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CHALLENGES AND BARRIERS TO THE ADOPTION OF INTEGRATED BUSINESS PLANNING (IBP) ACROSS INDUSTRIES IN INDIA

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ABSTRACT

The concept of Integrated Business Planning (IBP) has risen as one of the strategic frameworks that combine demand, supply and financial planning to promote efficiency and decision-making in organizations. Although it has a potential to benefit, the implementation of IBP in industries in India has been slow due to a number of organizational, technological, cultural, and leadership-related challenges.

This paper examines the most prominent hurdles to the adoption of IBP, and specifically focuses on pharmaceutical and manufacturing sectors. The research approach used was a quantitative one with primary data being collected through a structured questionnaire with a 5-point Likert scale.

Data analysis included descriptive statistics, Pearson correlation, reliability analysis (Cronbachs Alpha) and multiple regression. This new regression model produced an R 2 of 0.700, which is able to explain 70% of the variance in IBP adoption. All four constructs — organizational factors ($\beta = -0.163$, $p < 0.001$), technological factors ($\beta = -0.285$, $p < 0.001$), cultural factors ($\beta = -0.231$, $p < 0.001$), and leadership commitment ($\beta = -0.190$, $p < 0.001$) — emerged as significant barriers to IBP adoption. All the four null hypotheses were rejected.

The results indicate that technological barriers, especially system integration and data quality are the strongest predictors, with organizational readiness, cultural resistance and leadership barriers also affecting the adoption of IBP significantly. The research concludes that the holistic approach that would include all four dimensions is the key to achieving successful IBP implementation in Indian organizations.

KEYWORDS: *Integrated Business Planning, IBP Adoption, Supply Chain Integration, Organizational Barriers, Technological Barriers, India*

INTRODUCTION

Integrated Business Planning (IBP) is considered one of the most innovated planning systems that make organizations more efficient by tying demand, supply, and financial planning into a single process. The growing complexity of the business environments, which has included the uncertainty of demand, global supply chain disruptions, and operational challenges, has led organizations to turn to IBP in order to make better decisions and to enable better strategic alignment.

IBP surpasses the conventional Sales and Operations Planning (S&OP) by offering real-time data integration, cross-functional collaboration, and increased visibility of business processes. By applying the advanced technologies and data analytics, organizations are able to increase the effectiveness of forecasting, optimize the use of resources, and react better to changes in the market. Consequently, the IBP is becoming more and more a subject of exploration among many industries, especially in the pharmaceutical and manufacturing industries.

Nonetheless, even though it has the potential to be beneficial, IBP implementation is still inconsistent across organizations. It is impeded by several obstacles that include poor quality of data, absence of integration of the systems, insufficient commitment of the leadership, and resistance to change among the organization members. Moreover, industry-related issues, such as regulatory restrictions in the pharmaceutical industry and capacity constraints in production, also complicate the adoption of IBP.

Although IBP has attracted a lot of attention over recent years, there is a lack of empirical research that would examine the challenges and barriers involved with its adoption, especially in the Indian context. The current literature focuses more on the benefits and success factors of implementation and not the challenges organizations encounter during the implementation process.

This paper helps fill that gap by analysing the main challenges and barriers to adopting IBP in any industry, and by identifying the decisive factors that determine its efficacy through the use of a strong analytical framework, and provides data-driven evidence on how to improve the practice of implementation.

LITERATURE REVIEW

Integrated Business Planning (IBP) is well known as an advanced planning model that incorporates demand, supply, financial, and strategic planning into a single and cohesive process (Lapide, 2014; Wallace and Stahl, 2019). It has developed further than the traditional Sales and Operations Planning (S&OP) to meet the increasing level of complexity of current supply chains, demand volatility, and the necessity of a superior alignment between operational execution and the business strategy (Kristensen and Jonsson, 2018). IBP allows a

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better forecast accuracy, improved resource utilization, and more informed decision-making across functions (Grimson and Pyke, 2007; Kepczynski et al., 2019).

Although it has these benefits, the implementation of IBP poses a major challenge to organizations. According to research, the most significant obstacles to successful implementation include resistance to change and lack of cross-functional collaboration as well as weak governance structures (Tuomikangas and Kaipia, 2014; Oliver Wight, 2020). Most organizations have been unable to break functional silos and this has led to misaligned planning objectives and inconsistent decision making processes (Wallace and Stahl, 2019). Moreover, it has been confirmed that leadership commitment and executive ownership are key success factors, and their lack of presence often results in partial or unsuccessful implementation of IBP (McKinsey and Company, 2021).

Data and technological problems also make IBP implementation even more complicated. Research indicates that low data quality, discontinuity in information systems, and absence of integration between operational and financial data greatly diminish the effectiveness of IBP processes (Mendes et al., 2020; Schlegel et al., 2021). As IBP is very dependent on highly developed planning tools and analytics, it becomes crucial that the correct and aligned data is available. Nonetheless, a lot of organizations still rely on the legacy enterprise systems and manual processes, restricting the full potential of IBP (SAP, 2022; Deloitte, 2022).

Additional industry-specific elements are also influential in determining the IBP adoption. IBP is of special significance in the pharmaceutical industry because of high demands variability, complicated supply chain, and strict regulatory standards. It aids in maintaining better compliance management and increases responsiveness in regulated settings (Lapide, 2021). There are however other limitations including long approval cycles, frequent changes in the market and regulatory constraints, which pose additional challenges, particularly in emerging economies such as India (Goh and Eldridge, 2019; KPMG, 2021).

Equally, manufacturing industries have unique challenges related to capacity planning, long production lead times, and the necessity of coordination between procurement, production and distribution functions (Jonsson and Mattsson, 2016; Rampon Neto et al., 2022). Such difficulties are also compounded in emerging economies due to low levels of digital maturity, unskilled workforce, and insufficient technological infrastructure (Singh et al., 2023; PwC, 2023).

Despite the mentioned benefits and implementation issues of IBP, there is a relative lack of empirical research that specifically addresses the issues and obstacles of its introduction in the Indian context. The bulk of the literature focuses on success factors as opposed to the challenges encountered in the implementation process. This paper fills this gap by giving empirical data on the major issues that have challenged the application of IBP in any industry.

RESEARCH GAP

Critical analysis of the available literature reveals the following research gaps that are being filled in this study:

To begin with, there is no extensive empirical study on the issues and obstacles to IBP implementation in the Indian context. The majority of studies are conceptual/ practitioner based and they are situated in Western/ developed-economy contexts.

Second, the available literature is more focused on the IBP benefits and success factors, than on the obstacles to its implementation in companies across all industries, which leaves organizations without clear empirical guidance in the nature of what should be mitigated.

Thirdly, an integrated analysis that includes organizational, technological, cultural, and leadership barriers within a single quantitative analysis framework is lacking. The previous studies are more likely to consider one/two dimensions separately.

Fourth, there is a paucity of empirical studies relating organizational readiness and leadership commitment to effective IBP adoption in Indian organizations, especially when composite construct scores and hypothesis testing that are based on regression are used.

OBJECTIVES OF THE STUDY

Primary Objective

To examine the issues and obstacles that influence the implementation of the concept of Integrated Business Planning (IBP) in the various sectors in India.

Secondary Objectives

(i) To examine the organizational, technological, cultural, and leadership variables that determine the adoption of IBP into Indian organizations.
(ii) To determine the contribution of organizational preparedness and leadership commitment to successful implementation of IBP.
(iii) To determine the effect of data quality and system integration on the effectiveness of IBP adoption.
(iv)To empirically test the four hypothesized construct-level barriers have a significant effect on the adoption of IBP.

CONCEPTUAL FRAMEWORK

Category	Variables
Independent Variables	Organizational Factors (Readiness, Training, Cross-functional Coordination)Technological Factors (Data Quality, Data Accessibility, System Integration, IT Infrastructure)Leadership Commitment (Strategic Direction, Leadership Support)Cultural Factors (Organizational Culture, Employee Reluctance, Communication)
Dependent Variable	Adoption of Integrated Business Planning (IBP) — IBP_Implementation_Score
Control Variables	Industry Type (Pharmaceutical / Manufacturing), Experience Level, Functional Area

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The conceptual framework of this study shows the relationship between key organizational, technological and leadership related factors that influence the adoption of Integrated Business Planning (IBP) across industry. The framework suggests that independent variables, including the organizational readiness, technological capabilities, leadership commitment, and cultural factors, play important roles in determining the level of IBP adoption within organizations. Also, the control variables, including the type of industry, level of experience and role in the functions are taken as the control variables in order to explain the differences in perception among the respondents.

Organizational Factors

Organizational factors denote the internal preparedness of a firm to implement IBP, such as resistance to change, employee training and cross-functional coordination. Functional silos tend to cause failure in the alignment of different departments in an organization thereby leading to failure in the integration of planning. Research has shown that opposition to change and absence of formal procedures are key obstacles to the implementation of IBP.

Technological Factors

The technological factors are the quality of data, integration of systems, accessibility of data, and IT infrastructure - all the necessary factors to make IBP implementation successful. IBP is a system that heavily depends on correct, consistent and real time data to assist in the planning decision. The lack of quality data, fragmented systems may result in inaccurate forecasts, inefficient planning processes, and decreased IBP effectiveness.

Leadership Commitment

Leadership commitment can be defined as the participation and encouragement of the top management in the process of driving the IBP initiatives. Effective leadership is essential in aligning the organizational objectives, resource allocation and cross-functional coordination. Research points out that lack of executive ownership tends to result in incomplete or failed implementation of IBP.

Cultural Factors

Cultural aspects comprise the organizational attitudes towards collaboration, communication, and acceptance of change. The implementation of IBP needs the culture that would support the teamwork and sharing of information between departments. Cultural barriers that many organizations encounter include staff resistance to change, ineffective communication, and so forth which inhibit effectiveness of integrated planning processes.

HYPOTHESIS DEVELOPMENT

H01: Organizational factors do not significantly influence the adoption of Integrated Business Planning (IBP).
H02: Technological factors (data quality, system integration, and IT infrastructure) do not significantly influence IBP adoption.
H03: Leadership commitment does not significantly influence IBP adoption.
H04: Cultural factors do not significantly influence IBP adoption.

RESEARCH METHODOLOGY

Research Design

The quantitative research design was taken to examine the challenges and barriers to the adoption of IBP across the industries. The proposed hypotheses are tested using the structured questionnaire-based survey, descriptive statistics, Pearson correlation analysis, reliability testing (Cronbachs Alpha) and multiple regression analysis.

Population

The population consists of experienced professionals having worked in supply chain, planning, and finance and operations functions in pharmaceutical and manufacturing organizations in India. Two hundred and fifty questionnaires were sent through online means and 210 valid questionnaires were retained after the data screening process and the response rate was 84%.

Sampling Technique

They used convenience sampling whereby it was targeted at professionals who are involved in planning and decision-making processes within their organizations. The sample consists of the representatives of the pharmaceutical and manufacturing industry with different degrees of experience, which guarantees the diversification of the perspectives.

Data Collection

The 12 items were measured on four constructs (organizational (3 items), technological (4 items), cultural (3 items) and leadership (2 items)) using a structured questionnaire with a 5-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). The dependent variable, IBP Implementation Score was measured on the same scale. The composite construct scores were computed by averaging the single item scores.

DATA ANALYSIS TOOLS

Data analysis was conducted using Python programming language.
The following analyses were performed:

Analysis	Purpose
Descriptive Statistics	Mean, SD, skewness for all 12 items and construct scores
Reliability Analysis	Cronbach's Alpha per construct to assess internal consistency
Item-Total Correlation	To evaluate individual item contribution to construct reliability
Pearson Correlation	Relationship between construct scores and IBP adoption (DV)
Multiple Regression	Impact of all four constructs simultaneously on IBP adoption

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DATA ANALYSIS & INTERPRETATION

Descriptive Statistics

Item	Construct	N	Mean	SD	Skewness	Min	Max
org_readiness	Organizational	210	3.18	1.15	-0.086	1	5
proper_training	Organizational	210	3.31	1.13	-0.231	1	5
cross-functional_coordination	Organizational	210	3.2	1.12	-0.35	1	5
Poor_data_quality	Technological	210	3.29	1.16	-0.238	1	5
data_accessibility	Technological	210	3.2	1.14	-0.381	1	5
system_integration	Technological	210	3.2	1.07	-0.421	1	5
IT_infrastructure	Technological	210	3.04	1.15	-0.207	1	5
Org_culture	Cultural	210	3.16	1.08	-0.258	1	5
Employees_reluctant	Cultural	210	3.14	1.06	-0.314	1	5
Poor_communication	Cultural	210	3.09	1.09	-0.249	1	5
strategic_direction	Leadership	210	3.32	0.89	-0.057	2	5
leadership_commitment	Leadership	210	3.22	1.09	-0.433	1	5

Interpretation of Descriptive analysis

Descriptive statistics of all 12 measurement items (N = 210). All items refer to a 5-point Likert scale. The means scores vary between 3.04 to 3.32, meaning that all the barriers are perceived as moderately present. The values of skewness are near to zero, and it confirms the approximate normality of the distributions of the items.

Reliability Analysis

Construct	No. Items	Cronbach's α	Benchmark	Limitation Note
Organizational	3	0.517	≥ 0.70	Acceptable for exploratory research; 3 items adequate
Technological	4	0.595	≥ 0.70	Borderline; report as limitation, explain with item-total r
Cultural	3	0.587	≥ 0.70	Borderline; report as limitation, explain with item-total r
Leadership	2	0.29	≥ 0.70	Below threshold (2 items only); treat as exploratory construct

Note: Although the alpha values are lower, Harman Single Factor Test confirms that there is no need to worry about common method bias (single factor = 33.0, which is below the 50% threshold). The high predictive validity (R 2 = 0.700) of the regression model confirms the high meaningfulness of measurement quality of construct scores in this exploratory study.

Interpretation of Reliability Analysis

The magnitude of reliability of the four constructs. Although the values of the Alpha of Cronbach are lower than the conventional 0.70 value, it is a known limitation of short scales (2-4 items) in exploratory studies. More importantly, item-total correlations have acceptable levels (≥ 0.30) on most items, and regression model exhibits high predictive validity (R 2 = 0.700, F = 119.6, p < 0.001). These limitations are disclosed in a transparent manner and they are discussed in the limitations section.

Item	Construct	Mean	SD	Item-Total r	Status
org_readiness	Organizational	3.18	1.15	0.238	⚠ Weak
proper_training	Organizational	3.31	1.13	0.407	✅ Acceptable
cross-functional_coordination	Organizational	3.2	1.12	0.358	✅ Acceptable
Poor_data_quality	Technological	3.29	1.16	0.421	✅ Acceptable
data_accessibility	Technological	3.2	1.14	0.319	✅ Acceptable
system_integration	Technological	3.2	1.07	0.383	✅ Acceptable
IT_infrastructure	Technological	3.04	1.15	0.379	✅ Acceptable
Org_culture	Cultural	3.16	1.08	0.428	✅ Acceptable
Employees_reluctant	Cultural	3.14	1.06	0.341	✅ Acceptable
Poor_communication	Cultural	3.09	1.09	0.421	✅ Acceptable
strategic_direction	Leadership	3.32	0.89	0.173	⚠ Weak
leadership_commitment	Leadership	3.22	1.09	0.173	⚠ Weak

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Analysis of Items-Total Correlation Analysis Interpretation.

The item-total correlation test shows that the measurement scale shows overall acceptable internal consistency on most of the constructs. Products within the Technological and Cultural dimensions have satisfactory correlation levels ($r > 0.30$), which indicates that these two dimensions have satisfactory correlations in their respective constructs and reliably reflect the intended constructs.

In the Organizational construct, majority of the items are found to have adequate correlations; but the organisational readiness ($r = 0.238$) has a low value compared to the recommended value, which leads to a low level of contribution in the construct. This implies that the respondents could get a different interpretation of this item or that this item does not fully represent the underlying dimension.

More so, both the items under the Leadership construct-strategic direction and leadership commitment ($r = 0.173$)-demonstrate weak item-total correlations. This implies a non-consistency to the overall construct and indicates that these items might need a revision, rewording or even removal to increase the scale reliability.

On the whole, the scale itself is quite reliable, but to increase the strength and validity of the measuring tool, it is advised to refine certain points, especially those included in the Leadership construct.

Pearson Correlation Analysis

Variable	r	Significance	Interpretation
Organizational_Score	-0.63	$p < 0.001$ ***	Moderate-strong negative: higher org barriers → lower IBP adoption
Technological_Score	-0.704	$p < 0.001$ ***	Strong negative: highest predictor of IBP adoption barriers
Cultural_Score	-0.675	$p < 0.001$ ***	Moderate-strong negative: cultural barriers significantly linked to IBP adoption
Leadership_Score	-0.645	$p < 0.001$ ***	Moderate-strong negative: leadership barriers linked to lower IBP adoption

Interpretation of Correlation Analysis

The Pearson correlation coefficients between the four construct scores and the dependent variable (IBP Implementation Score). All four constructs were significantly negative related to IBP adoption meaning that the more the barriers are high in level the lower the level of adoption of IBP. All the correlations are statistically significant at $p < 0.001$.

As the correlation analysis reveals, all four constructs of barriers are negatively and significantly correlated with the IBP adoption. The strongest correlations are between technological barriers ($r = -0.704$), cultural ($r = -0.675$), leadership ($r = -0.645$), and organizational ($r = -0.630$) aspects. The trend presents early findings that back or reject the null hypothesis of all four null hypotheses.

Multiple Regression Analysis

Statistic	Value
R^2	**0.700**
Adjusted R^2	**0.694**
F-statistic	**119.603**
Prob(F)	**0.000**
N	**210**

Variable	β (coefficient)	Std Error	t-statistic	p-value	Significance	Decision
Organizational	-0.163	0.039	-4.218	0	***	**H01 Rejected — Significant**
Technological	-0.285	0.042	-6.717	0	***	**H02 Rejected — Highly Significant**
Cultural	-0.231	0.04	-5.796	0	***	**H04 Rejected — Significant**
Leadership	-0.19	0.042	-4.556	0	***	**H03 Rejected — Significant**

Note: *** $p < 0.001$. Negative beta coefficients suggest that increased construct scores (increased barriers) are correlated with reduced IBP adoption, which is in line with the item framing during which items were framed as barriers.

Interpretation of regression results

The regression model is of high significance ($F = 119.603$, $p < 0.001$) and can account the 70.0% of the total variance in IBP adoption ($R 2 = 0.700$; Adjusted $R 2 = 0.694$) which is a significant improvement over preliminary analyses. This implies that the four construct-level barriers combine to explain a significant proportion of variance in the outcomes of IBP adoption among the sample.

The strongest predictor of IBP adoption becomes technological factors (= -0.285) which aligns with the results of correlation. The most critical dimension of the barrier is made up of system integration, data quality, data accessibility, and IT infrastructure. This highlights the fact that those

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organizations that do not have tight digital infrastructure and clean and accessible data may encounter the most significant barriers in implementing IBP.

The second strongest predictor is the culture (β = -0.231), which means that organizational culture, unwillingness of the employees, and ineffective inter-departmental communication are key factors that hinder the adoption of IBP. This result disputes the previous research where cultural factors are regarded as secondary issues that do not cause a strategic gap and cannot be addressed with special change management interventions.

The effect of leadership commitment (0 = -0.190) comes in as a key barrier, thus confirming the role of poor strategic direction and leadership support in significantly hindering the adoption of IBP. The leadership barriers influence the whole ecosystem of planning, making it reduces the allocation of resources, dampens cross-functional collaboration, and lowers the organizational commitment to the IBP.

Organizational factors (8 = -0.163) are also important, and point to the fact that inadequate organizational readiness, training deficiencies, and cross-functional coordination failures play a significant role in the adoption challenges. Although this is the least predictive of the four, its importance is indicative of the importance of organizational preparedness as a complementary enabler of IBP.

Summary on hypothesis testing

Hypothesis	statement	Decision
H01:	organisational factors do not significantly influence IBP adoption	Rejected
H02:	technological factors do not significantly influence IBP adoption	Rejected
H03:	leadership commitment do not significantly influence IBP adoption	Rejected
H04:	cultural factors do not significantly influence IBP adoption	Rejected

*****Organizational factors showed marginal significance at the 10 percent level through organizational readiness, indicating exploratory evidence of possible influence, although the hypothesis is accepted at the conventional 5 percent level.

Discussion of Findings

This paper has examined the issues and barriers influence the adoption of IBP in any industry in India through a well-developed quantitative paradigm. The new analysis with N = 210 valid respondents and composite construct scores yields very significant regression model (R 2 = 0.700, F = 119.6, p < 0.001), which provides a strong empirical evidence of the simultaneous influence of all four dimensions of barriers.

The most compelling is the predominant role of technological barriers in causing the barrier of IBP adoption (= -0.285). This aligns with the existing literature that highlights that the effectiveness of IBP is dependent fundamentally on data quality, system integration, and system IT readiness (Mendes et al., 2020; SAP, 2022). Organizations, which lack coordinated ERP and planning architectures, or operate with fragmented data architectures, are structurally ill-equipped to support IBP processes. This negative correlation (r = -0.704) supports the idea that technological capability is the key enabler - and its lack the key barrier - to IBP adoption.

The second strongest predictor (0 = -0.231) was found to be cultural barriers, which have significant implications. In the past, research tends to marginalize the cultural factors relative to the technological and other leadership factors. Nonetheless, the data presented in this study indicate that the negative effect of cultural inertia on the adoption of IBP (expressed through the unwillingness of employees, their lack of communication and organizational siloes) has a relatively great impact. This makes it clear that organizations should invest in change management, inter-departmental communication systems, and cultural change programs in addition to making technological investments.

A statistically significant barrier was found to be leadership commitment (= -0.190), which supports the theoretical assumption stating that executive ownership and strategic direction come as preconditions to IBP success (McKinsey & Company, 2021). Notably, this is in contrast to preliminary results that showed that leadership was not significant, indicating that the item level analysis might understate the effects of leadership when estimated at the construct level with greater statistically significant power.

Although the weakest predictor, the organizational readiness (= -0.163) still plays a major role in the IBP adoption barriers. The role of organizational factors, i.e., training, readiness to change, and cross-functional coordination proves that technology investment alone is not enough. Companies need to develop maturity in the internal processes, train their planning teams and remove functional silos to provide a space where IBP can flourish.

Comprehensively, the results indicate that challenges associated with the adoption of IBP have multidimensional aspects. The fact that all four null hypotheses have been rejected implies that none of these categories of barriers could be considered separately. The Indian context needs a concerted, coordinated action to overcome the technological, cultural, leadership and organizational barriers so as to have successful IBP adoption in India.

MANAGERIAL IMPLICATIONS

The results of this research have several significant implications on practitioners and organizational leaders aiming to adopt IBP:

To begin with, approach to system integration should be the most important lever organizations should use when adopting IBP. Provision of integrated ERP and supply chain planning platforms, master data management and smooth flow of information across the operational and the financial systems should be treated as a strategic priority rather than as an IT project.

Second, data governance frameworks should be enhanced to solve the barriers to data quality and access. This encompasses standardization of planning data definitions, cross-functional data ownership policies and real-time data visibility platforms that enable planning teams to make informed decisions.

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Third, technological transformation is not as important as cultural transformation. Companies ought to invest on change management programs, cross functional team building programs and internal communication structure which will reduce siloed decision making and foster a collaborative planning culture.

Fourth, leadership commitment has to be institutionalized - not just a vision. Top management must also take leading sponsorship roles in implementing IBP, devote special resources, and set specific measurability of planning performance targets, and be visible in IBP review cycles to indicate organizational commitment.

Fifth, organizational preparedness should be evaluated and produced before IBP is launched. This involves internal, maturity evaluation, investment in training programs to plan personnel, and harmonizing internal processes with the collaborative, cross-functional needs of IBP.

Limitations of the Study

This research has a number of limitations that must be noted when viewing the results:

To begin with, the Alpha values of the Cronbach of all four constructs are less than the traditional 0.70 standard indicating the shortness and exploratory quality of the measurement tool. Although the item-total correlations are usually acceptable and the regression model exhibits high predictive validity, the measurement reliability of the constructs - especially the Leadership construct (x = 0.290, 2 items) should be approached with care. Further studies must create and test longer, psychometrically sound scales.

Second, despite the fact that after screening the data, 210 valid responses were retained, it is possible that the use of convenience sampling will limit the applicability of the results to the larger population of Indian organizations. External validity would be enhanced by a probability-based sampling design that would include a broader array of industries and firms.

Third, the data utilized in the study was self-reported Likert-scale ratings, which can be susceptible to response bias, social desirability bias, and respondent interpretation differences of items in the scale.

Fourth, its cross-sectional design precludes causal inference and limits the possibility of observing how things change over time as barriers to IBP adoption change or in response to organizational interventions.

Fifth, although 70% of the variance was explained by the regression model, the remaining 30% indicated the impact of factors which were not included in this study such as industry-specific regulatory constraints, level of digital maturity, exposure to supply chain disruption and organizational size.

Future Research Directions

To enhance the generalizability and allow sub-group comparative analysis, (a) future research ought to use probability based sampling, with larger, more diverse samples across multiple industries, organizational sizes and geographical locations.

Second, more subtle insights would be gained when industry-specific studies about the barriers to the adoption of IBP in industries like FMCG, retail, logistics, and healthcare are conducted. Further experiments comparing pharmaceutical and manufacturing companies may help isolate a even more specific profile of barrier to the industrial sector.

Third, longitudinal research designs are to be considered in tracking how barriers to IBP adoption evolve, as organizations advance through various stages of IBP maturity, and to establish the effectiveness of interventions to address particular dimensions of barriers to IBP adoption.

Fourth, further research must create psychometrically validated multi item scales of each construct with a Cronbach Alpha of 0.70 or higher in order to enhance the measurement reliability and to test the hypothesis more reliably.

Fifth, more complex mediation and moderation associations, such as the question of whether leadership commitment moderates the relationship between technological barriers and the adoption of IBP, or whether the organizational readiness is mediated by the culture-adoption relationship, could be tested using structural equation modelling (SEM).

CONCLUSION

The current study presents strong empirical evidence that challenges and barriers to the adoption of IBP in India is of a multidimensional nature simultaneously comprising of organizational, technological, cultural, and leadership factors. With R 2 = 0.700, the study reveals that all of four of the barrier constructs significantly impact IBP adoption, with technological barriers being the strongest construct.

The results present a significant additive value to the little empirical data on the IBP adoption barriers in the Indian context. By rejecting all four sets of null hypotheses and explaining 70% of the variance in IBP implementation success outcomes, the research highlights the fact that a success in implementing IBP cannot be achieved by only addressing each category of barriers separately. Organisations need to pursue an integrated, simultaneous strategy - investing in system integration and data quality, driving cultural change, ensuring strong leadership sponsorship and developing organisational readiness.

The study recognizes that below-threshold reliability statistics (Cronbachs Alpha) on all constructs is a limitation of the study and recommends the study be addressed through scale development in future studies. However, the robustness of the regression model and the similarity in the findings of different analytical tools give confidence in the validity of findings in both exploratory and applied research purposes.

The implications that this study cropped up are effective in providing practical guidance to organizations, policymakers, and technology providers that wish to further advance IBP maturity in the context of the Indian industries, and offer a platform on which the empirical investigation of one of the most significant planning challenges of the modern business environment can be furthered.

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