management frameworks,  
22 looking beyond financial measures has become a great topic of interest for many researchers.  
23 Numerous developments happened, incorporating a diverse set of non-financial performance  
24 measures and stakeholders perspective. Performance prism (Neely *et al.*, 2001) integrates  
25 stakeholder perspective under five facets—stakeholder satisfaction, stakeholder contribution,  
26 strategies, capabilities, and processes. Thus, the shift from merely looking for shareholders  
27 (financial perspective) to a set of stakeholders provides performance measurement a long-term  
28 focus. By incorporating quality, flexibility, consistency, monitoring and reviewing systems,  
29 social perspective, intellectual capital perspective, people development, and so on, integrative  
30 perspective and dynamism have been brought in performance management frameworks (Yadav  
31 *et al.*, 2013).  
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43 By filling in gaps left by financial and accounting measures, non-financial measures  
44 promise to portray the complete picture of enterprise performance. However, as per Ittner and  
45 Larcker (2003) still, there are few companies yet to realize benefits of them as they fail to  
46 identify, analyze, and act on the right non-financial measures. In recent times where internal and  
47 external business environments play a crucial role in rapidly changing industries based on  
48 technology, regulatory compliances, and changing customer demands, leading performance  
49 measures based on environmental contexts are still missing from PMS.  
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Besides this, post-2000 era of a critical review of BSC approach highlights that it was not a unique approach developed by Kaplan and Norton and similar version as Tableau de Bord existed prior (Bessire and Baker, 2005) and it is highly influential managerial fad and fashion (Arnaboldi *et al.*, 2015). Norreklit (2003) argued that BSC theory is persuasive rather than convincing and the validity of the theory builds mainly on the rationality of the model constructed by the reader.

Given these critics, enormous developments seen as an alternative to BSC are available in the literature (Some of them are described in the above text). The emphasis of these developments was to incorporate a holistic view of performance with a focus on enterprise centered performance measures. One of the recent developments, *flexible strategy game-card* (FSGC) (Sushil, 2010), attempted to look beyond enterprise centered measures and proposed dual perspectives of performance, i.e. enterprise perspective and customer perspective. All major stakeholders are considered under enterprise perspective, and as customers are at the center for strategy formulation and implementation, they have been taken apart (Sushil, 2012).

Enterprise perspective deals with situation-, actor-, process-, and learning-action-performance-related strategic factors based on a SAP-LAP framework<sup>1</sup> (Sushil 2000, 2009a). Situation factors are dealing with proactive and reactive measures of strategic actions and comprise external and internal situations. Actors are crucial factors for strategy formulation as well as strategy execution. Actor-related measures deal with internal as well as external actors. Process factors are related to strategy execution which deals with internal and external business processes. Performance factors are treated as the lag factors which are the outcomes of the strategy. The ‘customer perspective’ captures the viewpoint of the customers about the performance of the enterprise in the form of ‘value in offerings’ and ‘value in relationships’.

To capture the “outside-in” view of PMS and context specific performance measures, FSGC has been adopted for the study that enables to capture “situation” (context) based performance measures as well as dynamics between different performance measures beyond classical BSC approach.

## ***2.1 Hypothesis development***

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<sup>1</sup> SAP-LAP framework (Situation-Actor-Process & Learning-Action-Performance) Framework. More details about this framework is available at Sushil (2000).

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3 After exploring evolutionary patterns in PMM practices, this study attempts to capture  
4 performance measures beyond BSC to develop PMS through empirical investigations in the  
5 context of Indian telecom service providers. Here, lead indicators are driving measures  
6 illustrating incremental changes that will affect outcomes, whereas lag indicators are outcome  
7 measures that indicate the results of strategy (Barnabe, 2011).  
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12 To examine the relationships between enterprise and customers perspectives adopted  
13 from FSGC by assuming enterprise factors as leading and lagging indicators and customers'  
14 factors as enabling indicators, four hypotheses have been developed. These hypotheses examine  
15 the relationships of leading and lagging indicators with the interactions of enabling indicators,  
16 these linkages have been exhibited in Figure 1. These hypotheses have been supported by strong  
17 theoretical basis, as situation aspects capture contingency theory, strategy and structure theory,  
18 and dynamic capabilities view; actors' perspective capture stakeholder theory; and process  
19 aspects capture institutional theory, organizational learning theories, and so on.  
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27 **--Insert Figure 1 Here--**  
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29 *Hypothesis 1 (H1): Situation-related strategic factors are predictors of enterprise performance.*  
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31 Enterprises deal with the ever-changing business environment. Contingency theory suggests that  
32 enterprise performance depends on alignment with the environment and congruence of internal  
33 organizational elements (McKee *et al.*, 1989). To achieve superior performance, firms must  
34 enhance their external fit with the environment and maintain their internal fit with strategy and  
35 structure (Venkatraman, 1989). Dynamic capabilities influence firm performance by matching  
36 the resource base with changing business environment (Teece *et al.*, 1997).  
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43 *Hypothesis 2 (H2): Actor-related strategic factors are predictors of enterprise performance.*  
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45 Neely *et al.* (2001) argue that the only reason why an organization has strategy is to deliver value  
46 to its stakeholders. So, it is imperative to consider all its stakeholders while developing strategic  
47 objectives and actions. BSC has also incorporated 'customer perspective' as an important  
48 perspective of performance, but it sidelined other important stakeholders (Bourne *et al.*, 2002).  
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52 *Hypothesis 3 (H3): Process-related strategic factors are predictors of enterprise performance.*  
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3 Business processes underpin the vast majority of organizations where executives identify  
4 measures to manage these processes (Neely *et al.*, 2001). Institutional theory (Scott, 1995),  
5 organizational ecology (Hannan and Freeman, 1989), and organizational learning (Senge, 1992)  
6 theories have been applied to understand organizational processes and practices. Enterprises  
7 identify different key performance indicators (KPIs) to track their business processes which lead  
8 to superior performance.  
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14 *Hypothesis 4 (H4): Customers' strategic factors are mediators of enterprise performance.*  
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16 Integrative perspective of performance incorporating the customers' viewpoint provides a  
17 holistic view of enterprise performance. The existing studies consider the customer perspective  
18 of performance explicitly by looking at customer satisfaction index, but the incorporation of  
19 customer's viewpoint about the performance of an enterprise can bring the holistic view of  
20 performance (Sushil, 2009b).  
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### 26 **3. Methodology**

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28 The multi-method research approach combining both qualitative and quantitative research routes  
29 helps to unearth a complete picture of a phenomenon (Fine and Elsbach, 2000). Prior PMS  
30 research highlights one of the limitations that questionnaire surveys are commonly used to gather  
31 data about PMSs, but are rarely combined with other complementary research methods (Dossi  
32 and Patelli, 2010). This study seeks to overcome this shortcoming by using the multi-method  
33 approach of questionnaire survey, and semi-structured interviews. The unit of analysis for this  
34 study is Indian telecom firms, and as strategic decision- and performance-related aspects are  
35 dealt with top-level management, the unit of observation is top- and senior-level managers  
36 employed in Indian telecom companies. The following subsections describe the identification of  
37 strategic factors, development and validation of data collection instrument, and data collection  
38 procedure.  
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#### 48 **3.1 Identification of strategic factors**

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50 For identifying strategic factors related to four constructs identified from *flexible strategy game-*  
51 *card*, semi-structured interviews were conducted with top- and senior-level management people  
52 employed in telecom companies in India. For identification of customers' strategic factors for  
53 'value in offerings' and 'value in relationships', semi-structured interviews have been conducted  
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with telecom customers capturing their viewpoints about assessing the performance of telecom operators. ‘Thematic content analysis’, a qualitative data analysis methodology has been used to identify themes, and the following strategic factors of performance have been identified (for details about the identification of strategic factors, please see Yadav and Sushil, 2014):

*Enterprise perspective* (PE denotes enterprise-related performance factors):

**Situation:**

PE1: Fierce Competition  
PE2: Government Policies

**Actor:**

PE3: Customer Satisfaction  
PE4: Employee Productivity

**Process:**

PE5: Business Process Efficiency

**Performance:**

PE6: Profitability  
PE7: Compounded Annual Growth Rate (CAGR)  
PE8: Average Revenue Per User (ARPU)  
PE9: No. of Customers

*Customer perspective* (PC denotes customers’-related performance factors):

**Value in Offerings:**

PC1: Quality of Telecom Services  
PC2: Call Tariff  
PC3: Value Added Services (VAS) Offerings

**Value in Relationships:**

PC4: Brand Image of Operator  
PC5: Customer Support Services

These nine strategic factors are considered as the variables for this study to measure the following four latent constructs: situation, actor, process, and performance. Two latent constructs of customers’ perspective have been captured with the help of five strategic factors. Respondents identified that inclusion of financial and non-financial performance measures helps to capture a holistic view of the performance of the enterprises. Further, questionnaire survey methodology has been found appropriate to measure these latent constructs, where performance measurement scale has been developed and validated.

### ***3.2 Data collection instrument development***

Enterprise performance management issues are highly context specific where existing measurement instruments are of no use. Keeping this in mind, data collection instrument has been developed and validated in the context of Indian telecom service providers. Performance

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3 measurement scale for measuring these six latent constructs has been developed with the help of  
4 focus group discussion with 12 senior people from the telecom industry, and some insights have  
5 been developed through discussion with customers on customers' strategic factors. The  
6 perceptual data has been captured with the help of opinion sought on a five-point Likert type  
7 scale ranging from 1 (strongly disagree) to 5 (strongly agree) on statements about situation,  
8 actor, process, value in offerings, and relationships. The developed scale is a multi-item scale  
9 consisting 47 items measuring different aspects of situation-, actor-, and process-related strategic  
10 factors, and the strategic factors related to customers' perspective; whereas performance has  
11 been captured on the data range regarding profitability ratios, revenue growth, number of  
12 customers, and ARPU. The validity and reliability of the measurement scale have been  
13 established (the results are shown in the next section).  
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### 23 ***3.3 Data collection***

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25 This study captures the perception of senior- and top-level executives for exploring the  
26 relationships between leading and lagging performance indicators. Since the questionnaire seeks  
27 responses on different facets of business processes and domains, an in-depth understanding of  
28 telecom industry and operator services is essential to provide justified opinion. Therefore,  
29 executives with minimum ten years of working experience in the telecom industry have been  
30 selected as respondents for the questionnaire survey that constitute the unit of observation for  
31 this study. A personal contact approach is found to be the most appropriate to collect the data.  
32 Snowball sampling technique has been used to identify the respondents for this study. The  
33 appointments were sought with the respondents through e-mails or phone contacts. After the  
34 efforts of six months, 126 responses have been collected. These were further checked for  
35 incompleteness and response biases, and finally, the responses of 107 managers have been used  
36 for further analysis. Table 1 presents the respondents' profile regarding their designation and  
37 working experience. It is visible in Table 1 that the telecom employees with designations of  
38 Vice-President, DGM (Deputy General Manager), AGM (Assistant General Manager), and GM  
39 (General Manager) are the respondents of the survey, in which 10.3 per cent respondents are  
40 vice-presidents. 38.3 per cent respondents have working experience of 21 and more years, and  
41 these include vice-president and GM category employees.  
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#### 4. Empirical findings and results

To test proposed hypotheses in section 2, the data collected through opinion survey has been taken as a base to perform different statistical techniques. The data is collected on five-point Likert type scale, so the data is metric data. The validity and reliability of the measurement scale have been established through factor analysis (principal component technique), and internal consistency of the scale is measured through Cronbach's Alpha. The descriptive statistics of the data is checked through univariate analysis; the degree of association among these six constructs and all the strategic factors have been examined through Pearson's correlation. To examine the predictor-criteria relationships and mediating effects of customers' strategic factors, multiple regression technique has been used. The following subsections present results of these statistical tests separately:

##### *4.1 Validity and reliability of measurement scale*

Exploratory factor analysis has been conducted to establish the construct validity of the measurement scale. KMO and Bartlett's test of sphericity has been conducted, in which the KMO value is .643, and Bartlett's test is highly significant ( $p < .000$ ). This indicates that factor analysis is appropriate. Some criterion for extraction of factors were Eigen value  $> 1$ , VARIMAX rotation, the anti-image correlation for diagonal entries  $> .5$ , and thus some items— 'E14', 'E34', 'E44', 'C23', 'C43', and 'C54'—were dropped. Thus, the measurement scale finally consists of 41 items, which can be considered as a multidimensional performance measurement scale for Indian telecom service providers. The cumulative variance explained by these factors is 70.835 per cent.

**--Insert Table 2 Here--**

Table 2 presents the results of Principal Component Analysis, the factor loadings of each item, and the internal consistency statistics. The statements of the opinion survey were duly checked with the experts and respondents to establish the content validity. All the items were grouped under five strategic factors of enterprise perspective, and five strategic factors of customers' perspective, which helps to establish construct validity of the scale. Cronbach's Alpha for the scale has been obtained as .842, which presents high internal consistency. The values of Cronbach's Alphas for individual strategic factors have also been obtained, which is

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3 higher than 65 per cent, which indicates that strategic factors and overall scale have good  
4 reliability.  
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#### 6 7 **4.2 Descriptive statistics** 8

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10 To understand the nature of spread of the data, univariate analysis has been conducted, and the  
11 results are shown in Table 2. It is visible that there is little difference available between the mean  
12 and median values of strategic factors, indicating the data is distributed closer to a normal  
13 distribution. The values of mean range from 3.03 to 4.03, whereas the values of median range  
14 from 3 to 4. The standard deviation values range from .438 to .680.  
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#### 18 19 **4.3 Correlation analysis** 20

21 To examine the degree of association among these six constructs of FSGC, Pearson correlation  
22 coefficients have been obtained. These coefficients present no correlation among 'situation' and  
23 'performance', but 'situation' has a highly significant correlation with 'actor', 'process', and  
24 customers' constructs, which highlights 'situation' as a strong driver to enabling factors. Some of  
25 the highly significant correlations identified are 'actor' and 'process' (.567), 'process' and 'value  
26 in offerings' (.609), 'value in offerings' and 'value in relationships' (.581).  
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38 Tables 3 and 4 present the Pearson correlation coefficients for the constructs and all the  
39 strategic factors respectively. Looking at the degree of association among strategic factors, it is  
40 found that some of the strong correlations identified are 'customer satisfaction' and 'quality of  
41 telecom services' (.587), 'business process efficiency' and 'quality of telecom services' (.604),  
42 'profitability' and 'CAGR' (.768), 'ARPU' and 'no. of customers' (.821), 'quality of telecom  
43 services and 'customer support services' (.536), and so on. Some of the factors are not correlated  
44 to other factors; for example, 'situation' related strategic factors have no correlation with  
45 'performance' and 'customers' related strategic factors. The correlation exists between 'Govt.  
46 Policies' and 'customer satisfaction' (.260) and 'Govt. Policies' and 'business process  
47 efficiency' (.363) that is significant at 0.01 level. The majority of 'customers' related strategic  
48 factors show strong correlations among other factors.  
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#### 4.4 Multiple regression analysis

The Pearson correlation coefficient helps to identify the association between two variables, which has been examined in the last subsection, but it doesn't examine the predictor-criteria relationships among dependent and independent variables. For this purpose, multiple regression analysis has been used, in which step-wise regression is used for examining the hypotheses of association among the constructs, and hypotheses of association among all the strategic factors.

##### *'Performance' (P) as Dependent Variable*

For examining the leading and lagging relationships among different game-card constructs, 'performance' has been taken as a dependent variable, and 'situation', 'actor', 'process', 'value in offerings', and 'value in relationships' have been taken as independent variables. Stepwise regression analysis produces four regression models, and the regression models summary is presented in Table 5.

##### **--Insert Table 5 Here--**

Results of the regression models summary present that 'situation' is not a significant predictor of 'performance'. For the other strategic factors, regression model 1 presents 'process' as the strongest predictor and then 'actor' as predictor (regression model 2), then 'value in offerings' as predictor (regression model 3), and 'value in relationships' as predictor (regression model 4), where 'performance' has been taken as dependent variable.

#### **5. Empirically validated strategic performance management model**

Strategic performance management model showcasing the relationships among leading and lagging performance indicators with the interactions of customers-related strategic factors has been portrayed, and this is demonstrated in Figure 2. Besides testing the hypotheses of association among leading and lagging indicators, the driver-dependent relationships among other strategic factors have also been examined through multiple regression. VIF (Variance inflation factor) has been taken as a measure for detecting multi-collinearity, and the values range from 1.072 to 2.044. The values being below five show the negligible effect of multi-collinearity among the independent variables.

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3 The hypotheses of association results show that ‘actor’, ‘process’, ‘value in offerings’ and  
4 ‘value in relationships’ are the predictors of ‘performance’. Strategic performance management  
5 model, which adopts the FSGC structure presents interactions among enterprise and customers  
6 perspectives, where ‘actor’ related strategic factors show interaction with ‘value in relationships’  
7 and ‘process’ related strategic factors show interaction with ‘value in offerings’.  
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15 Empirically validated strategic performance management model for all the strategic  
16 factors has been developed, and this is demonstrated in Figure 5. The values presented on the  
17 arrows depict ‘Beta’ value (regression coefficient), obtained from stepwise regression.  
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### 20 21 ***5.1 Mediation effects of subscriber factors***

22 According to Barron and Kenny (1986), a given variable may be said to function as a mediator to  
23 the extent that it accounts for the relations between the predictor and the criterion. A variable  
24 functions as a mediator when it meets the conditions: (i) variations in levels of the independent  
25 variable significantly account for variations in the presumed mediator (Path a); (ii) variations in  
26 the mediator significantly account for variations in the dependent variable (Path b); and (iii)  
27 when Paths a and b are controlled, a previously significant relation between the independent and  
28 dependent variables is no longer significant, with the strongest demonstration of mediation  
29 occurring when Path c is zero. Here, ‘value in offerings’ is acting as a mediating variable  
30 between ‘process’ and ‘performance’ (Figure 3), and likewise, ‘value in relationships’ is acting  
31 as a mediating variable between ‘actors’ and ‘performance’ (Figure 4). To investigate the  
32 mediation effects of customers constructs, it is suggested that all four conditions proposed by  
33 Barron and Kenny (1986) should be examined and inferences of full, partial, or no mediation  
34 should be grounded with strong statistical testing.  
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49 The regression analysis summary presents the complete mediation effect of ‘value in  
50 offerings’ which makes the relationship between ‘process’ and ‘performance’ insignificant. The  
51 indirect effect of mediating variable is found to be .247 (Table 6). Tables 6 and 7 present the  
52 regression summary showcasing the statistical testing of mediation effect of ‘value in offerings’  
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3 and ‘value in relationships’. It shows that ‘value in relationships’ completely mediates the  
4 relationships between ‘actor’ and ‘performance’, which is no longer significant in step 4.  
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7 **--Insert Table 6 Here--**

8 **--Insert Table 7 Here--**

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11 ‘Situation’ related strategic factors are drivers for ‘actor’ and ‘process’, which ultimately  
12 affect the ‘performance’. ‘Profitability’ has been observed as the outcome, which is dependent  
13 on the ARPU, CAGR, and number of customers. ‘Brand image of the operators’ is driven by  
14 ‘VAS offerings’ and ‘call tariff’, and thus, it presents the mutual interaction of both aspects of  
15 customers’ strategic factors.  
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20 Some of the customers’ factors are enabling the financial performance indicators, as ‘call  
21 tariff’, ‘brand image of operator’, and ‘quality of telecom services’ affect the ‘CAGR’. The ‘no.  
22 of customers’ is driven by ‘brand image of operator’ and ‘call tariff’. In nutshell, the hierarchical  
23 strategic performance management model for the telecom service operators reinforces the  
24 relationships of leading and lagging performance indicators, where ‘situation’, ‘actor’, and  
25 ‘process’ strategic factors are leading indicators; ‘performance’ factors are lagging indicators,  
26 whereas customers’ strategic factors act as enabling indicators.  
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32 **--Insert Figure 5 Here--**

## 33 **6. Discussions of empirical findings**

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36 This study establishes the relationships of leading and lagging performance indicators with  
37 introducing customers’ strategic factors as mediators in the context of Indian telecom service  
38 providers. The findings emphasize the fact that financial performance indicators are lagging or  
39 outcome variables that are driven by the external environment, internal organizational structure,  
40 and business processes. Going beyond the four perspectives of BSC, this study captures holistic  
41 dimensions of business performance by adopting structural aspects of flexible strategy game-  
42 card and dual perspectives of performance. The ‘situation’, ‘actor’, ‘process’, ‘value in  
43 offerings’, and ‘value in relationships’ aspects capture two different perspectives of performance,  
44 i.e. enterprise perspective and customer perspective where adding value in relationships and  
45 offerings lead to incorporate customers’ driven strategic factors in PMS. This combination  
46 reinforces customers’ orientation for the success of any business and enterprise as it enables an  
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3 organization to incorporate measures related to customers' feedback, customers' relationships,  
4 and value-addition to customer products and services in enterprise PMS.  
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7 Morecroft *et al.* (2002) hypothesize that successful firms manage strategic resources and  
8 capabilities through holistic management systems. Current management theories interpret that  
9 firms create strategic advantage by efficiently creating and using systematic PMS. The resource-  
10 based view and systems-based strategy theories emphasize on looking beyond popular financial  
11 versus non-financial dichotomy and link the performance to its strategic goals (Malina and Selto,  
12 2004). The strategic factors identified for the empirical investigations represent the diverse and  
13 complementary performance measures for Indian telecom service providers. The findings of the  
14 empirical analysis reveal that regulatory framework for Indian telecom industry is a major  
15 driving force for telecom operators, as the tariff regulations, spectrum auctioning and sharing  
16 policies, roaming policies, MNP (nation-wide), revenue sharing policies, entry and exit policies,  
17 and M&A policies. Due to a saturated market and stiff competition, small players are exiting the  
18 market, and thus, consolidations are prevalent in the industry. This study brings one of the  
19 neglected aspects of performance to the fore, i.e. the viewpoint of customers about the telecom  
20 operators' performance. The results show that customers' strategic factors can be portrayed as  
21 enabling performance indicators in strategic performance management model for telecom  
22 customers. The efficient business processes drive the quality of telecom services, customer  
23 support services, and call tariff. The brand image of the operator is determined through VAS  
24 offerings and call tariff provided by the operator, which can attract more customers with better  
25 quality and brand image. These findings highlight the fact that now the preferences of Indian  
26 customers are changing, and telecom services are no more restricted to voice-based services. Due  
27 to penetration of smartphones in the market, data-based services and offers are upcoming  
28 preferences of the customers. The tangible performance indicators are 'ARPU', 'number of  
29 customers', and 'growth in revenues'. Profitability has been observed as the ultimate lagging  
30 financial performance indicator, which shows conformity to the conventional performance  
31 measurement practices as the overall bottom-line of an organization (Dixon, 1999; Thrubin,  
32 1994; Smith, 1999).  
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52 The use of multi-method research approach ranging from semi-structured interviews  
53 with opinion survey bring methodological rigor in this study, and thus, it attempts to overcome  
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3 the methodological shortcomings of the existing studies. This study makes some contributions to  
4 the body of knowledge, as it looks beyond the four BSC perspectives to measure performance  
5 and attempts to capture holistic performance management indicators ranging from external  
6 drivers to internal business processes to internal and external actors to customers' viewpoint and  
7 financial and non-financial tangible performance measures. There is a dearth of studies available  
8 in the context of Indian enterprises studying relationships of diverse performance indicators, and  
9 thus, this study makes the sectoral contribution as well. Highlighting customers' view point to  
10 assess enterprise performance that provides an "outside-in" approach of PMS could be seen as  
11 one of the major contributions to the knowledge base.  
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## 19 **7. Implications and Conclusion**

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21 This study examines the relationships of leading and lagging performance indicators for Indian  
22 telecom service providers based on the opinion survey conducted with 107 senior and middle-  
23 level managers employed in the telecom companies. In particular, this study explores the  
24 relationships between customers' strategic factors, considering them enabling performance  
25 indicators. From the findings of this study, some of the implications for both practitioners and  
26 academia can be drawn.  
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33 It is a well-established fact that integration of non-financial performance indicators with  
34 financial parameters provides a holistic picture of enterprise performance. The diverse set of  
35 performance indicators capture the external and internal drivers of performance, which  
36 ultimately affect the financial performance. The strategic factors recommend aligning with the  
37 strategic goals and strategic interventions. With these diverse set of performance indicators,  
38 effective PMS can be developed and deployed. By evaluating the performance of any enterprise  
39 on these performance indicators, some of the strategic interventions can be suggested. Further,  
40 system dynamics modeling technique can be employed to simulate and capture future scenarios  
41 and, thus, measure the most likely impact of recommended strategies; corrective actions can be  
42 suggested if required. For any telecom operator with the above set of performance indicators  
43 identified through thematic content analysis, some of the recommended strategic interventions  
44 could be (i) mergers and acquisitions, (ii) global expansion, (iii) introducing innovative services,  
45 (iv) VAS offering, and so on.  
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The set of performance indicators identified here is in the context of Indian telecom service operators, which should be used in another context with full caution. However, this study could be taken as exemplary in any context for PMS development. In the context of any particular Indian telecom operator, these should be cross-verified, and some other performance indicators could be added or modified in the above list. The customers' strategic factors brought forth that the practitioners' viewpoint should not be limited to customer satisfaction scores, but management should look forward to introducing innovative services and building brand image in the minds of the customers. Thus, this study reinforces the relationships of leading and lagging performance indicators with the high influence of customers' strategic factors as enabling performance indicators. The academia could take this study as an exemplary study to develop an effective PMS looking beyond the dichotomy of financial and non-financial indicators, and capture the holistic aspects of performance using *flexible strategy game-card*.

This study could be taken up further for developing system dynamics–based PMS for any particular Indian telecom enterprise, and thus, it can lead to the development of effective, holistic, and dynamic PMS, which is an upcoming thrust area of PMS researchers. The other aspects of future research could be to conduct an opinion survey with low-performing telecom operators, and the dissimilarities in the results could open up new avenues of research. In a nutshell, a diverse set of performance indicators looking beyond the classical trends could lead to the development of effective PMS for an enterprise.

## References

- Ahn, H. (2001). Applying the balanced scorecard concept: an experience report. *Long Range Planning*, 34, 441-461.
- Akkermans, H.A. and van Oorschot, K.E. (2005). Relevance assumed: a case study of balanced scorecard development using system dynamics. *Journal of the Operational Research Society*, 56 (8), 931-941.
- Arnaboldi, M., Lapsley, I. and Steccolini, I. (2015), "Performance management in the public sector: The ultimate challenge", *Financial Accountability & Management*, Vol. 31, No.1, pp. 0267-4424.
- Barnabe, F. (2011), "A system dynamics-based balanced scorecard to support strategic decision making", *International Journal of Productivity and Performance Management*, Vol. 60 No.5, pp. 446-73.
- Baron, R.M. and Kenny, D. A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No.6, pp.1173-82.

- 1  
2  
3 Bessire, D. and Baker, C. R. (2005), "The French Tableau de bord and the American Balanced Scorecard: a critical analysis", *Critical Perspectives on Accounting*. Vol. 16, No. 6, pp. 645-664.  
4  
5  
6 Bititci, U.S. (1994), "Measuring your way to profit", *Management Decision*, Vol.32 No.6, pp. 6-24.  
7  
8 Bititci, U.S., Carrie, A.S. and McDevitt, L. (1997). Integrated performance management systems: a  
9 development guide. *International Journal of Operations and Production Management*, 17 (5),  
10 522-534.  
11 Bourne, M., Neely, A., Platts, K. and Mills, J. (2002), "The success and failure of performance  
12 measurement initiatives", *International Journal of Operations and Production Management*, Vol.  
13 22 No.11, pp. 1288-310.  
14  
15 Business Line (2012), "Fitch maintains 'negative outlook' on bhartiairtel", Accessed from:  
16 [http://www.thehindubusinessline.com/industry-and-economy/info-tech/fitch-maintains-negative-](http://www.thehindubusinessline.com/industry-and-economy/info-tech/fitch-maintains-negative-outlook-on-bharti-airtel/article3593852.ece)  
17 [outlook-on-bharti-airtel/article3593852.ece](http://www.thehindubusinessline.com/industry-and-economy/info-tech/fitch-maintains-negative-outlook-on-bharti-airtel/article3593852.ece) [Accessed on: 5<sup>th</sup> Aug., 2013]  
18  
19 Chenhall, R. H. (2003). Management control systems design within its organizational context: findings  
20 from contingency-based research and directions for the future. *Accounting, Organizations and*  
21 *Society*, 28 (2,3), 127-168.  
22  
23 Deming, W.E. (1986), *Out of the Crisis: Quality, Productivity, and Competitive Position*, Cambridge  
24 University Press, Cambridge.  
25  
26 Dixon, J.R., Nanni, A.J. and Vollmann, T.E. (1990), *The New Performance Challenge: Measuring*  
27 *Operations for World-class Companies*, Dow Jones-Irwin, Homewood, IL.  
28  
29 Dixon, N.M. (1999), *The Organizational Learning Cycle: How We Can Learn Collectively*, 2<sup>nd</sup> Edition,  
30 Gower, Aldershot.  
31  
32 EFQM (1991), *The Business Excellence Model*, EFQM Publication, Brussels.  
33  
34 Fine, G.A. and Elsbach, K.D. (2000), "Ethnography and experiment in social psychological theory-  
35 building: tactics for integrating qualitative field data with quantitative lab data", *Journal of*  
36 *Experimental Social Psychology*, Vol.36 No.1, pp. 51-76.  
37  
38 Franco-Santos, M. and Bourne, M.C.S. (2003), "Factors that play a role in managing through measures",  
39 *Management Decision*, Vol. 41 No. 8, pp.698-710.  
40  
41 Ghalayini, A.M. and Noble, J.S. (1996), "The changing basis of performance measurement",  
42 *International Journal of Operation and Production Management*, Vol. 16 No.8, pp. 63-80.  
43  
44 Gimbert, X., Bisbe, J. and Mendoza, X. (2010), "The role of performance measurement systems in  
45 strategy formulation processes", *Long Range Planning*, Vol. 43, pp. 477-97.  
46  
47 Hammer, M. and Champy, J. (1994), "Reengineering the corporation: A manifesto for business  
48 revolution", *The Academy of Management Review*, Vol. 19 No.3, pp. 595-600.  
49  
50 Hannan, M.T., and Freeman, J., (1989). *Organizational Ecology*, Harvard University Press, Boston, MA.  
51  
52 Hayes, R.H. and Abernathy, W.J. (1980), "Managing our way to economic decline", *Harvard Business*  
53 *Review*, July/August, pp. 67-77.  
54  
55  
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2  
3 Ittner, C.D. and Larcker, D.F. (2003), “Coming up short on non-financial performance measurement”,  
4 *Harvard Business Review*, November, pp. 88-95.  
5
- 6 Kaplan, R.S. and Norton, D.P. (1992), “The balanced scorecard – measures that drive performance”,  
7 *Harvard Business Review*, January/February, pp. 71-90.  
8
- 9 Kaplan, R.S. and Norton, D.P. (2000), “Having trouble with your strategy? Then map it”, *Harvard*  
10 *Business Review*, Vol. 78 No. 5, pp. 167-76.  
11 Kaplan, R.S., Norton, D.P. (2001), *The Strategy-Focused Organization: How Balanced Scorecard*  
12 *Companies Thrive in the New Business Environment*. Harvard Business School, Boston, MA.  
13
- 14 Malina, M.A. Selto, F.H. (2004), “Choice and change of measures in performance measurement models”,  
15 *Management Accounting Research*, Vol.15, pp. 441-69.  
16
- 17 McAdam and McCreedy, (1999), “A critical review of knowledge management models”, *The Learning*  
18 *Organization*, Vol. 6 No. 3, pp. 91-101.  
19
- 20 McKee, D.O., Varadarajan, P.R., Pride, W.M. (1989), “Strategic adaptability and firm performance: a  
21 market contingent perspective”, *Journal of Marketing*, Vol. 53, pp. 21-35.  
22
- 23 Milgrom, P. and Roberts, J. (1995), “Complementarities and fit: strategy, structure, and organizational  
24 change in manufacturing”, *Journal of Accounting and Economics*, Vol. 19 No. 2/3, pp.179–208.  
25
- 26 Morecroft, J., Sanchez, R. and Heene, A. (2002), Resource management under dynamic complexity. In:  
27 Morecroft (Ed.), *Systems Perspectives on Resources, Capabilities, and Management Processes*.  
28 Pergamon, Amsterdam.  
29
- 30 Neely, A., Adams, C. and Crowe, P. (2001), “The performance prism in practice”, *Measuring Business*  
31 *Excellence*, Vol. 5 No. 2, pp. 6-12.  
32
- 33 Norreklit, H. (2000). The balance on the balanced scorecard—a critical analysis of some of its  
34 assumptions. *Management Accounting Research*, 11, 65-88.  
35
- 36 Nørreklit, H. (2003), “The Balanced Scorecard: what is the score? A rhetorical analysis of the Balanced  
37 Scorecard”, *Accounting, Organizations and Society*, Vol. 28, No. 6, pp. 591-619.  
38
- 39 Pinheiro de Lima, E., Gouvêa da Costa, S.E., Pedro G. S. Ferreira and Angelis, J.J. (2010),”Operations  
40 strategy and performance measurement roles”, In the Conference Proceedings of POMS 21st  
41 Annual Conference, Vancouver, Canada.  
42
- 43 Oakes, H. and Oakes, S. (2016), “An alternative Balanced Scorecard informed by Habermas, Deleuze and  
44 Guattari, Heidegger and a review of key critiques”, *In Conference Proceedings of 10<sup>th</sup>*  
45 *International Conference of Performance Measurement Association*, Edinburgh, Scotland.  
46
- 47 Scott, W.R. (1995), *Institutions and Organizations: Theory and Research*, Sage Publications, London.  
48
- 49 Senge, P.N. (1992), *The Fifth Discipline: The Art and Practice of the Learning Organization*, Century  
50 Business Press, London.  
51
- 52 Smith, P. (1999), “The learning organization ten years on: a case study”, *The Learning Organization*, Vol.  
53 6 No. 5, pp. 217-23.  
54

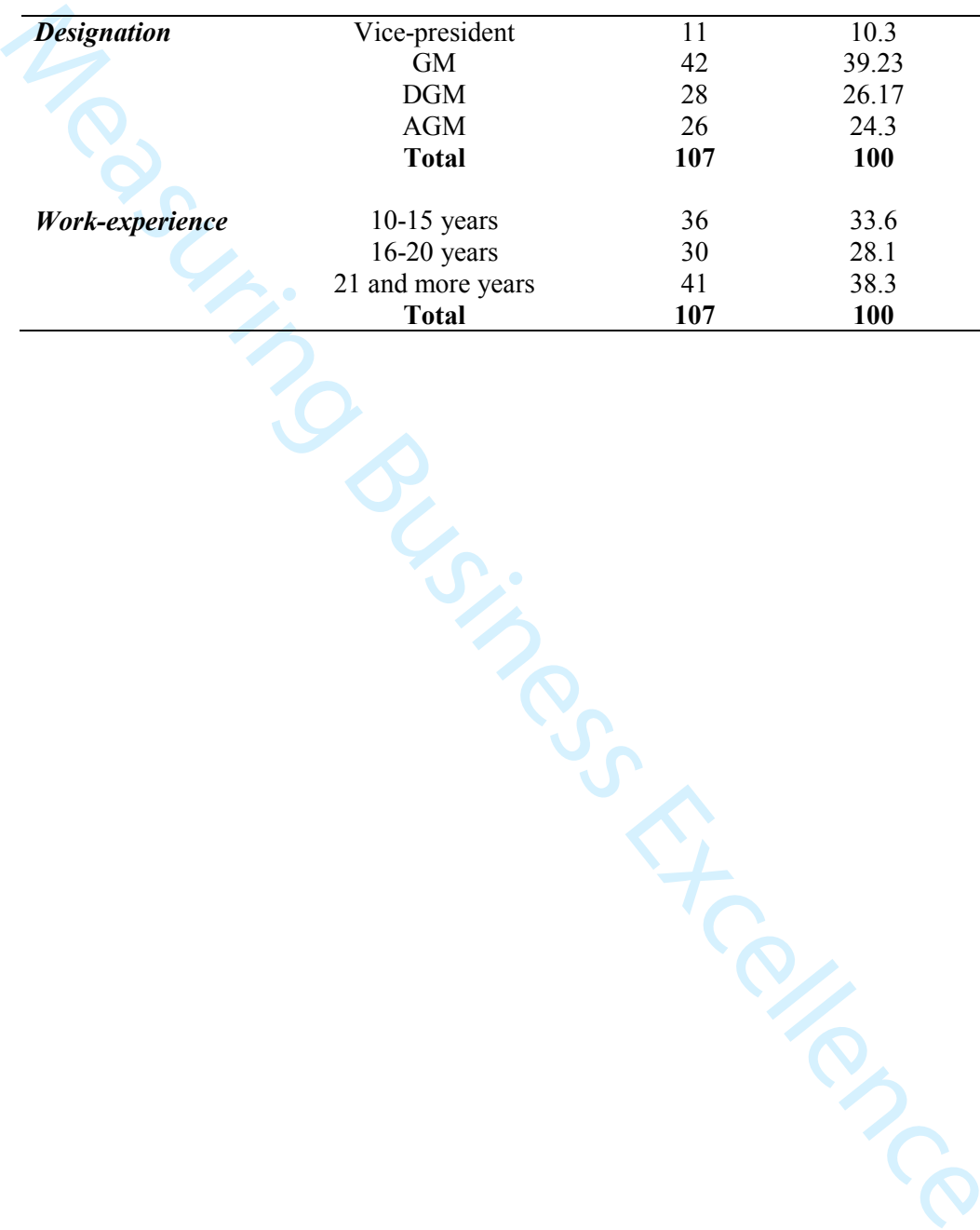
- 1  
2  
3  
4 Srivastava, A., and Sushil (2013) Modeling Strategic Performance Factors for Effective Strategy  
5 Execution, *International Journal of Productivity and Performance Management*, 62(6), 554-581.  
6  
7 Sushil (2000), "Situation-Actor-Process Options: Mapping and Enhancing Flexibility", *Systems Research*  
8 *and Behavioral Science*, 17(3), 301-309, 2000  
9  
10 Sushil (2008), "How Balanced is Balanced Scorecard?", *Global Journal of Flexible Systems Management*,  
11 9(2&3), iii-iv.  
12  
13 Sushil (2009a), "SAP-LAP Linkages – A Generic Interpretive Framework for Analyzing Managerial  
14 Contexts", *Global Journal of Flexible Systems Management*, 10(2), 11-20.  
15  
16 Sushil (2009b), "The dual perspective of performance", *Global Journal of Flexible Systems Management*,  
17 Vol. 10 No. 4, pp. iii.  
18  
19 Sushil (2010), "Flexible strategy game-card", *Global Journal of Flexible Systems Management*. Vol. 11  
20 No. 1/2, pp. iii-iv.  
21  
22 Sushil (2012), "Making Flowing Stream Strategy Work", *Global Journal of Flexible Systems Management*,  
23 Springer, 13(1), 25-40.  
24  
25 Teece, D., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic*  
26 *Management Journal*, Vol. 18, pp. 509-33.  
27  
28 Thurbin, P.J. (1994), *Implementing the Learning Organization: The 17-day Learning Program*, Pitman  
29 Publishing, London.  
30  
31 Venkatraman, N. (1989), "The concept of fit in strategy research: toward verbal and statistical  
32 correspondence", *Academy of Management Review*, Vol. 14, pp. 423-44.  
33  
34 Yadav, N. Sushil, and Sagar, M. (2013), "Performance measurement and management frameworks:  
35 research trends of last two decades", *Business Process Management Journal*, Vol. 19 No.6, pp.  
36 947-71.  
37  
38 Yadav, N. and Sushil (2014), "Total interpretive structural modelling (TISM) of strategic performance  
39 management for the Indian telecom service providers", *International Journal of Productivity and*  
40 *Performance Management*, Vol. 63 No.4, pp. 421-45.  
41  
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**Table 1: Respondents' Profile**

	<b>Group</b>	<b>N</b>	<b>%</b>
<b>Designation</b>	Vice-president	11	10.3
	GM	42	39.23
	DGM	28	26.17
	AGM	26	24.3
	<b>Total</b>	<b>107</b>	<b>100</b>
<b>Work-experience</b>	10-15 years	36	33.6
	16-20 years	30	28.1
	21 and more years	41	38.3
	<b>Total</b>	<b>107</b>	<b>100</b>



**Table 2: Descriptive Statistics and Results of Principal Component Analysis**

Performance Factor	Factor Loading	Eigen Value	Communalities	Reliability	Mean	Median	St. Dev.	Min.	Max.
				<b>.842</b>					
<i>PE1: Fierce Competition (3-items)</i>		2.727		.653	3.55	3.5	.438	2.50	4.50
<b>E11</b>	.516		.497						
<b>E12</b>	.778		.730						
<b>E13</b>	.850		.768						
<i>PE2: Government Policies (6-items)</i>		3.002		.743	3.03	3.00	.680	1.50	4.50
<b>E21</b>	.746		.686						
<b>E22</b>	.752		.698						
<b>E23</b>	.763		.732						
<b>E24</b>	.809		.808						
<b>E25</b>	.506		.800						
<b>E26</b>	.847		.755						
<i>PE3: Customer Satisfaction (5-items)</i>		1.710		.740	3.66	3.83	.503	2.17	4.67
<b>E31</b>	.608		.662						
<b>E32</b>	.567		.621						
<b>E33</b>	.832		.786						
<b>E35</b>	.780		.706						
<b>E36</b>	.510		.593						
<i>PE4: Employee Productivity (3-items)</i>		2.460		.688	3.44	3.33	.612	1.33	4.67
<b>E41</b>	.535		.592						
<b>E42</b>	.608		.803						
<b>E43</b>	.603		.790						
<i>PE5: Business Process Efficiency (7-items)</i>		3.481		.834	3.67	3.71	.569	2.14	5.00
<b>E51</b>	.707		.692						
<b>E52</b>	.641		.691						
<b>E53</b>	.621		.739						
<b>E54</b>	.579		.767						



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<b>E55</b>	.624		.682						
<b>E56</b>	.626		.755						
<b>E57</b>	.667		.647						
<i>PC1: Quality of Telecom Services (5-items)</i>		2.825		.754	3.61	3.60	.633	1.80	4.80
<b>C11</b>	.741		.634						
<b>C12</b>	.635		.654						
<b>C13</b>	.742		.708						
<b>C14</b>	.695		.521						
<b>C15</b>	.620		.487						
<i>PC2: Call Tariff (2-items)</i>		2.739		.708	3.60	3.50	.597	2.00	4.50
<b>C21</b>	.777		.638						
<b>C22</b>	.866		.766						
<i>PC3: VAS Offerings (4-items)</i>		2.245		.800	3.47	3.50	.525	2.50	5.00
<b>C31</b>	.577		.659						
<b>C32</b>	.758		.665						
<b>C33</b>	.715		.571						
<b>C34</b>	.756		.607						
<i>PC4: Brand Image of Operator (2-items)</i>		1.963		.774	4.03	4.00	.548	3.00	5.00
<b>C41</b>	.712		.780						
<b>C42</b>	.854		.778						
<i>PC5: Customer Support Services (4-items)</i>		1.687		.849	3.59	3.75	.612	1.25	5.00
<b>C51</b>	.830		.730						
<b>C52</b>	.857		.874						
<b>C53</b>	.831		.831						
<b>C55</b>	.624		.559						

**Table 3: Correlation Analysis**

	S	A	P	P'	V. (Offerings)	V. (Relationships)
S	1	.266**	.419**	.106	.371**	.203*
A		1	.567**	.236*	.492**	.502**
P			1	.293**	.609**	.520**
P'				1	.207*	.201*
V. (Offerings)					1	.581**
V. (Relationships)						1

**\*\*Correlation is significant at 0.01 level (2-tailed)**

**\* Correlation is significant at 0.05 level (2-tailed)**

Table 4: Pearson Correlation Results of all Strategic Factors (N=107)

	PE1	PE2	PE3	PE4	PE5	PE6	PE7	PE8	PE9	PC1	PC2	PC3	PC4	PC5
PE1	1	-.059	.034	.039	.188	.089	.068	-.011	.009	.122	.052	.328**	.122	.207*
PE2		1	.260**	.182	.363**	.112	.067	.087	.050	.224*	.268**	.078	.138	.020
PE3			1	.211*	.584**	.078	.253**	.305**	-.206*	.587**	.144	.337**	.254**	.559**
PE4				1	.326**	.072	.031	.033	.154	.302**	.000	.274**	.222*	.207*
PE5					1	.093	.174	.316**	.256**	.604**	.271**	.382**	.264**	.529**
PE6						1	.768**	.201*	.348**	.188	-.145	.188	.016	.089
PE7							1	.316**	.235*	.343**	-.208*	.226*	.065	.195*
PE8								1	.821**	.223*	.107	.092	-.010	.238*
PE9									1	.137	.029	.123	.084	.212*
PC1										1	.190*	.350**	.259**	.536**
PC2											1	.138	.233*	.156
PC3												1	.277**	.407**
PC4													1	.207*
PC5														1

\*\*Correlation is significant at 0.01 level (2-tailed)

\* Correlation is significant at 0.05 level (2-tailed)

**Table 5: Regression Model Summary for Performance (P') as Dependent Variable**

Model	R	R-square	Adjusted R-square	Std. Error of Estimates
1	.419 <sup>a</sup>	.236	.277	.51079
2	.436 <sup>b</sup>	.283	.347	.50920
3	.477 <sup>c</sup>	.304	.358	.49262
4	.482 <sup>d</sup>	.353	.367	.46332

Predictor a: Process

Predictor b: Process, Actor

Predictor c: Process, Actor, Value in offerings

Predictor d: Process, Actor, Value in offerings, Value in relationships

(Dependent Variable: Performance)

**Table 6: Regression Analysis Summary for Mediation Effect of 'Value in Offerings'**

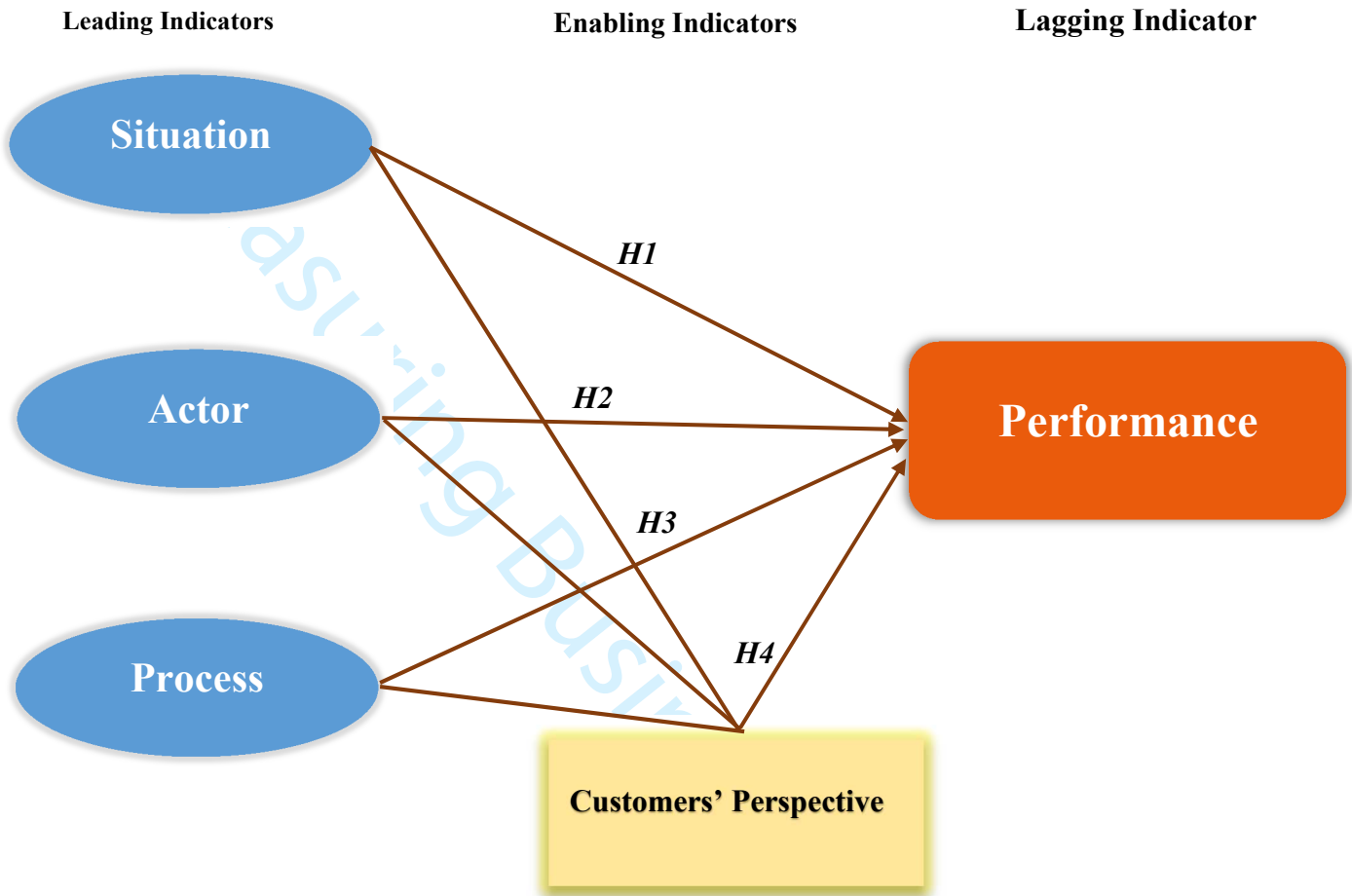
Step	IV	DV	R-square	R-square change	Sig. Value	Beta	Mediation Effect
1	Process	Performance	.286		.002	.293	
2	Process	V. in offerings	.371		.000	.609	<b>Complete Mediation</b>
3	V. in offerings	Performance	.043		.032	.207	
4	Process V. in offerings	Performance	.297	.011	.697	.046 .265	

**Table 7: Regression Analysis Summary for Mediation Effect of 'Value in Relationships'**

Step	IV	DV	R-square	R-square change	Sig. Value	Beta	Mediation Effect
1	Actor	Performance	.256		.015	.236	
2	Actor	V. in relationships	.252		.000	.502	<b>Complete Mediation</b>
3	V. in relationships	Performance	.040	.009	.038	.201	
4	Actors V. in relationships	Performance	.265		.314	.111 .180	

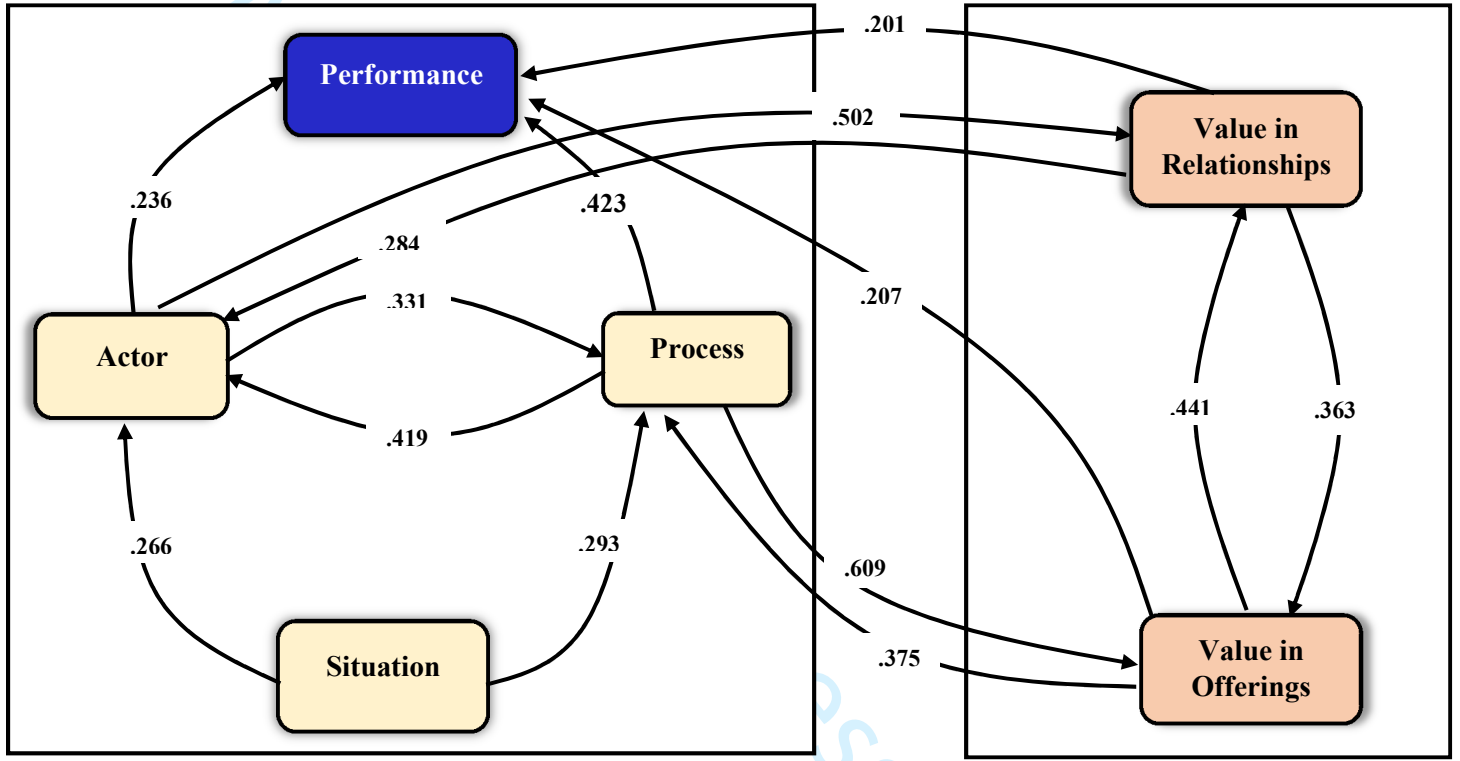
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Figure 1: Research Framework



Measuring Business Excellence

Figure 2: Empirically Validated Strategic Performance Management Model



Enterprise Perspective

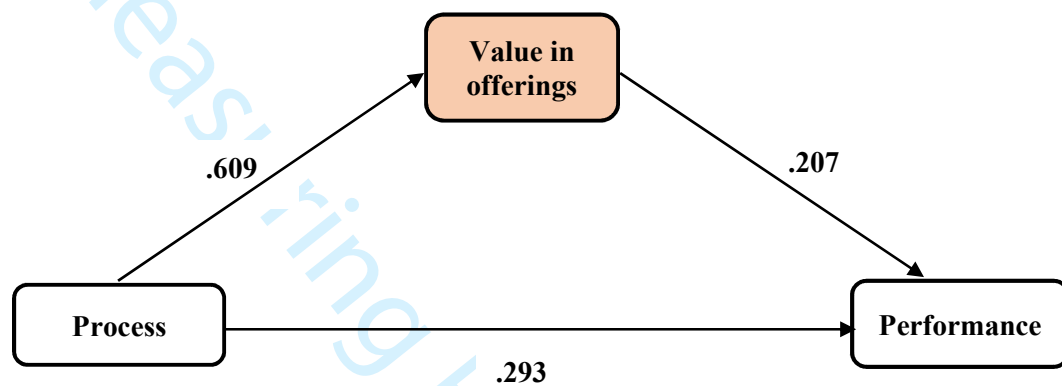
Customer Perspective

— Beta value —

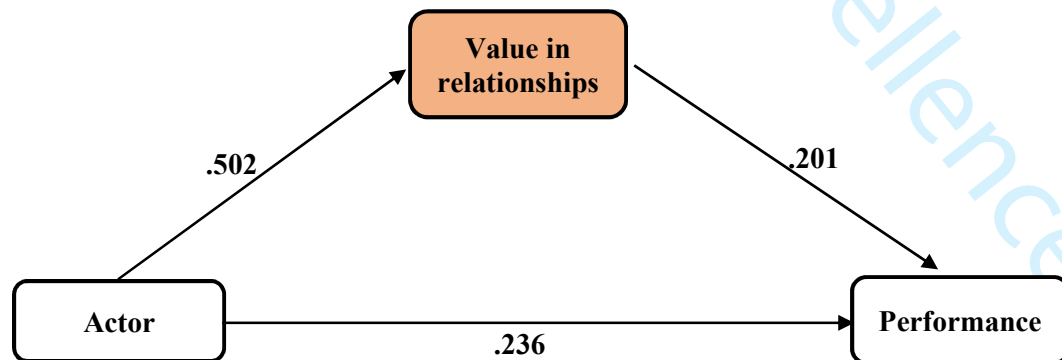
Measuring Business Excellence

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**Figure 3: 'Value in Offerings' As Mediator**



**Figure 4: 'Value in Relationships' As Mediator**



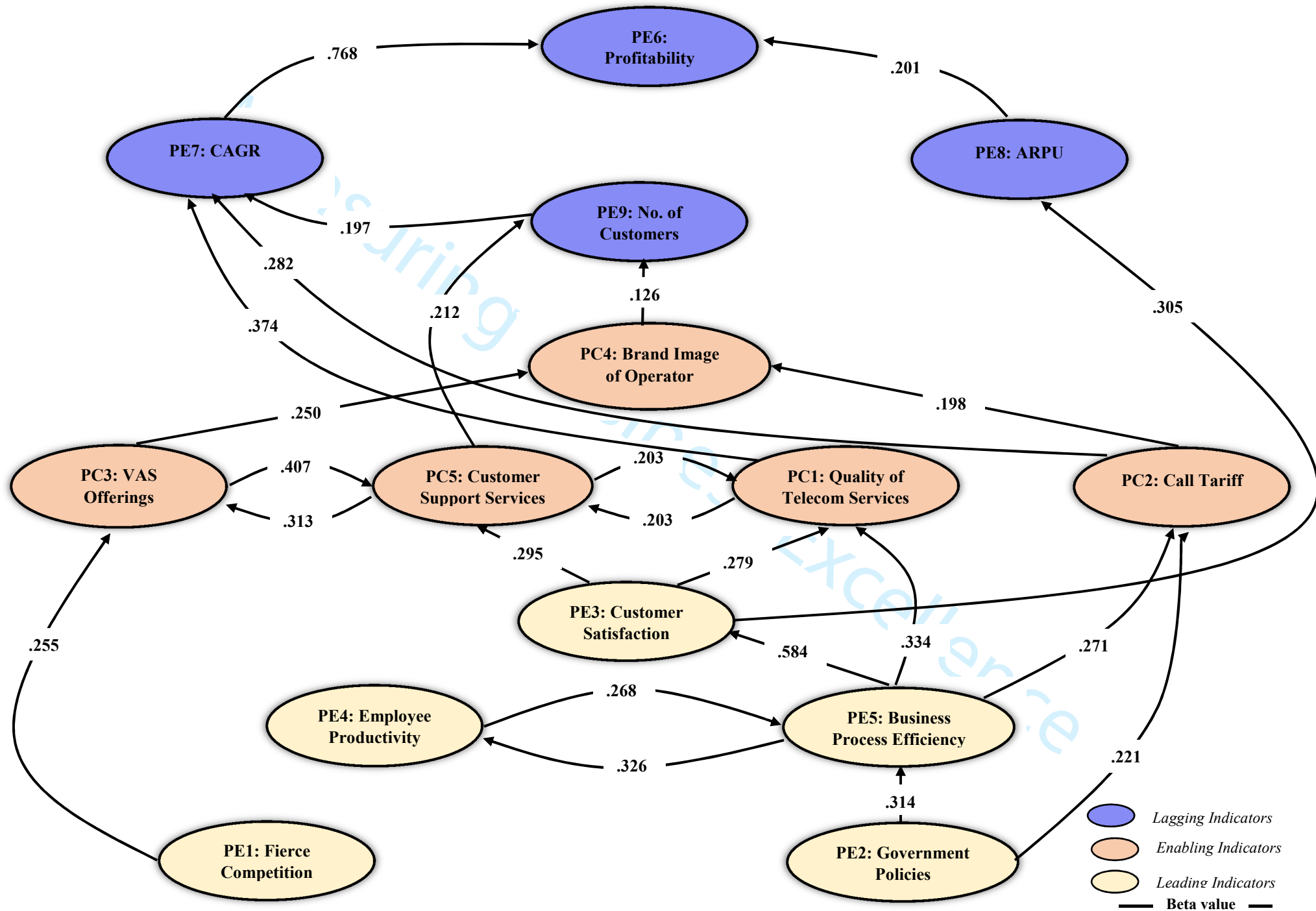


Figure 5: Empirically Validated Strategic Performance Management Model for Strategic Factors

● Lagging Indicators  
● Enabling Indicators  
● Leading Indicators  
 — Beta value —

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