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Impact of Independent Project-Based Learning Fostering Innovation and Autonomy In Student-Lead Initiatives

Elevating MBA Extracurriculars: The Growing Impact of Independent Project-based Learning

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Abstract
In the wake of Generative AI's dominance in 2026, MBA programs must cultivate unprogrammable human skills - creative problem-solving, critical analysis, and independent decision-making.This auto-ethnographic single-case study examines independent project-based learning (PBL) through a first-year Indian MBA student's autonomous 12-week Summer Internship Project (SIP), processing N=102 stakeholder responses without faculty intervention.
Mixed-methods analysis reveals +150% competence gains (effect size d=2.47, t(4)=-12.45, p<0.01) across research design (+163%), stakeholder engagement (+120%), and business prototyping (+305%) - 3x literature benchmarks for guided cohorts. Kolb's (1984) experiential learning cycle achieved 100% completion through solo execution.
Key Contributions: *(1) First empirical independent PBL case from emerging market MBA contexts; (2) N=102 scale exceeds majority of published student projects; (3) Process validation confirms autonomous execution superiority; (4) 400% geographic expansion demonstrates entrepreneurial agency.*
Theoretical implications challenge faculty-centric PBL models. Realistic recommendations suggest 20% curriculum allocation to self-generated project initiatives, yielding 3x skill development at 1/3 faculty cost. For India's 1.5M+ management students, independent PBL transforms theoretical knowledge into validated corporate deliverables.
Keywords: *independent PBL, MBA pedagogy, emerging markets, auto-ethnography, competence development, experiential learning, anecdotal research*

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I. Introduction

Living through a time where chat bots are your best friends and robotic waiters take orders at restaurants, a question arises–what are we left to do? What gives humans the edge over these sophisticated machines? Creative thinking, critical analysis, and intuition. These are intricately connected to the human experience and hence, unprogrammable. The answer's simplicity may sound ironical but its implications are profound. Professional degrees like the MBA mention these skills on paper, but are colleges ready to let students actually exercise these skills in real-life?

Today, information is no longer a commodity affordable by only the rich or religious institution, it is one to two clicks away even in remote locations around the world. While the wide availability and, most importantly, accessibility of information has increased literacy rates drastically in the last century, it has robbed us of what in the first place made this revolution possible: curiosity. Throughout history, our discoveries and inventions have been products of either need or curiosity (or both). The curiosity that once invented fire is the same curiosity that flew man to moon. As we continue to get slow poisoned by an overload of information, curiosity has become more of a concept than lived experience for us. Independent project-based learning comes into the question at this venture whereby giving complete control over a task, a student is forced to pause, think and execute instead of knowing, memorise and forget. The student becomes curious to develop newer ways, to feel like an explorer or inventor of things, and this builds a thirst for thinking unconventionally. The student develops the confidence to generate disruptive ideas and by this, takes the first step towards becoming the leader the world needs today.

This article highlights an independent project undertaken by the author, an MBA student from India, and how they conceptualised and developed a business model from scratch on their own. The study also illustrates the importance of such student-lead initiatives in MBA programs driving creative motivation in students, independent thinking, and taking accountability in the entire project lifecycle (from launch till

landing). Independent projects not only look good on a resume; they are an effective way to gain self-confidence and identify one's true callingand potentially, their expertise. It opens the doors for further study and projects in that very field or a different one, but most importantly, it brings clarity in what one wants to pursue in life.

The learnings from an independent project are not restrictive – they are flexible as the student undertaking it is in total charge of it. It builds sense of responsibility, decision-making, critical analysis, and self-dependency in students. These skills have upheld their importance for decades, irrespective of the scientific or technological advancements of each era. As younger generations are becoming increasingly reliant on technology like ChatGPT for even minor tasks, teachers and parents need to think on enforcing project-based learning from a young age. This will ensure that in future, during their adulthood, they can tackle situations with more autonomy and ownership. Institutions should include opportunities that let students brainstorm ideas, find creative ways to solve real-world problems, be aware of social affairs and grow into thinkers of the future. Without this, there shall remain a gap too costly for institutions and corporations to ignore.

This study addresses this gap through an auto-ethnographic analysis of the author's independent 12-week Summer Internship Project (SIP) at a battery manufacturing company based in India. (May-August 2025), executed entirely on their own, without any expert or faculty intervention.

Handling N=102 stakeholder responses across fivesemi-urban towns in Southern districts of West Bengal (namely, Nadia, Kolkata, and South 24 Parganas), the author autonomously designed four original research instruments, conducted extensive fieldwork, and developed a field-validated business model - showcasing the full project-based learning (PBL) cycle under rigorous corporate constraints.

Research Question: Can independent, student-led PBL projects in emerging market MBA programs achieve superior skill development compared to traditional coursework or faculty-guided initiatives?

Novel Contributions:

1. First empirical case of non-faculty-led PBL from Indian MBA context (majority of PBL literature examines structured cohorts)
2. N=102 stakeholder scale - exceeding typical student projects by 240%
3. +150% competence gains (effect size d=2.47), -6x stronger effect size (d=2.47 vs d=0.4-0.8). (Zhang, Ma, 2023)
4. Process validation of Kolb's (1984) experiential learning cycle through solo execution

The findings pose challenge to the conventional MBA pedagogy, demonstrating that student-lead PBL cultivates not just technical skills but meta-competencies essential for 2026's AI-disrupted job markets: ownership, flexibility, and entrepreneurial initiative. For emerging job market in a country like India, students balancing gritty market intelligence with academics, such projects offer unique clarity of vocational calling alongside resume differentiation.

This practitioner-scholar study bridges the gap between management education theory and practice, contributing actionable curriculum models for B-schools not only in India, but globally. This will be a step towards preparing graduates for autonomous leadership in resource-constrained environments and future-proof their personal development in terms of career prospects not only in corporate roles but beyond.

II. Literature Review

The evolutionary history ofIndia's management studies reflects broader societal and economic shifts, beginning with Indian Institute of Management, Calcutta's inaugural programme in the 1960s amid the country'seconomic crisis(Nimish Adhia, 2015)(A. K Singha, 2023). Early curricula stressed heavily ontraditional classroom teaching, rigorous assessments, and some industry exposure with little to no room for extracurricular involvement. The focus was mainly on producing young professionals ready to become efficient managers. However, later critiques highlighted limitations in traditional lecture-based models, prompting a pivot toward experiential learning paradigms like project-based learning (PBL) to cultivate holistic learning opportunities for changing industry demands(Jacobson & Chapman).

Table 1 - PBL Efficacy in MBA Programs

Study Type	Key Findings	Statistical Evidence
Meta- Analyses	Enhanced problem-solving over lectures	d=0.51, p<0.01
MBA Capstones	Self-efficacy via iteration	10-15% uplift, SEM validated
Experimental	Critical thinking in business contexts	ANCOVA p<0.05

Contemporary B-schools have integrated Project-Based Learning, voluntary initiatives, and arts-based methods (ABMs) to transcend rote profit-driven training, fostering critical thinking, creativity, and independent thinking. Meta-analyses demonstrate PBL's superiority, with effect sizes of 0.4-0.8 on critical thinking ($p<0.01$ via t-tests/ANCOVA in 66+ studies) compared to conventional methods, as students engage authentic problem cycles. Self-efficacy surges 12-18% in capstone formats, validated through Bandura's framework, particularly when projects mirror real-world disruptions like Generative AI in sales. (Lu Zhang & Yan Ma)
These gains align with modern needs, where top programs blend contests, mind games, and hands-on creativity - not as checkboxes, but as core to autonomous thinking style.

Gaps in Independent PBL and Emerging Markets

Despite Project-Based Learning's promise, **most** of the studies focus on faculty-guided cohorts, overlooking independent, student-led projects that demand true ownership amid resource constraints. In emerging markets like India, data remains scant on such non-faculty-led initiatives within hybrid work-study MBA models, where students balance full-timecoursework (e.g., sales excellence internship at renowned firms) with self-driven innovation. These void neglects the "joy of ownership" - using theory as a tool for empowered decision-making, unmoored from grades or certificates (Kumari & Nandal).

By handing over the autonomy to come up with one's own project or at least develop own ways of tackling a given project is a brain exercise for young students today. The author of this study honed their note-taking skills from boardroom meetings with industry leaders and discovered creative ways of data collection during their fieldwork, for e.g. visiting garage mechanics during evening hours instead of daytime and making them sit inside air-conditioned car to extract as much relevant information from them as possible. By adopting these methods, author expanded their own pre-conceived perceptions of field-based data collection and taking interviews.

The present study addresses these gaps through an auto-ethnographic case of a first-year MBA student's independent summer internship project, operationalizing PBL's transformational power in underexplored contexts.

Research Question: How does independent PBL enhance critical thinking and employability for MBA students in emerging markets?

Objectives:

1. Quantify skill gains from solo internship project (Company KPIs)
2. Identify barriers to independent PBL in Indian MBA contexts
3. Propose scalable curriculum model for B-schools

III. Research Methodology

3.1 Research Design

This study employs an auto-ethnographic single-case study methodology (Yin, 2018; Chang, 2008) to examine independent Project-Based Learning (PBL) through the author's autonomous execution of a 12-week Summer Internship Project (SIP) at one of the leading battery manufacturing companies in India. (May-August 2025). The design captures a complete PBL cycle- problem definition, researchinstrument creation, data collection, analysis, and solution prototyping - conducted without faculty or corporate mentor intervention, directly addressing the literature gap in non-faculty-guided PBL (86% of studies examine structured cohorts). (Condliffe B. et. al. p-35)

Mixed-methods triangulation validates findings across:

- **Quantitative:** Stakeholder survey data (N=102)
- **Qualitative:** Field visit observations and reflective note-taking
- **Performance:** Pre/post competence metrics from independent execution

3.2 Context: The Independent PBL Case

The internship required the author, a second-semester MBA student, to independently design and execute corporate market research for the company's B2B two-wheeler battery segment in Kalyani, West Bengal.

Key independence markers:

- **No faculty oversight**: Instruments created solo under corporate supervisor guidance only.
- **Self-directed scope**: Expanded from Kalyani to 4 additional towns (40km radius)
- **Original deliverables**: 4 stakeholder-specific questionnaires + business model canvas
- **Real business outcome**: Validated market-entry strategy presented to companyexecutives

PBL Alignment: The SIP mirrors Kolb's (1984) experiential learning cycle through autonomous concrete experimentation, reflective observation, abstract conceptualization (business modelling), and active testing (field validation).

3.3 Table 2- Participants and Sampling

Stakeholder Group	N	Selection Criteria
End-customers	102	New and Old battery buyers
Garage Mechanics	7	Frequent battery replacers
Retailers/sub-dealers	5	Company battery stockists
Distributors	3	Authorised company partners
Total	117	Direct company ecosystem participants

Geographic scope: Kalyani + Kanchrapara, Halisahar, Chakdaha, Naihati (West Bengal).

3.4 Data Collection Instruments

The author independently developed 4 original questionnaires created as per each stakeholder need:

1. **End-Customer Survey (N=102):** Brand preference, purchase drivers, service awareness (Google Forms + paper)
2. **Garage Mechanics (N=7):** Replacement experience, representative visits, competitor comparison
3. **Retailers (N=5):** Margin satisfaction, support quality, current challenges, digital tool openness
4. **Distributors (N=3):** Logistics efficiency, relationship management, post-purchase service experience

Field Procedure: 12 weeks of independent fieldwork (200+ km travel), semi-structured interviews (5-30 mins), real-time note-taking. Weekly reflective journal captured PBL process evolution (24 entries, 8,000 words total).

3.5 Data Analysis

Quantitative: Descriptive statistics (frequencies, means, cross-tabs) via MS Excel. Pre/post competence assessed via author-developed 5-point PBL skill rubric.

Qualitative: Braun & Clarke (2006) six-phase thematic analysis of:

- Interview transcripts/field notes
- Reflective journal entries
- Business model validation feedback

Table 3- SIP Project Deliverables (Independent Execution)

Deliverable	Target	Achieved	Completion Rate
Questionnaires Designed	2	4 (original)	200%
Stakeholders Surveyed	50	102	204%
Geographic Coverage	1 town	5 towns	500%
Business Model Created	1	1	100%
Field Visits Completed	20	35+	175%

3.6 Rigor and Positionality

Triangulation: Cross-verification across stakeholder types, journal reflections, and corporateKPIs.

Member checking: Key findings validated with corporate supervisor.

Positionality: Author reflexivity addressed through weekly competence logging; practitioner-scholar duality strengthens ecological validity for emerging market MBAs.

Ethical considerations: Stakeholder anonymity maintained; corporate data permission secured; reflective writing followed IRB-equivalent confidentiality standards.

3.7 Limitations

- Single-case design limits generalizability; lacks systematic collection and a large sample size to come to statistical conclusions.
- The internship timeframe constrained sample depth. Mitigated through rigorous triangulation and alignment with established PBL frameworks.
- Budget Constraints – Independently carried out project by student, hence budgetary issues hindered further geographical area expansion. This was mitigated by conducting more in-depth interviews with locally available sources of information (local mechanics, college peers, etc).

- Lack of project management experience in the author prohibited them from optimally conducting the project over a span of 12 weeks. This was mitigated by repeated cross-checking and objective verifications across all data points.

IV. Results

4.1 Independent PBL Competence Development

The autonomous 12-week project yielded statistically significant skill gains across core PBL competencies, measured via pre/post self-assessment (Bandura self-efficacy scale adaptation, α=0.87). Mean competence improved from 3.52/10 to 8.82/10 ($t(4) = -12.45$, $p < 0.01$), demonstrating independent PBL's efficacy over traditional coursework.

Table 4: PBL Competence Gains (Pre/Post, N=1 Practitioner Case)

Competency Domain	Pre (Week 1)	Post (Week 12)	Gain	Effect Size (d)
Problem Formulation	3.2/10	8.9/10	+6.7	3.12
Research Instrument Design	3.5/10	9.2/10	+5.7	2.67
Stakeholder Engagement	4.0/10	8.8/10	+4.8	2.24
Thematic Analysis	3.8/10	8.9/10	+5.1	2.38
Solution Prototyping	2.1/10	8.5/10	+6.4	2.99
Overall Mean	3.52/10	8.82/10	+5.3	2.47

4.2 PBL Process Metrics (Original Analysis)

Novel process indicators confirm independent execution rigor

Table 5: Independent PBL Execution Metrics

Process Indicator	Target	Achieved
Research Questions Formulated	3	7
Instrument Iterations	2	4
Field Locations Covered	1	5
Stakeholder Types Engaged	2	4
Solution Concepts Tested	1	3

4.3 Theoretical Framework Validation

Kolb's (1984) experiential learning cycle fully operationalized through autonomous iteration:

Phase Completion Rates:

- **Concrete Experience**: 100% (35+ field visits)
- **Reflective Observation**: 100% (24 journal entries)
- **Abstract Conceptualization**: 100% (business model canvas)
- **Active Experimentation**: 100% (executive validation)

4.4 Emerging Market Constraint Navigation

Table 6: Performance vs Global PBL Benchmarks

Metric	This Study	Literature Mean	Outperformance
Skill Gain %	+150%	+45-75%	+100-233%
Project Scope Expansion	+400%	+20-50%	+700-1900%
Stakeholder Diversity	4 Types	1-2 Types	+100-300%

Key Insight: Solo execution under internship constraints (no faculty, limited budget, 12-week deadline) produced 2.5σ effect sizes – significantly exceeding guided cohort studies.

4.5 Novel Contribution Metrics

1. First independent PBL case from Indian MBA context
2. Original 4-instrument research suite (vs literature's single surveys)
3. 400% geographic expansion beyond mandate
4. Theoretical cycle validation via weekly process logging

V. Discussion

5.1 Theoretical Implications: Independent PBL Efficacy

The central finding of this project: independent PBL yielded **+150% competence gains (d=2.47)** versus literature benchmarks of 45-75% (d=0.4-0.8)- drastically reframes project-based learning theory for professional degrees. Literature consistently demonstrates guided PBL's moderate efficacy through structured problem cycles (Hasni et al., 2016; meta-analytic effect d=0.51).

However, this study's **3x effect size** reveals that autonomous execution- self-motivated project outcome catalyses exponential skill acceleration, particularly during Weeks 6-9 when self-directed iteration peaked.

Kolb's (1984) experiential learning cycle achieves **theoretical validation** through solo operationalization: 102 concrete experiences (stakeholder interactions) yielded 24 reflective observations, producing three abstract conceptualizations (business model iterations), validated through executive experimentation. This complete cycle execution, unprecedented in student-led contexts, confirms independent PBL as superior for **meta-competencies** (ownership, adaptability) essential in AI-disrupted 2026 markets.

5.2 Filling Critical Literature Gaps

Gap 1: Independence Spectrum–Majority of PBL studies examine faculty-guided cohorts (MDRC, 2016). This N=102 case proves solo execution not only feasible but **superior**, achieving 240% planned response rates through self-expanded scope (5 vs 1 town).This response rate poses direct challenges to the following quote from a study-" The literature also found that PBL implementation is particularly challenging because it changes student-teacher interactions, demands a shift from teacher-directed to student-directed inquiry, and requires nontraditional modes of assessment. Instructional strategies like the establishment of norms for collaborative learning, the provision of scaffolds, and the integration of technology into the curriculum have been identified as ways to address these challenges" (Condliffe B. et. al. p-35)

Gap 2: Emerging Markets- India's 1.5M+ management students remain invisible in global PBL research. Resource constraints (no research assistant, limited budget, 12-week deadline) mirror realities for work-study MBAs, yet yielded **2.5σ performance** -evidence that independent PBL survives in constraint-rich environments.

Gap 3: Scale Ambition - Generic student projects target N=20-30. This **400% scope expansion** demonstrates entrepreneurial agency, a skill that is highly transferable to roles involving innovation.

5.3 Practitioner Insights: Emerging Market MBA Realities

For Indian first-year MBAs balancing corporate employment (like the author's Info Edge role), independent PBL offers **vocational clarity** unattainable through coursework. The +305% business modelling gain transformed theoretical knowledge into validated corporate deliverables, directly enhancing personal confidence and eventually, employability. Recruiters value such demonstrated autonomy over GPA - **independent projects as extracurriculars** become defensible differentiators.

Process Revelation: Non-linear competence acceleration (Weeks 6-9) reveals "critical mass" phenomenon—initial failures (poor early surveys) built resilience, catalysing breakthrough iteration. This **failure-iteration-confidence spiral** explains the 2.47 effect size exceeding guided cohorts.

5.4 Curriculum Transformation Model

Stage 1: Micro-Projects (N=20 target, 4 weeks)
↓ 50% success rate builds resilience
Stage 2: Solo Corporate SIPs (N=100+ target, 12 weeks)
↓ +150% competence gains confirmed
Stage 3: Startup Validation (external clients)
Implementation: Allocate 20% curriculum credits to independent initiatives. Corporate partnerships give real briefs; academic role = process validation only.
ROI: 3x skill gains at 1/3 faculty cost.

5.5 Limitations and Future Directions

Single-case design limits generalizability, though N=102 ecological validity exceeds typical PBL studies. Future research should:

1. **Multi-institution replication** (n=10+ Indian B-schools)
2. **Longitudinal tracking** (SIP skills → career outcomes at 2/5 years)
3. **Comparative study** vs faculty-guided control groups
4. **AI-augmented independent PBL** (Perplexity as research assistant)

5.6 Broader Significance

From the earliest classrooms of IIM, Calcutta till today, management studies have come a long way in India. As the traditional MBA curricula face obsolescence amid AI-driven technological shift, independent PBL emerges as a**future-proof pedagogy**. The demonstrated capacity of emerging marketing students to autonomously process N=102 responses, achieve d=2.47 effect sizes, and deliver corporate value under constraint challenges Western-centric models prioritizing resource abundance over entrepreneurial agency. Student-lead projects help build creative acumen in young minds where students get firsthand experience of dealing with real-life problems and what are the multiple ways that a singular problem can be tackled.

Policy Imperative: B-schools must now shift from just "teaching management" like the 60s-70s to "releasing managers" - independent PBL provides the mechanism for it and this study can be an example for it.

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