

ปัจจัยที่ส่งผลต่อความต้องการจดทะเบียนทรัพย์สินทางปัญญาและแนวทางในการ
เสริมสร้างการคุ้มครอง: กรณีศึกษา วิทยาลัยศิลปะ สื่อ และเทคโนโลยี
มหาวิทยาลัยเชียงใหม่

Factors Affecting the Need for Intellectual Property Registration and
Guidelines for Strengthening Protection: A Case Study of the College
of Arts, Media and Technology, Chiang Mai University

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บทคัดย่อ

วัตถุประสงค์: งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยที่ส่งผลต่อความต้องการจดทะเบียนทรัพย์สินทางปัญญา (IP) และเสนอแนะแนวทางในการเสริมสร้างการคุ้มครองทรัพย์สินทางปัญญาในกลุ่มบุคลากรของวิทยาลัยศิลปะ สื่อ และเทคโนโลยี (CAMT) มหาวิทยาลัยเชียงใหม่ โดยใช้มุมมองทางด้านสารสนเทศศาสตร์ **ระเบียบวิธีวิจัย:** บูรณาการกรอบแนวคิด PRECEDE ทฤษฎีของ Herzberg และแบบจำลองพฤติกรรมสารสนเทศของ Wilson โดยเก็บรวบรวมข้อมูลเชิงสำรวจจากสายวิชาการและสายสนับสนุนจำนวน 56 คน ซึ่งคัดเลือกด้วยวิธีการสุ่มตัวอย่างแบบเจาะจง (Purposive sampling) มีการตรวจสอบความเที่ยงตรงและความเชื่อมั่นของเครื่องมือ (IOC 0.67-1.00) ข้อมูลถูกวิเคราะห์โดยใช้สถิติเชิงพรรณนาและการทดสอบค่าที่แบบอิสระ (Independent Samples t-tests)

ผลการวิจัย: ผู้ตอบแบบสอบถามส่วนใหญ่ (ร้อยละ 89.3) แสดงให้เห็นถึงความต้องการจดทะเบียนทรัพย์สินทางปัญญา ปัจจัยขับเคลื่อนที่สำคัญ ได้แก่ ความต้องการด้านความรู้ความเข้าใจ (ความรู้) บริบททางสภาพแวดล้อม (การเข้าถึงสารสนเทศ) และปัจจัยด้านความรู้สึก (งบประมาณ สภาพแวดล้อม) ที่น่าสังเกตคือการสนับสนุนด้านไอทีสำหรับระบบการยื่นคำขอออนไลน์เพื่อลดภาระทางความคิด (Cognitive load) แสดงให้เห็นถึงความต้องการที่สำคัญที่สุด

การนำไปใช้ประโยชน์: ผลการวิจัยถูกนำมาใช้เพื่อเสนอ "แบบจำลอง 3Es" (Easy Access, Electronic System, Ecosystem Support) เพื่อเป็นแนวทางในการกำหนดนโยบายขององค์กร การออกแบบระบบสารสนเทศ และการจัดตั้งระบบที่เอื้อต่อเสริมสร้างการคุ้มครองทรัพย์สินทางปัญญาในสถาบันการศึกษา

คำสำคัญ: ทรัพย์สินทางปัญญา พฤติกรรมสารสนเทศ การออกแบบระบบสารสนเทศ ปัจจัยแรงจูงใจ
กรอบแนวคิด PRECEDE

Abstract

Purpose: This research aims to investigate the factors influencing the need for intellectual property (IP) registration and to propose guidelines to strengthen IP protection among personnel at the College of Arts, Media and Technology (CAMT), Chiang Mai University, from an information science perspective.

Methodology: By integrating the PRECEDE Framework, Herzberg's Theory, and Wilson's Information Behaviour Model, survey data were collected from 56 academic and support staff selected through purposive sampling. The instrument's reliability and validity were verified, with IOC values ranging from 0.67 to 1.00. The data were analyzed using descriptive statistics and Independent Samples t-tests.

Findings: A significant majority of respondents (89.3%) expressed a need for IP registration. Key drivers included cognitive needs (knowledge), environmental contexts (information access), and affective factors (budget and surrounding conditions). Notably, IT support for online submission systems, aimed to reduce cognitive load, showed as the most critical demand.

Applications of this study: The findings are used to propose the "3Es Model" (Easy Access, Electronic System, Ecosystem Support) as a guideline for organizational policy formulation, information system design, and the development of a mentoring system to enhance IP protection in educational institutions.

Keywords: Intellectual property, Information behaviour, Information system design, Motivation factors, PRECEDE Framework

1. Introduction

Currently, the Ministry of Higher Education, Science, Research, and Innovation (MHESI) policy, in alignment with the Thailand Research and Innovation Utilization Promotion Act B.E. 2564 (2021), emphasizes the role of higher education institutions in transforming knowledge and technology into innovations for commercial and social use. Intellectual Property (IP) creation among higher education personnel is imperative, spanning both academic and commercial domains to advance knowledge and sustain institutions. Effective IP management mechanisms are significantly linked to the enhancement of innovation and organizational

productivity (Hall & Sena, 2016). Consequently, awareness of IP rights serves as a foundational context for academic staff to protect their creative works and organizational innovations (Okeke et al., 2025). However, global trends indicate that higher education institutions face significant challenges in IP management. Recent international studies reveal that personnel often encounter major barriers, including time constraints (70%), complexity of legal requirements (63.3%), and lack of institutional support (53.3%) (Sawe et al., 2025). A survey of the context at the College of Arts, Media and Technology (CAMT) reveals similar obstacles; the majority of personnel lack comprehensive knowledge, are unable to identify applicable IP categories, or encounter difficulties with complex documentation preparation.

IP Registration Workflow and Procedural Bottlenecks. To analyze the factors and barriers to IP registration among personnel, it is imperative to understand the actual operational workflow. This workflow encompasses complex academic and legal dimensions, particularly in the first two operational stages. These initial stages represent critical "procedural bottlenecks" and are the primary causes of cognitive load for researchers and innovators. The detailed processes are as follows:

Step 1: Prior Art Search (Novelty Check): This initial step serves as a vital mechanism for screening the potential for IP protection (particularly for patents and petty patents). Its objective is to verify the redundancy of an invention against existing knowledge or technologies (Prior Art) across national and international databases. This stage demands advanced information-seeking skills from creators to analytically compare claims and in-depth technical details. The primary challenges in this step include limited access to specialized databases and information overload, resulting from the necessity to extract relevant information from a vast volume of patent documents.

Step 2: Document Preparation: This stage involves translating technical knowledge and innovation into legal documentation. It is the most complex and time-consuming phase. Applicants must strictly prepare documents in compliance with the legal standards. The sub-processes include:

- 1) **Detailed Description:** Systematically explaining the background, technical characteristics, and objectives.
- 2) **Claims Formulation:** Regarded as the most legally crucial component for defining the definitive scope of protection.
- 3) **Abstract and Drawings Preparation:** Must be executed according to specific formats and regulations.
- 4) **Form and Legal Requirements:** Utilizing the patent application form and preparing documents demonstrating rights.

Conceptual Framework and Theoretical Background To establish a robust research framework to address these challenges, the researcher synthesized relevant concepts and theories as follows:

Intellectual Property (IP): The Department of Intellectual Property (2010) defines IP as works resulting from human invention, discovery, or creation. IP is classified into two main categories: 1) Copyright: The exclusive right of the owner to perform any act regarding the created work (e.g., literary, artistic, or computer programs). 2) Industrial Property: Human creativity related to industrial goods, comprising six types (Patents, Layout-Designs of Integrated Circuits, Trademarks, Trade Secrets, Tradenames, and Geographical Indications). Furthermore, the National Reform Steering Assembly (2016) describes the IP Value Chain in four stages: Creation, Protection, Commercialization, and Enforcement.

PRECEDE Framework: Developed by Lawrence W. Green (Green & Kreuter, 1991), this framework posits that multiple factors determine behavior. Applying the "Educational and Organizational Diagnosis" phase, influencing factors are categorized into: 1) Predisposing Factors: Motivation for behavior (e.g., knowledge, beliefs, attitudes); 2) Enabling Factors: Resources and conditions necessary to perform a behavior (e.g., availability, accessibility); and 3) Reinforcing Factors: Feedback or rewards received from others (e.g., tangible rewards, praise).

Frederick Herzberg's Two-Factor Theory: Herzberg et al. (1990) categorized factors influencing work motivation into: 1) Motivation Factors: Intrinsic factors creating job satisfaction (e.g., Achievement, Recognition); and 2) Hygiene Factors: Extrinsic factors essential to prevent dissatisfaction (e.g., Policy and Administration, Working Conditions).

Information Behaviour Model: To elevate the study from an Information Science perspective, this research integrates T.D. Wilson's Information Behaviour Model (Wilson, 1999). Wilson posits that information-seeking behavior arises from three basic human needs: physical, affective (e.g., achievement, recognition), and cognitive (learning and acquiring skills). This behavior is heavily influenced by the environmental context, such as the workplace and organizational policies (Montazeri, 2025).

Theoretical Integration: In the context of IP registration, researchers experience *cognitive needs* to understand complex IP definitions and novelty-checking procedures (Predisposing Factors). They are driven by *affective needs* for social recognition and commercial success (Reinforcing Factors and Motivation Factors). However, their information-seeking behavior is contingent upon the workplace environment, specifically the convenience of accessing

information and the availability of IT support (Enabling Factors and Hygiene Factors). Integrating these models demonstrates that the barriers to IP registration are fundamentally related to organizational information behavior. By synthesizing these theories, this research aims to analyze in depth the factors influencing the need for IP registration and to develop appropriate guidelines, via Information System Design (ISD), to effectively promote the IP protection system. The integration of these concepts forms the conceptual framework of this study, as illustrated in Figure 1.

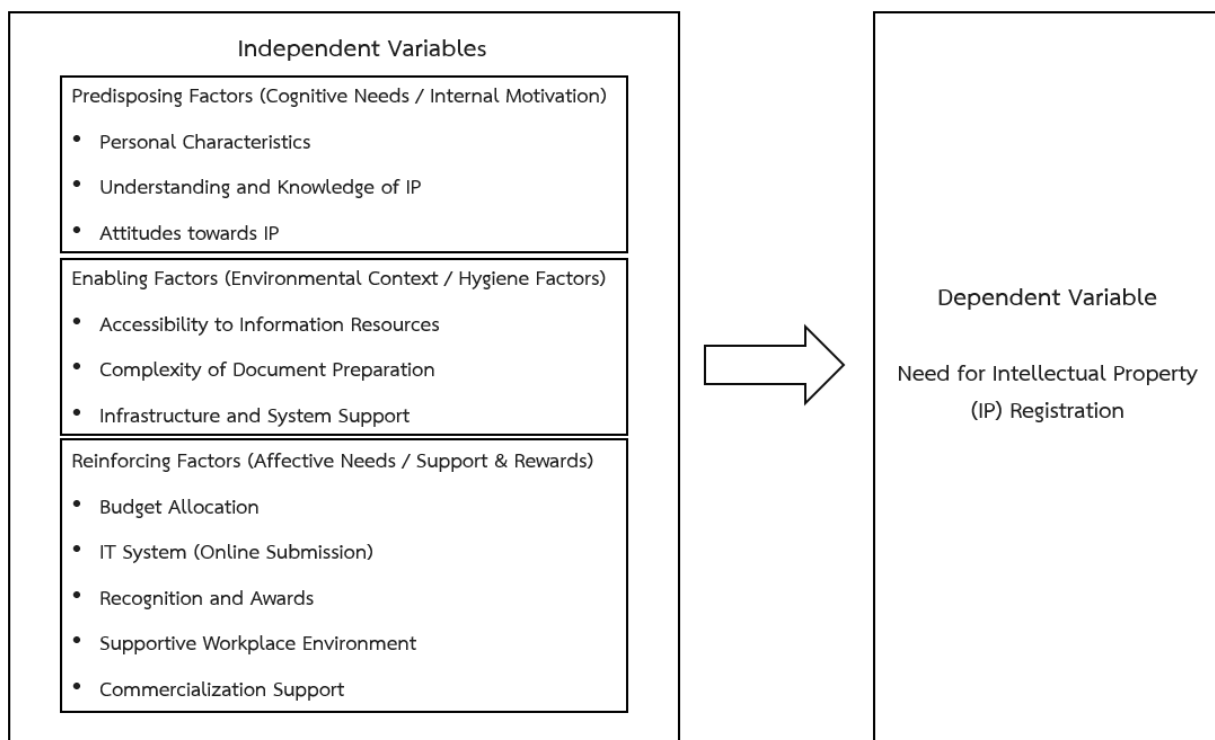


Figure 1 Conceptual Framework: Factors Affecting Intellectual Property Registration.

2. Purpose

1) To investigate factors affecting the need for IP registration among CAMT personnel, classified by predisposing, enabling, and reinforcing factors under the Information Behaviour context.

2) To propose guidelines for strengthening IP protection and registration, leading to precise policy formulation and information system implementation

3. Methodology

3.1 Research Design and Sample

This study employed a survey research design. The population consisted of 125 personnel from CAMT. The sample group was selected via purposive sampling to include personnel directly involved in academic creation and innovation. The final sample comprised 56 participants, equally divided into 28 academic staff and 28 support staff.

3.2 Research Instrument

The questionnaire was developed by integrating the PRECEDE Framework, Herzberg's Two-Factor Theory, and Wilson's Information Behaviour Model, with clearly defined operationalization of variables (constructs) to establish a robust connection between data collection and results:

1) Predisposing Factors: Reflecting cognitive needs, measured through knowledge levels of IP definitions and legal procedures.

2) Enabling Factors: Reflecting environmental contexts, measured through the convenience of accessing information resources and infrastructure support.

3) Reinforcing Factors: Reflecting affective needs and motivation, measured through the demand for IT support, budget, and social recognition.

The instrument underwent content validity verification by three experts. Selected items yielded IOC values ranging from 0.67 to 1.00. The questionnaire's reliability was tested through a try-out, yielding an acceptable Cronbach's Alpha coefficient. Data were analyzed using descriptive statistics and an independent samples t-test to test for significant differences at the 0.05 level.

3.3 Data Analysis

Data were analyzed using statistical software. Descriptive statistics (percentages, means, and standard deviations) were used to summarize the demographic data and variable scores. Inferential statistics (Independent Samples t-test) were used to test for significant differences at the 0.05 significance level.

4. Research results

The data analysis revealed that a significant majority of the participants (89.3%) expressed a need for intellectual property registration.

4.1 Predisposing Factors (Cognitive Needs)

Personal factors showed no statistically significant correlation with the need for registration. However, specific aspects of "knowledge and understanding" demonstrated a significant influence. The group expressing a need for registration possessed significantly higher mean knowledge scores regarding the "Definition of Intellectual Property" and "Work Verification Procedures (Novelty Checking)" compared to the group with no need for registration, at a statistical significance level of 0.05 ($p < 0.05$), as illustrated in Figure 2

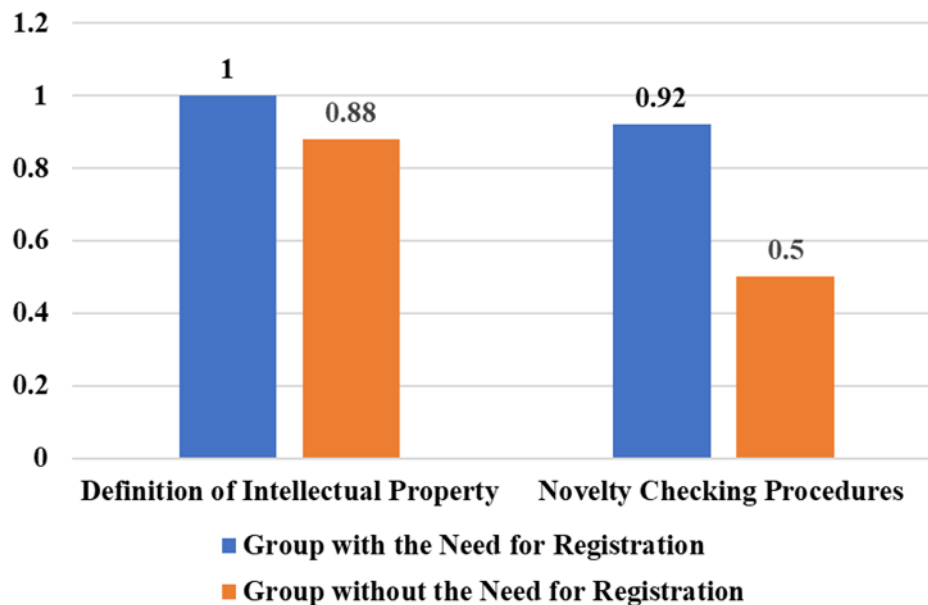


Figure 2 Comparison of Statistically Significant Mean Knowledge Scores (Max Score = 1.00)

4.2 Enabling Factors (Environmental Contexts)

The analysis revealed that "Convenience in Accessing Information" was the sole factor significantly influencing the decision to register intellectual property. The group expressing a need for registration rated the importance of information accessibility significantly higher than the group without such a need (Mean = 4.00 vs. 3.25, $p = 0.049$).

4.3 Reinforcing Factors (Affective Needs and IT Support)

Reinforcing factors emerged as the most influential variables. Distinct differences ($p < 0.05$) were found in IT Support, Budget Support, Commercialization, Environment, and Recognition. Notably, IT Support for online document submission systems exhibited the most

substantial discrepancy (t-value = -11.68), indicating it is the most critical driver. Other significant factors included budget funding for novelty searches, support for commercial utilization, a supportive research environment, and acknowledgment from supervisors and peers, as illustrated in Figure 3

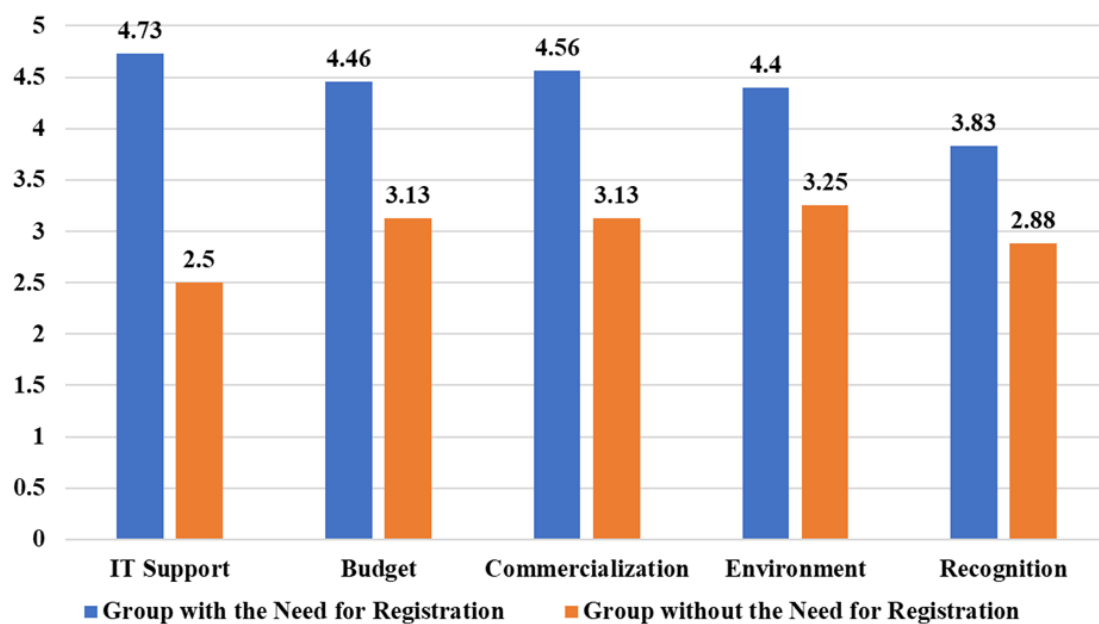


Figure 3 Reinforcing Factors Affecting the Need for Intellectual Property Registration
(Max Score = 5.00)

5. Conclusion

This research highlights that CAMT personnel have a strong need for IP registration, independent of personal factors. The "Need for IP Registration" is fundamentally driven by cognitive needs regarding IP procedures, convenience in accessing information, and, most importantly, reinforcing factors, specifically IT support and organizational policy.

From the IP registration workflow detailed in the introduction, it is evident that the resulting workload integrates the complexities of Information Behaviour and legal procedures. The findings consistently manifest the "procedural bottlenecks" addressed in this study, particularly the manual processes in document preparation and novelty checking that lead to information overload. The difficulties inherent in these steps reflect that the lack of ecosystem support transforms these processes into significant barriers. Addressing these bottlenecks

requires reinforcing factors, specifically IT support, to transition toward user-centered online information systems.

6. Discussion

6.1 Personal Factors are Non-Determinants

The finding that bio-social factors do not affect the need for registration aligns with Chumbangmang (2013), suggesting that the drive for IP is universal when the organizational culture supports innovation. This highlights that predisposing factors related to cognitive understanding override demographic differences.

6.2 The Critical Role of IT and Information Behaviour

The study identified “lack of understanding in drafting” (23.4%) and “complex documentation” (20.9%) as key pain points. Interpreted through Wilson’s Information Behaviour Model (Wilson, 1999), these issues function as environmental barriers that hinder personnel from effectively satisfying their cognitive needs.

Furthermore, the findings are consistent with recent international studies, which highlight legal complexity and insufficient institutional support as major obstacles to IP management in higher education (RSIS International, 2025).

The statistically significant role of IT support (t -value = -11.68) reinforces Tiraktapanakul’s (2014) recommendation to adopt online submission systems. Such systems represent a critical environmental adjustment that can enhance information accessibility and streamline document processing.

6.3 External Motivation and Hygiene Factors

The significance of recognition and commercialization support confirms Herzberg’s theory that motivation factors are essential for driving desired behaviors beyond fundamental hygiene factors. Furthermore, through the deeper theoretical lens of Herzberg, the critical demand for IT support aligns with recent systematic reviews that find hygiene factors (policy, infrastructure, and administration) to be fundamental mechanisms for preventing work dissatisfaction (Wang et al., 2025). If the institution fails to address these environmental barriers by adjusting the workplace ecosystem, personnel cannot seamlessly engage in the IP process, regardless of their high internal motivation.

7. Recommendations and Future Research

Based on the findings, the researcher proposes the "3Es Model for IP Promotion" for educational institutions, integrating the PRECEDE Framework, Herzberg's theory, and Information System Design (ISD). This model is elaborated based on its underlying mechanisms and validated by the empirical data from this study:

E1 - Easy Access (Information Simplification): Grounded in Information Behaviour and Enabling Factors. Creating easily accessible information channels reduces information complexity, directly addressing procedural bottlenecks in seeking information, and enabling prompt fulfillment of user needs.

E2 - Electronic System (Information System Design): Based on ISD principles and Reinforcing Factors (specifically IT Support, t-value = -11.68). Implementing an online submission system minimizes documentation burdens. This system is designed to reduce researchers' cognitive load during complex document preparation and acts as a Hygiene Factor to prevent dissatisfaction, facilitating a seamless IP process.

E3 - Ecosystem Support (Information and Innovation Ecosystem): Aligning with Herzberg's Motivation Factors (Recognition and Achievement), this creates a comprehensive support environment. It includes Knowledge Management (KM) through mentorship to support novelty checking, budget allocation, and social recognition, reinforcing intrinsic motivation for sustainable IP creation.

Recommendations for Future Research:

1) Link the study to trends in digital transformation and Artificial Intelligence (AI). Currently, AI can be applied to enhance efficiency in analysis and prediction, and significantly reduce time in the IP novelty search process (Clarivate, 2025).

2) Refine the 3Es conceptual model to enhance its generalizability. Future studies should validate the model across multiple contexts through comparative, multi-site studies, or longitudinal studies to strengthen the robustness of the research.

References

- Chumbangmang, J. (2013). **Factors affecting work efficiency of personnel at Sima Business Co., Ltd.** [Unpublished independent study]. Sukhothai Thammathirat Open University.
- Clarivate. (2025). **AI in IP practice: Transforming intellectual property strategy.** <https://clarivate.com/resources/white-papers/ai-in-ip-practice-transforming-intellectual-property-strategy/>
- Department of Intellectual Property. (2010). **Introduction to intellectual property law.** Department of Intellectual Property.

- Green, L. W., & Kreuter, M. W. (1991). **Health promotion planning: An educational and environmental approach** (2nd ed.). Mayfield Publishing Company.
- Hall, B. H., & Sena, V. (2016). Appropriability mechanisms, innovation, and productivity: Evidence from the UK. **Economics of Innovation and New Technology**, 26(1–2), 42–62. <https://doi.org/10.1080/10438599.2016.1202513>
- Herzberg, F., Mausner, B., & Snyderman, B. B. (1990). **The motivation to work**. Transaction Publishers.
- Montazeri, P. (2025). Expanding Wilson's information behaviour model using social cognitive theory. **Information Research**, 30(2), 72–77. <https://publicera.kb.se/ir/article/view/51418>
- National Reform Steering Assembly. (2016). **Report of the National Reform Steering Assembly on economy**. The Secretariat of the House of Representatives.
- Okeke, G. N., Obiorah, C. A., Uğah, T. A., Mbanaso, M. I., Oyokunyi, E., Chimezie, H., Abulu, P. B., & Chuku-Akwu, O. R. (2025). Understanding intellectual property rights awareness and management among academic staff in colleges of education in Delta State. **International Journal of Innovative Development and Policy Studies**, 13(4), 167-180. <https://doi.org/10.5281/zenodo.17614658>
- Sawe, M. V., Juyad, C. M. T., & Dumalagan, F. A. (2025). Assessment of knowledge and awareness regarding copyright and intellectual property rights (IPRs) among the faculty of Agusan del Sur State College of Agriculture and Technology. **International Journal of Research and Innovation in Social Science**, 9(8), 1129–1136. <https://doi.org/10.47772/ijriss.2025.908000096>
- Triraktapanakul, W. (2014). Guidelines for developing services in intellectual property registration. **Veridian E-Journal**, 7(2), 910–922.
- Wang, K., Ang, H. L., Pang, Y. Y., Li, X., & Marimo, E. C. (2025). Hygiene and motivation in the workplace: A PRISMA systematic review of Herzberg's two-factor applications. **International Journal of Research and Innovation in Social Science**, 9(10), 6527–6539. <https://doi.org/10.47772/IJRISS.2025.910000533>
- Wilson, T. D. (1999). Models in information behaviour research. **Journal of Documentation**, 55(3), 249–270. <https://doi.org/10.1108/EUM0000000007145>