# Knowledge Innovation Drives Development, Wisdom Builds Manufacturing Powerhouse: A Postprint Case Study on the Innovation Management System Construction of Longyan Tobacco Industry Co., Ltd.

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## Abstract

[ Purpose / Significance ] Against the backdrop of "innovation-driven development, building a manufacturing powerhouse," enterprises need to integrate the new policy and knowledge environments to establish knowledge management systems and innovation management systems that drive corporate development. In this regard, the practical case of Longyan Tobacco Industry Co., Ltd. serves as a valuable reference. [ Method / Process ] Through case study methodology, this paper elaborates on the corporate background of Longyan Tobacco and analyzes the structure, functions, and value of the innovation management system centered on the intelligence knowledge management system. [ Results / Conclusion ] Innovation management with knowledge management at its core has effectively realized the activation and sharing of creativity, significantly enhanced the enthusiasm for enterprise innovation participation, and effectively tapped into the endogenous drivers of creativity and knowledge.

## Full Text

### Knowledge Innovation Driving Development, Intelligence Forging Manufacturing Excellence—A Case Study of the Innovation Management System at Longyan Tobacco Industrial Co., Ltd.

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## Abstract

[**Purpose/Significance**] Against the backdrop of "innovation-driven development and building a manufacturing powerhouse," enterprises must establish knowledge management and innovation management systems that align with new policy and knowledge environments. The practical case of Longyan Tobacco Industrial Co., Ltd. offers valuable insights in this regard. [**Method/Process**] Through case study methodology, this paper details the corporate context of Longyan Tobacco and analyzes the structure, functions, and value of its innovation management system, which centers on an intelligence knowledge management system. [**Result/Conclusion**] This knowledge management-centered innovation approach has effectively activated and shared creativity, significantly enhanced employee participation in innovation, and successfully tapped into the endogenous drivers of ideas and knowledge.

**Keywords:** innovation; innovation management; knowledge management system; enterprise management; Longyan Tobacco; AMT

## 1 Introduction

"Innovation-driven development, building a manufacturing powerhouse" has become a critical national strategy. In the 2016 Government Work Report, Premier Li Keqiang repeatedly emphasized the need to "inherit, but more importantly, to innovate" and to "cultivate the craftsmanship spirit of striving for excellence." Building a manufacturing powerhouse cannot be achieved without both "innovation" and "craftsmanship."

How can manufacturing enterprises enhance their innovation capabilities, improve corporate innovation systems, and foster a culture of continuous improvement and meticulous refinement? Through ongoing exploration and practice in collaboration with AMT, a leading domestic "Management + IT" consulting service provider, Longyan Tobacco Industrial Co., Ltd. has gradually developed a systematic innovation management system that seeks internal drivers, coordinates overall and local development, and fully unleashes inherent potential. This paper focuses on innovation management and knowledge management to detail Longyan Tobacco's management practices, offering practical references for various organizations, particularly enterprises.

## 2 Enterprise Background

Founded in 1951, Longyan Tobacco Industrial Co., Ltd. (hereinafter "Longyan Tobacco") is one of Fujian Province's most influential state-owned enterprises and a renowned cigarette manufacturing base in China. The company boasts an annual production capacity exceeding 1.2 million cases, generates annual tax profits surpassing 10 billion RMB, and holds total assets of 12.5 billion RMB. Equipped with domestically leading and world-advanced cigarette production equipment, the company's manufacturing technology and process quality rank

among the best in China. Its core brand, “Septwolves,” stands as one of over ten key backbone cigarette brands nationwide.

Driven by its vision of “building an ecological high-quality cigarette manufacturing base,” Longyan Tobacco employs “IS-PDCA” systems thinking, using its intelligence knowledge management system as an enabler to support full lifecycle innovation management. Through the management approach of “collective wisdom, collective intelligence,” the company mobilizes full participation and stimulates the wisdom of every employee. Based on a points system, it has established a company-wide “improvement and innovation index,” gradually forming a distinctive systematic innovation management system.

## 3 IS-PDCA: Systems Thinking + Information Interaction for Self-Driven Innovation

IS-PDCA (see Figure 1 [Figure 1: see original paper]) comprises “I” for intelligence/information/knowledge, “S” for strategy/direction/goals, and “PDCA,” which emphasizes closed-loop, scientific process management of various objects. Specifically, P represents the operations command system, D the operations execution system, C the measurement and analysis system, and A the improvement and innovation system.

IS-PDCA embodies three layers of management thinking (see Figure 2 [Figure 2: see original paper]). “I-S” emphasizes forming strategic decisions based on information and intelligence analysis, reflecting rapid perception and response to market environments. “S-PDCA” stresses that all business and management activities maintain alignment with strategic direction and support strategic goal implementation. “I-PDCA” highlights the interactive feedback between work activities and information/knowledge, promoting continuous process innovation.

The most distinctive features of these three management thinking layers are: first, the profound recognition of the significant value that “I”—information, data, and knowledge—holds for enterprise and individual development in modern society; and second, the strengthened systematic requirements for continuous improvement, with greater emphasis on coordinated overall and local development, organic integration of top-down transformation and bottom-up improvement, and heightened focus on the endogenous drivers of the enterprise as a system.

## 4 Intelligence Knowledge Management System: Enabler of Full Lifecycle Innovation Management

Based on the IS-PDCA concept, Longyan Tobacco conducted top-level design of its enterprise management platform, establishing six subsystems—intelligence knowledge management (I), strategic planning (S), operations command (P), operations execution (D), measurement and analysis (C), and improvement and innovation (A)—to embody each IS-PDCA element. This framework designs

the basic structure of these six subsystems at the enterprise management level, along with their fundamental interactions, constituting a self-driven, organic management system oriented toward continuous systematic improvement.

The "I" subsystem serves as the central hub for information input, interaction, and transformation across the entire management system, concentrating functions such as environmental sensing, information interaction, knowledge conversion, and innovation incubation. To implement the "I" subsystem, Longyan Tobacco partnered with AMT to jointly plan and construct the intelligence knowledge management system, as shown in Figure 3 [Figure 3: see original paper].

The intelligence knowledge management system represents the core of the entire IS-PDCA management framework. It features two key aspects: first, like a nervous system, it interacts with all subsystems to maintain organizational agility; and second, it serves as the main stage for full participation in systematic improvement through creative selection and management, intelligence information push and interaction, thereby supporting continuous improvement and innovation, employee learning and growth, and unleashing internal wisdom and drivers.

### 4.1 Innovation Improvement Management Center: The Main Stage for Employee Creativity

How can employee creativity be stimulated? How can ideas be guided from initial 萌芽 to value creation? Longyan Tobacco's intelligence knowledge management system has designed a distinctive full lifecycle innovation management process (see Figure 4 [Figure 4: see original paper]). Through an ingeniously crafted innovation incubation center, it connects and integrates bottom-up and top-down improvement pathways, forming a more complete development cycle. Starting from idea generation, through stages of seed selection (PK), breeding, growth, and fruition, the process fully mobilizes and applies collective wisdom to generate valuable improvement and innovation proposals that enter the "A" subsystem's improvement and innovation mechanism for implementation through project-based or daily improvement approaches.

This closed-loop innovation management process not only enables idea selection but also ensures that truly valuable ideas undergo systematic and comprehensive cultivation and implementation, promoting 成果转化. Consequently, the Innovation Improvement Management Center has become the most direct and substantial stage for all Longyan Tobacco employees to participate in corporate innovation and development.

### 4.2 Intelligence Information Management Center: An Ecological Park for Enterprise Knowledge Evolution

In terms of information management, the intelligence knowledge management system strengthens enterprise knowledge evolution and value-added. It employs

web crawler technology to intelligently capture data and information from external websites and internal systems, using UIMA tools for professional parsing and indexing to rapidly achieve integration, analysis, precise push, and intelligent presentation of internal and external intelligence knowledge (see Figure 5 [Figure 5: see original paper]). Additionally, by integrating with the innovation management process, it pushes relevant intelligence information at innovation process nodes to avoid duplicate innovation.

### 4.3 Intelligence Information Interaction Center: A Hub for Enterprise Information Exchange

The information interaction center facilitates internal knowledge exchange and problem-solving through knowledge communities, expert networks, practice circles, and knowledge maps (see Figure 6 [Figure 6: see original paper]). It also opens information interfaces with other business systems, enabling centralized presentation of internal and external information and data resources on the platform to form a one-stop information hub.

## 5 "Collective Wisdom, Collective Intelligence": Fully Stimulating Every Employee's Wisdom

"Collective wisdom, collective intelligence" represents a crucial means for achieving sustainable and healthy enterprise development. The key to knowledge management lies in transforming everyone's wisdom from intangible to tangible, from dispersed to centralized, from disorderly to orderly, thereby creating greater value and driving continuous innovation. As noted by Longyan Tobacco's General Manager Liao Caihe, "The focus of management is to establish mechanisms and atmosphere, leaving the innovation stage to frontline employees."

How can the innovation process promote full participation and fully stimulate each employee's wisdom? Longyan Tobacco employs innovative management methods to drive innovation management. For instance, the design of the intelligence knowledge management system itself was completed through a company-wide creative competition.

To build an intelligence knowledge management system that aligns with Longyan Tobacco's characteristics and employees' core needs—ensuring it could be "built well and used effectively" while identifying elite and innovative talents—the company launched an "I-Creative" intelligence knowledge management system design competition for all employees. The competition aimed to enhance employee awareness of the system and promote understanding and participation in company-wide innovation management.

The competition included stages such as launch and promotion, submission of works, voting and selection, and final awards. Ultimately, 389 employees from 20 departments participated, generating 70 creative proposals and forming

30 creative achievements, laying a solid foundation for promoting systematic innovation management throughout the company.

## 6 Points Management System: Normalizing Continuous Improvement and Innovation

Corresponding to the full lifecycle innovation management is the points management system within Longyan Tobacco's intelligence knowledge management system. Points are derived from two sources: (1) outcome-based points from idea submission, solution refinement, and achievement formation; and (2) participation-based points from browsing, commenting, liking/disliking, and recommending during the PK stages of ideas, solutions, and achievements. Different contribution levels and participation behaviors correspond to different point values, encouraging full participation in every innovation 环节 and guiding employees to actively contribute, apply, and disseminate intelligence, information, and knowledge resources from the idea source onward. This makes the innovation 论证 process more robust and ensures innovation 成果落地. Meanwhile, the gamified points system design provides employees with engaging experiences and valuable growth during the improvement and innovation process, thereby stimulating continuous internal innovation drivers.

Given the emphasis on full participation, should the points system account for differences among employees at various levels? The answer is affirmative. Longyan Tobacco's points rules are differentially configured based on employee positions and ranks—higher ranks receive more points—ensuring that time-constrained middle and senior managers can also actively participate in innovation. In practice, ideas, comments, and likes from these employees often prove more valuable. Additionally, targeted point limits are set to guide employees at different levels to allocate their point resources rationally based on limited resource thinking, achieving decentralization and improving innovation value evaluation.

To ensure the sustainability of improvement and innovation, Longyan Tobacco has also linked the points system to its performance appraisal system. By converting points into an "improvement and innovation index" as a 考核 indicator for departmental creative management and full-staff innovation, the company ensures that innovation performance at both departmental and individual levels becomes measurable and comparable. This promotes identification of innovation weaknesses and performance optimization, embedding continuous improvement and innovation into employee consciousness and normalizing it as routine corporate work.

## 7 Conclusion

Since its official launch in January 2015, Longyan Tobacco's intelligence knowledge management system has achieved remarkable results. By December 2015,

platform logins exceeded 167,000 人次, with 1,498 employees participating in creative activities—representing 93.7% of the workforce. A total of 1,085 employees submitted 2,306 ideas, a 38.17% increase compared to 2014. The participation rate reached 72.1%, up 28.04% from 2014. Creative content covered cigarette 工艺, automatic control, information technology, tobacco logistics, quality control, administrative management, party culture management, and corporate management, generating direct economic benefits of 5.6984 million RMB.

Since implementing innovation management, Longyan Tobacco has effectively activated and shared creativity, significantly mobilized employee enthusiasm for innovation, successfully tapped into the endogenous drivers of ideas and knowledge, substantially enhanced its innovation and improvement capabilities, promoted maximization of innovation value, and gradually built an "Internet + Collective Intelligence" corporate collaborative innovation ecosystem.

Aiming for enduring success and centered on self-driven improvement and innovation, Longyan Tobacco continues its pursuit of excellence and lean management through relentless commitment to innovation improvement and exploration of endogenous drivers. This case exemplifies the "innovation spirit" and "craftsmanship spirit" of China's manufacturing enterprises.

*Note: Figure translations are in progress. See original paper for figures.*