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# Technology application towards improving income and career retention among workers in Nha Xa silk village

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***Abstract:*** *This study examines the role of technology adoption in enhancing income improvement and occupational retention among workers in Nha Xa silk village, Vietnam. Drawing on the Technology Acceptance Model (TAM), the research proposes that Technology Adoption influences Income Satisfaction and Occupational Commitment indirectly through Business Performance Perception. Data were collected from 162 respondents representing 81 business households in Nha Xa silk village and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results reveal that Technology Adoption significantly improves Business Performance Perception, which in turn positively affects both Income Satisfaction and Occupational Commitment. Among the outcomes, Occupational Commitment is the most strongly explained variable, indicating that workers' long-term attachment to traditional silk weaving is primarily driven by perceived business performance rather than technology use alone. The findings highlight that technology contributes to occupational sustainability only when it generates tangible economic benefits. This study extends TAM by integrating occupational outcomes in traditional craft contexts and provides practical implications for promoting sustainable development in rural craft villages through performance-oriented digital transformation.*

**Keywords:** Business performance perception; digital transformation; occupational commitment; technology adoption; traditional craft villages.

## 1. INTRODUCTION

Traditional crafts have long played an important role in shaping the cultural identity and economic structure of communities around the world (Chen, 2026). In Vietnam, traditional craft villages specializing in silk weaving, pottery, bamboo products, and woodcrafts provide employment opportunities and preserve local cultural heritage across generations. However, rapid industrialization, urbanization, and changing consumer preferences have created significant challenges for the sustainability of these traditional occupations. Industrial production methods and mass-produced goods increasingly replace handmade products, reducing the competitiveness and market value of traditional crafts while contributing to unstable incomes and a decline in younger generations' commitment to craft-related occupations (UNESCO & World Bank, 2021). In response to these challenges, green transformation has emerged as a promising strategy for revitalizing traditional craft villages (Lu et al., 2025). Green transformation refers not only to the adoption of environmentally friendly production methods but also to a broader development approach that integrates environmental protection, economic sustainability, and cultural preservation. Sustainable craft production can improve workers' livelihoods, enhance product value, and strengthen community resilience. A notable example is the Nam Cao silk weaving village in Thai Binh Province, where local cooperatives have maintained traditional silk weaving techniques while promoting eco-friendly production and cultural tourism activities. These initiatives contribute to preserving intangible cultural heritage and creating additional income opportunities for local communities (Vietnam.vn, 2024).

Alongside green transformation, Information and Communication Technology (ICT) has become an increasingly important driver of socio-economic development in Vietnam. ICT development is widely recognized as a key factor in improving productivity, communication, and market accessibility, particularly in rural areas (Castells, 2010). In 2022, The Prime Minister has issued Decision No. 801/QD-TTg approving the Program for the Preservation and Development of Vietnamese Traditional Craft Villages for the period 2021-2030. Accordingly, from a conceptual standpoint, the preservation and development of traditional craft villages plays a crucial role in promoting economic restructuring, rural labor, job creation, and improving the quality of life for the people. One of the important solutions for developing craft village tourism, as outlined in the Prime Minister's Decision, is to strengthen research, integration, transfer, and application of technology and digital technology, and digital transformation to enhance production and business capacity, promote trade, and develop craft village tourism. Nevertheless, disparities in digital access and technological capability remain significant between urban and rural communities in Vietnam. Many traditional craft villages continue to face limitations in digital literacy, e-commerce adoption, and access to online markets, which restrict their competitiveness in the digital economy. This issue is closely related to the

social structure of Vietnam, where a large proportion of the population still lives in rural communities organized around traditional craft villages. These villages are characterized by strong social cohesion, shared occupational identity, and intergenerational knowledge transmission. For example, Van Phuc silk village in Hanoi represents one of the most prominent examples of a traditional craft community, with a history of silk weaving extending over a thousand years and a large number of households participating in different stages of silk production (Vietnam National Authority of Tourism, 2021). However, in terms of opportunities, such characteristics provide favorable conditions for the integration of ICT into community-based economic activities, enabling artisans to expand communication networks, strengthen collaboration, and access broader markets.

In the context of Nha Xa Silk Village, which is one of the oldest traditional silk weaving villages in northern Vietnam, with a long history of producing high-quality silk products that contribute significantly to local cultural identity and household livelihoods (Vietnam News Agency, 2014). Currently, the village has more than 150 households engaged in silk weaving, operating approximately 375 looms and producing over one million meters of silk annually (Vietnam News, 2024). The development of the weaving industry has contributed significantly to improving local livelihoods and fostering economic stability. The establishment of the Nha Xa Silk Association has further enhanced product quality, strengthened the village's reputation, and modernized business practices among local artisans. As a result, Nha Xa is recognized as one of the leading localities in Vietnam in terms of silk production and quality. The village has traditionally relied on family-based production models, where weaving knowledge and techniques are transmitted across generations. However, similar to many traditional craft villages in Vietnam, Nha Xa is currently facing multiple socio-economic and environmental challenges. The expansion of industrial textile manufacturing and the availability of low-cost machine-made fabrics have reduced the competitiveness of handmade silk products, leading to unstable incomes for many weaving households. In addition, younger generations increasingly seek employment opportunities in urban and industrial areas due to higher and more stable earnings, resulting in a gradual decline in labor participation in traditional silk weaving activities. Despite these challenges, Nha Xa silk village has shown signs of adaptation through the integration of digital technology and tourism-oriented development (Vietnam.vn., 2025). Some local households and cooperatives have begun using social media platforms, e-commerce channels, and online marketing strategies to promote silk products to domestic and international customers. Technology application has helped artisans expand market access, communicate directly with consumers, and reduce dependence on intermediaries. At the same time, local authorities have promoted the preservation of traditional weaving techniques while encouraging the development of cultural tourism associated with the village's historical and cultural heritage. However, the adoption of digital technology remains uneven due to limitations in digital literacy, financial resources, and technological infrastructure among small household producers. Therefore, understanding how technology application can improve income and strengthen workers' long-term commitment to traditional occupations is becoming increasingly important for the sustainable development of Nha Xa silk village and the preservation of its cultural heritage.

In this context, technology application is expected to play a pivotal role not only in improving economic outcomes but also in sustaining the long-term viability of traditional silk weaving as a livelihood. However, the effectiveness of technology in transforming rural craft-based economies depends largely on how it is perceived, adopted, and translated into tangible business outcomes by local workers. In particular, digital tools such as e-commerce platforms, social media marketing, and online payment systems may only generate meaningful benefits when they are effectively integrated into production and business activities. This highlights the importance of understanding the behavioral and perceptual mechanisms underlying technology use among craft workers. Therefore, examining how technology adoption influences perceived business performance, and subsequently affects income improvement and occupational commitment, is essential for identifying sustainable development pathways for Nha Xa silk village in the digital era. The study is divide into 5 part inluding (1) Introduction; (2) Conceptual framework and hypothesis development; (3) Methodology; (4) Results and discussion; and (5) Implications and conclusion.

## 2. CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

### 2.1 Technology Acceptance Model

Before examining digital technology acceptance, it is important to clarify the concept of technology itself. Traditional definitions often associate technology with applied science used in products and production processes, however, a broader and more future-oriented perspective is provided by W. Brian Arthur, who defines technology as a means to fulfill a human purpose and further emphasizes that it can take the form of a method, process or device (Gupta et al., 2024). This perspective highlights the functional and human-centered nature of technology, while also acknowledging the ambivalence in how people perceive it. It is both as something that can extend human capabilities and as something that may constrain them. In the context of rapid digitalization, users increasingly expect technologies to be reliable, useful, and easy to use, which places significant importance on how individuals perceive and interact with technological systems.

The study of technology acceptance emerged in response to the high failure rates of early information technology systems, where many applications were rejected by users despite significant financial investment. Davis (1989) sought to understand how system design characteristics influence user motivation and acceptance and developed the Technology

Acceptance Model (TAM) as a theoretical framework to explain how users come to accept and use new technologies. TAM is adapted from the Theory of Reasoned Action (Vallerand et al., 1992) and later extended through the Theory of Planned Behavior (Ajzen, 1985; 2020). Unlike these earlier theories, which rely on subjective weighting of behavioral determinants, TAM applies empirical methods such as regression analysis to determine the influence of key variables on user behavior. The original TAM proposes that technology acceptance is primarily determined by two key beliefs as perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which an individual believes that using a particular technology will enhance their job performance, while perceived ease of use refers to the degree to which the technology is perceived as effortless to use. These beliefs shape the user's attitude toward using the technology, which in turn influences behavioral intention and actual usage behavior (Davis, 1986). Over time, the model has been extended (TAM2, TAM3) through the inclusion of additional determinants, often in collaboration with researchers such as Visvanath Venkatesh, leading to a large body of empirical research across various contexts including organizational change, consumer behavior, healthcare, and education. In parallel, TAM is widely recognized as a robust framework for examining and measuring factors that influence individuals' decisions to accept or reject information technology. The model is grounded in psychological theory, emphasizing that user behavior is shaped by the relationships among beliefs, attitudes, intentions, and actual behavior. It assumes that individuals adopt technology based on cognitive evaluations aimed at maximizing its usefulness and benefits. As such, TAM provides a structured approach to understanding user acceptance through key dimensions that influence decision-making processes.

In the context of this study on Nha Xa silk village, TAM serves as a suitable theoretical foundation for analyzing how workers adopt digital technologies in their production and business activities. Specifically, perceived usefulness may relate to how technologies such as e-commerce platforms or social media improve income and market access, while perceived ease of use reflects the accessibility of these tools for workers with limited digital skills. By applying TAM, this study aims to examine how these perceptions influence technology adoption, and subsequently, how such adoption contributes to improving income and enhancing career retention among workers in traditional craft villages.

### 2.2 Technology Adoption in Traditional Village

Technology adoption refers to the process through which individuals or organizations accept, implement, and continuously use new technologies in their activities and decision-making processes. The concept is widely discussed in the fields of information systems, innovation diffusion, and organizational behavior because the successful implementation of technology depends not only on the availability of technological tools but also on users' willingness and ability to utilize them effectively (Rogers, 2003). Technology adoption has become an important strategy for preserving and developing traditional craft villages in the context of globalization and digital transformation. Traditional villages, particularly those engaged in handicraft production, increasingly face challenges related to market competition, declining labor participation, limited market access, and changing consumer behavior. In response to these pressures, the integration of digital technologies into production, marketing, and business management activities has emerged as a critical factor influencing both economic sustainability and occupational continuity. Previous studies indicate that technology adoption in traditional craft villages is often driven by the need to improve productivity, expand market access, and enhance competitiveness. Research on Vietnamese handicraft villages has shown that digital marketing and online business platforms can significantly improve the visibility and competitiveness of traditional products in domestic and international markets. Digital Transformation enables craft producers to overcome geographical limitations and connect directly with customers through social media and e-commerce platforms (Vaculčíková et al., 2020).

Studies on rural industrial clusters in Vietnam further demonstrate that technological modernization contributes substantially to income growth and economic transformation within traditional villages. For example, research conducted by Sonobe et al. (2011) on a paper-manufacturing village in northern Vietnam found that the diffusion of mechanized production technologies significantly increased household income and accelerated the transition from manual handicraft production to modern industrial activities. The study also emphasized the importance of social learning and kinship networks in facilitating technology diffusion among rural producers.

Beyond economic benefits, technology adoption also affects the sustainability and preservation of traditional occupations. In many craft villages, younger generations tend to leave traditional occupations due to unstable income and limited career opportunities. Digital technologies, particularly e-commerce and social media platforms, create new opportunities for younger workers by modernizing traditional business models and making craft occupations more economically attractive. Studies on traditional SMEs in Indonesia found that digital technologies support product innovation, broader market reach, and business resilience while simultaneously helping preserve cultural identity (Putri et al., 2025).

However, technology adoption in traditional villages is often selective and constrained by several barriers. Many artisans and rural workers face difficulties related to limited digital literacy, lack of financial resources, inadequate technological infrastructure, and resistance to organizational change. Research on craft-based SMEs in Bali revealed that artisans frequently adopt digital tools incrementally rather than fully transforming traditional production systems. Their

adoption decisions are strongly influenced by cultural values, collective norms, and concerns about preserving traditional identity (Krismajayanti et al., 2026). Similarly, studies applying the Technology–Organization–Environment (TOE) framework to handicraft SMEs emphasize that technological readiness, organizational capacity, and external environmental support significantly influence e-commerce adoption and digital empowerment among rural enterprises (Munawaroh et al., 2025). These findings suggest that technology adoption is not solely determined by technological factors, but also depends on workers' skills, social context, institutional support, and perceived benefits. In the context of Nha Xa silk village, technology adoption may include the use of weaving technology and also social media platforms, e-commerce applications, digital payment systems, and online communication tools to support silk production and trading activities. The adoption of such technologies can help workers improve market access, increase sales opportunities, and stabilize income.

### 2.3 Technology Adoption and Business Performance Perception

Technology adoption has been widely recognized as a critical factor in enhancing business performance perception, particularly in the context of digital transformation and small-scale production systems. According to the Technology Acceptance Model, individuals are more likely to adopt technology when they perceive it as useful and capable of improving their job performance (Davis, 1986). This implies that technology adoption is fundamentally performance-driven, as users expect tangible benefits such as increased productivity, efficiency, and economic returns. In traditional production settings, technology serves as a tool to optimize both production processes and market-related activities, thereby contributing to improved overall performance. The mechanism through which technology adoption influences business performance can be explained from both operational and market perspectives. On the operational side, the use of modern technologies can streamline production processes, reduce manual labor, improve product quality, and minimize costs. On the market side, digital technologies such as e-commerce platforms and social media enable producers to access wider markets, engage directly with customers, and enhance brand visibility. Therefore, technology adoption not only enhances internal productivity but also strengthens external competitiveness.A growing body of empirical research supports the positive relationship between technology adoption and business performance. Similarly, Chahal et al. (2016) demonstrate that high-performance practices, supported by technological capabilities, positively affect business outcomes. These findings consistently indicate that technology plays a crucial role in driving performance improvements across different sectors. Nevertheless, it is important to acknowledge that technology adoption may also create certain challenges, particularly in the form of perceived job insecurity. Workers with lower levels of education, skills, or experience may perceive new technologies as a threat to their job stability, leading to uncertainty and stress (Hellgren & Sverke, 2003). Technological change can alter job requirements and create pressure for workers to adapt, which may initially reduce confidence in their ability to maintain performance levels. However, such negative perceptions are often transitional. When workers successfully adapt to new technologies, these tools can ultimately enhance their productivity and economic outcomes (Yusoff et al., 2017). Thus, while job insecurity may influence initial attitudes toward technology, it does not diminish the long-term positive impact of technology adoption on business performance.

Recent empirical studies have shown that technology adoption positively influences individual business performance by improving productivity, income generation, customer access, and work efficiency among self-employed workers and small household businesses. Digital technologies such as social media, e-commerce platforms, mobile payment systems, and online communication tools enable individuals to promote products more effectively, reach wider markets, and reduce transaction costs. For instance, Nambisan et al. (2019) argued that digital technologies empower individual entrepreneurs by enhancing opportunity recognition, market connectivity, and business flexibility in small-scale enterprises. Similarly, a study by Srinivasan & Venkatraman (2018) found that the use of digital platforms and online business tools significantly improves sales performance and customer engagement among micro-business owners. In developing economies, research by Hjort & Poulsen (2019) demonstrated that improved digital connectivity and Internet access increased employment opportunities and productivity at the individual business level, particularly in rural and informal sectors. Furthermore, Nguyen & Luu (2019) found that Vietnamese small household businesses adopting online marketing and e-commerce platforms achieved higher revenue growth and stronger customer relationships compared to those relying solely on traditional selling methods.

In the context of Nha Xa silk village, technology adoption is increasingly important in transforming traditional silk production and business practices. The use of digital platforms for marketing and sales allows local artisans to reach a broader customer base beyond traditional markets, while communication technologies facilitate more efficient interactions with customers and partners. In addition, improvements in production tools and techniques can enhance efficiency and product quality. As a result, workers who adopt and effectively utilize these technologies are more likely to experience increased sales, improved productivity, and more stable income, leading to a more positive perception of their business performance. Based on the theoretical foundation of the TAM and empirical evidence on the performance-enhancing effects of technology, it can be inferred that technology adoption plays a significant role in improving business performance perception among workers. From above agurements, the following hypothesis is proposed:

*H1: Technology adoption positively influences business performance perception among workers in Nha Xa silk village.*

### 2.4 Business Performance Perception and Income Satisfaction

The relationship between economic performance and individual satisfaction can be explained through the theoretical lens of loss aversion and status comparison. According to loss aversion theory, individuals tend to perceive losses more strongly than gains, implying that negative economic outcomes such as declining income or unstable business performance have a disproportionately adverse impact on individual well-being (Kahneman & Tversky, 1979). In contrast, improvements in economic conditions are expected to enhance satisfaction, although the psychological impact of gains may be less intense than that of losses. This asymmetry highlights the importance of maintaining positive and stable economic performance in shaping individuals' perceptions of their financial situation. Empirical evidence from studies on migration and occupational mobility further supports this argument. Research shows that individuals experiencing downward mobility such as reduced occupational status or income tend to report lower levels of well-being and life satisfaction (Massey & Akresh, 2006). This phenomenon is often attributed to unmet expectations and the psychological burden of status loss. Similarly, studies have found that negative income changes over the life course have a stronger impact on subjective well-being than positive changes , and that such effects can persist across generations. In addition, downward mobility has been linked to poorer mental health outcomes, further reinforcing the importance of stable or improving economic conditions (Liu & Wang, 2017).

From this perspective, business performance is a key determinant of income satisfaction, as it directly affects income level, stability, and predictability. When individuals perceive strong business performancethrough higher sales, productivity, or market expansion, they are more likely to feel financial security and satisfaction. Conversely, weak or unstable performance may lead to income uncertainty and dissatisfaction due to unmet expectations. In the context of Nha Xa silk village, business performance is closely linked to silk production outcomes. The adoption of technologies such as e-commerce and digital marketing can improve performance and income, thereby enhancing satisfaction. However, if performance does not improve, workers may experience dissatisfaction due to perceived economic loss. From above agurements, the following hypothesis is proposed:

*H2: Business performance perception positively influences income satisfaction among workers in Nha Xa silk village.*

### 2.5 Business Performance Perception and Occupational Commitment

The relationship between business performance and occupational commitment can be explained through perspectives of job satisfaction and organizational commitment. Job satisfaction reflects individuals' emotional evaluation of their work experience while organizational or occupational commitment represents the degree to which individuals identify with and are willing to remain in their profession or organization. Similarly, organizational commitment reflects an affective attachment to goals and values, where individuals are willing to exert effort and maintain long-term involvement (Mowday et al., 1979). From a theoretical perspective, business performance plays a critical role in shaping these attitudes. When individuals perceive strong business performance through increased income, stable operations, or growth opportunities, they are more likely to experience positive emotions toward their work, which in turn enhances their commitment. This mechanism can be explained by the fact that favorable performance outcomes provide both extrinsic rewards (e.g., income, financial stability) and intrinsic or psychological rewards (e.g., pride, sense of achievement), thereby strengthening individuals' attachment to their occupation (Gbadamosi et al., 2015). Moreover, committed individuals are more willing to contribute to organizational success and engage in extra-role behaviors, further reinforcing the link between performance and commitment.

Empirical evidence supports the positive relationship between business performance and employee commitment. Studies have shown that improved business performance is closely associated with better employee attitudes and stronger organizational attachment. For instance, Lopez et al. (2005) demonstrate that organizational learning and effective human resource practices contribute to improved business performance, which in turn enhances employees' engagement and commitment. Similarly, Chahal et al. (2016) find that high-performance practices positively influence business performance and strengthen employees' psychological attachment to the organization. More recently, Tavitiyaman et al. (2026) show that the adoption of smart technologies improves perceived usefulness and service experience, leading to enhanced business performance and more positive employee attitudes in the hospitality sector. These findings suggest that when workers perceive improvements in business outcomes, they are more likely to develop stronger commitment to their work and organization. In the context of Nha Xa silk village, business performance is directly linked to the outcomes of silk production and related economic activities. As workers adopt new technologies and improve their business operations, positive performance outcomes such as increased sales, stable income, and enhanced product quality can strengthen their attachment to the silk weaving profession. Conversely, weak or unstable performance may reduce motivation and encourage workers to seek alternative employment. Therefore, perceived business performance plays a crucial role in shaping occupational commitment among workers in traditional craft villages. From above agurements, the following hypothesis is proposed:

*H3: Business performance perception positively influences occupational commitment among workers in Nha Xa silk village.*

### 2.6 The Moderating Role of Business Performance Perception

The relationship between technology adoption and work-related outcomes can be better understood through the lens of the TAM when it proposes that individuals are more likely to adopt and use technology when they perceive it as useful and easy to use (Davis, 1989). In particular, perceived usefulness refers to the degree to which individuals believe that using a specific technology will enhance their job or task performance. Within the context of traditional craft villages, this perspective suggests that workers are more willing to integrate digital tools and technologies into their production and business activities when they perceive that these technologies can improve business outcomes such as productivity, sales, operational efficiency, and market access. Therefore, TAM provides an important theoretical explanation for understanding how technology adoption influences workers' economic and occupational outcomes through improvements in business performance.

From an organizational behavior perspective, employees' attitudes and behaviors, including income satisfaction and occupational commitment, are strongly influenced by their evaluation of work outcomes and experiences. Income satisfaction reflects individuals' subjective evaluation of whether their earnings meet their expectations and needs, while occupational commitment refers to the psychological attachment individuals develop toward their profession and their willingness to remain in it (Lumley et al., 2011). According to TAM, when individuals perceive technology as useful in improving business performance, they are more likely to experience positive economic outcomes and favorable work experiences. These positive outcomes subsequently strengthen satisfaction and long-term occupational attachment. In other words, the benefits of technology adoption are not derived merely from the use of technology itself, but from the extent to which technology contributes to meaningful performance improvements.

Previous studies have demonstrated that technology adoption positively affects business performance by enhancing efficiency, reducing operational costs, improving communication, and expanding market opportunities (Teng et al., 2022). However, the influence of technology adoption on individual-level outcomes is often indirect. Technology adoption first improves business performance, which then shapes workers' perceptions of income stability, job value, and career sustainability. This argument aligns closely with TAM, where perceived usefulness acts as a central mechanism connecting technology usage to performance-related outcomes. When workers perceive that technology adoption generates tangible economic benefits such as increased sales, stable customer demand, and improved productivity, they are more likely to develop higher levels of income satisfaction and stronger commitment to their occupation.

Empirical evidence also supports the role of performance outcomes in shaping work attitudes and commitment. Studies have shown that positive performance outcomes contribute significantly to job satisfaction (Terek et al., 2018), well-being, and organizational commitment, whereas poor economic outcomes often reduce motivation and occupational attachment (Yahaya & Ebrahim, 2016). In traditional areas such as Nha Xa Silk Village, the adoption of technologies such as e-commerce platforms, social media marketing, and digital communication tools does not automatically increase workers' satisfaction or occupational commitment. Instead, workers evaluate these technologies based on whether they improve business performance and generate practical economic value. If technology adoption leads to higher income, more stable orders, and better business opportunities, workers are more likely to feel satisfied with their income and maintain stronger attachment to traditional occupations. Conversely, if technology adoption fails to improve business outcomes, its impact on workers' attitudes and commitment may remain limited. From above agurements, the following hypotheses are proposed:

*H4a: Business performance perception mediates the relationship between technology adoption and income satisfaction among workers in Nha Xa silk village.*

*H4b: Business performance perception mediates the relationship between technology adoption and occupational commitment among workers in Nha Xa silk village.*

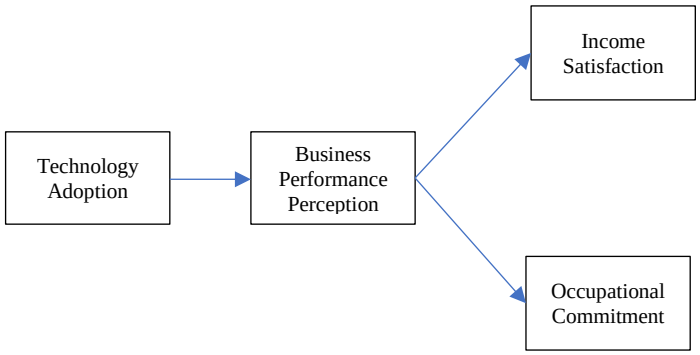


**Figure 1:** Research Model

## 3. METHODOLOGY

### 3.1 Measures and Questionnaire Development

The measurement scales in this study were adapted from prior validated research. Specifically, Technology Adoption (TAD) was measured using four items adapted from Putri et al. (2025). Business Performance Perception (BPP) was measured using four items based on Chahal et al. (2016), and Tavitiyaman et al. (2026). Income Satisfaction (IS) was measured using five items adapted from Liu & Wang (2017). Occupational Commitment (OC) was measured using five items derived from Lumley et al. (2011) and Terek et al. (2018).

All items were measured using a five point Likert scale ranging from "1 - Strongly disagree" to "5 - Strongly agree", which is widely applied in behavioral and management

research. Prior to the main data collection, a pilot test was conducted with a small group of respondents to ensure the clarity, readability, and contextual relevance of the measurement items.

### 3.2 Sample, Data Collection and Analysis

Data for this study were collected from business households in Nha Xa silk village, a traditional craft village in Vietnam known for silk production. A total of 81 business households were selected as the primary sampling units, and each household was represented by two respondents to ensure diversity of perspectives within the same business unit. As a result, 162 valid responses were obtained and used for analysis. This sampling approach allows for a more comprehensive understanding of business operations and individual perceptions within each household, thereby enhancing the reliability of the dataset. The respondents were individuals directly involved in production and business activities within the household, including owners, co owners, and family members. A structured questionnaire was employed to collect the data, and the survey was administered through direct distribution to ensure a high response rate and data accuracy. The measurement items were adapted from established studies and adjusted to fit the context of traditional craft production in Nha Xa village.

The demographic profile of the respondents includes gender (male and female), age groups (under 25, 25–34, 35–44, and 45 and above), education level (high school, vocational training, university, and postgraduate), role in business (owner, co owner, and family member), business experience (less than 3 years, 3–5 years, 6–10 years, and more than 10 years), and monthly income levels (below 700 USD, 700–1500 USD, and above 1500 USD). In addition, respondents were asked to indicate the types of technology applied in their production processes, including weaving technology, dyeing technology, finishing technology, design and pattern technology, and other forms of technological application.

For data analysis, this study employed Partial Least Squares Structural Equation Modeling (PLS SEM) using SmartPLS 3 to assess the reliability and validity of the measurement model and to test the proposed hypotheses.

## 4. RESULTS AND DISCUSSION

### 4.1 Demographics of Respondents

Table 1 presents the demographic characteristics of the respondents in Nha Xa silk village. The sample consists of 162 workers within 81 households, with female respondents accounting for 56.8% and male respondents accounting for 43.2%, indicating a relatively balanced gender distribution with a slight female majority. This reflects the typical labor structure in traditional craft villages, where female workers often play an important role in silk production activities. In terms of age, the majority of respondents fall within the working age groups of 25–34 (30.9%) and 35–44 (32.1%), followed by those aged 45 and above (27.1%), while the proportion of younger respondents under 25 is relatively low at 9.9%. This suggests that the workforce is mainly composed of experienced and economically active individuals, with limited participation from younger generations.

**Table 1:** Demographics of Respondents

| **Demographics** | | **Frequency** | **Percentage (%)** |
|---|---|---|---|
| Gender | Male | 70 | 43.2 |
| | Female | 92 | 56.8 |
| Age | < 25 | 16 | 9.9 |
| | 25–34 | 50 | 30.9 |
| | 35–44 | 52 | 32.1 |
| | ≥ 45 | 44 | 27.1 |
| Education Level | High school | 58 | 35.8 |
| | Vocational | 40 | 24.7 |
| | University | 52 | 32.1 |
| | Postgraduate | 12 | 7.4 |
| Role in Business | Owner | 54 | 33.3 |
| | Co-owner | 51 | 31.5 |
| | Family member | 57 | 35.2 |
| Business Experience | < 3 years | 20 | 12.3 |
| | 3–5 years | 36 | 22.2 |
| | 6–10 years | 50 | 30.9 |
| | > 10 years | 56 | 34.6 |
| Monthly Income | < 700 USD | 42 | 25.9 |
| | 700–1500 USD | 75 | 46.3 |
| | > 1500 USD | 45 | 27.8 |
| **Total of Respondents** | | **162** | **100** |
| Types of Technology Application | Weaving Technology Only | 2 | 2.5 |
| | E-commerce Technology Only | 11 | 13.6 |
| | Both | 68 | 83.9 |
| **Total of Business Households** | | **81** | **100** |

Regarding education level, most respondents have completed high school (35.8%) or university education (32.1%), while 24.7% have vocational training and only 7.4% hold postgraduate qualifications. This indicates a moderate level of educational attainment, which may influence the

ability to adopt and effectively utilize new technologies. The distribution of roles in business is relatively balanced, with family members (35.2%), owners (33.3%), and co owners (31.5%) all contributing significantly. This reflects the household based production structure typical of traditional craft villages. In terms of experience, a large proportion of respondents have more than six years of experience, including 6–10 years (30.9%) and over 10 years (34.6%), indicating strong industry familiarity. This suggests that respondents are well equipped to evaluate business performance and technological changes. Income levels are mainly concentrated in the middle range, with 46.3% earning between 700 and 1500 USD, while 25.9% fall below 700 USD and 27.8% earn above 1500 USD. This reflects a relatively stable but moderate income structure.

Finally, Table 1 also shows that most business households in Nha Xa Silk Village adopted both weaving technology and e-commerce technology (83.9%). This indicates a strong trend toward integrating production technology with digital business activities to improve efficiency and market access. Meanwhile, 13.6% of households applied only e-commerce technology, while only 2.5% used weaving technology alone. The findings suggest that combined technology adoption has become the dominant approach among silk-producing households, reflecting increasing awareness of the importance of digital transformation and technological innovation for sustaining business performance and traditional occupations.

### 4.2 Scale Reliability and Validity Assessment

Table 2 presents the results of construct reliability and convergent validity for the proposed model examining technology application and its impact on income and career retention among workers in Nha Xa silk village. The Cronbach's Alpha values for the main constructs, including Technology Adoption (0.843), Business Performance Perception (0.884), Income Satisfaction (0.922), and Occupational Commitment (0.909), all exceed the recommended threshold of 0.70, indicating satisfactory internal consistency. Similarly, the Composite Reliability values range from 0.894 to 0.942, further confirming strong construct reliability.

**Table 2:** Construct Reliability and Validity

| | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|
| TAD | 0.843 | 0.852 | 0.894 | 0.679 |
| BPP | 0.884 | 0.892 | 0.921 | 0.745 |
| IS | 0.922 | 0.928 | 0.942 | 0.766 |
| OC | 0.909 | 0.909 | 0.932 | 0.734 |

*Source: Data analysis by SmartPLS3*

The Average Variance Extracted (AVE) values for all constructs range from 0.679 to 0.766, exceeding the minimum recommended value of 0.50. This indicates that each construct explains a substantial proportion of the variance of its indicators and demonstrates adequate convergent validity.

In the Table 3, according to the Fornell–Larcker criterion, the square root of the Average Variance Extracted (AVE) for each construct is higher than its correlations with other constructs. Specifically, the diagonal values for Business Performance Perception (0.863), Income Satisfaction (0.875), Occupational Commitment (0.857), and Technology Adoption (0.824) are all greater than the corresponding inter-construct correlations. This indicates that each construct is empirically distinct from the others, thereby satisfying the requirement for discriminant validity. In addition, the HTMT values range from 0.291 to 0.847, all of which are below the recommended threshold of 0.85. This further confirms that there is no issue of discriminant validity among the constructs. Overall, the results demonstrate that the measurement model achieves adequate discriminant validity, supporting the distinctiveness of Technology Adoption, Business Performance Perception, Income Satisfaction, and Occupational Commitment in examining the role of technology application in improving income and career retention among workers in Nha Xa silk village.

**Table 3:** Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT)

| | | BPP | IS | OC | TAD |
|---|---|---|---|---|---|
| Fornell-Larcker Criterion | BPP | 0.863 | | | |
| | IS | 0.485 | 0.875 | | |
| | OC | 0.723 | 0.775 | 0.857 | |
| | TAD | 0.460 | 0.270 | 0.624 | 0.824 |
| Heterotrait-Monotrait Ratio (HTMT) | BPP | | | | |
| | IS | 0.532 | | | |
| | OC | 0.802 | 0.847 | | |
| | TAD | 0.522 | 0.291 | 0.699 | |

*Source: Data analysis by SmartPLS3*

### 4.3 Research Model Assessment and Discussion

The structural model demonstrates moderate explanatory power in explaining key outcomes related to technology application among workers in Nha Xa silk village. Specifically, the model explains 20.7% of the variance in Business Performance Perception (BPP) (Adjusted $R^2$ = 0.207), 23.0% of the variance in Income Satisfaction (IS) (Adjusted $R^2$ = 0.230), and 52.0% of the variance in Occupational Commitment (OC) (Adjusted $R^2$ = 0.520). This indicates that while the model provides moderate explanatory power for BPP and IS, it shows relatively strong predictive capability for occupational commitment, suggesting that the

proposed variables play a particularly important role in shaping workers' long term attachment to their occupation.

**Table 4:** Structural Equation Modelling Results Estimates

| Paths | Original Sample | Sample Mean | S.D | T Statistics | P Values |
|---|---|---|---|---|---|
| TAD → BPP | 0.460 | 0.466 | 0.079 | 5.792 | 0.000 |
| BPP → IS | 0.485 | 0.492 | 0.094 | 5.137 | 0.000 |
| BPP → OC | 0.723 | 0.722 | 0.059 | 12.197 | 0.000 |
| TAD → BPP → IS | 0.223 | 0.231 | 0.065 | 3.435 | 0.001 |
| TAD → BPP → OC | 0.333 | 0.340 | 0.076 | 4.364 | 0.000 |
| Adjusted $R^2$: BPP = 0.207; IS = 0.230; OC = 0.520 | | | | | |

*Source: Data analysis by SmartPLS3*

The empirical results indicate that Technology Adoption (TAD) has a significant and positive impact on Business Performance Perception (BPP) ($\beta = 0.460$, $t = 5.792$, $p < 0.001$), thereby providing strong support for H1. This finding reinforces the theoretical argument rooted in the Technology Acceptance Model (Davis, 1986), which posits that individuals are more likely to adopt technologies when they perceive them as useful for improving job performance. In the context of Nha Xa silk village, the adoption of production technologies such as weaving and dyeing equipment, along with digital tools, plays a crucial role in enhancing operational efficiency, product quality, and market accessibility. As workers increasingly integrate these technologies into their daily activities, they are able to produce more efficiently and reach broader markets, which in turn leads to improved perceptions of business performance. This result is also consistent with prior empirical studies by Chahal et al. (2016), Nambisan et al. (2019), Srinivasan & Venkatraman (2018), Hjort & Poulsen (2019) and Nguyen & Luu (2019), which emphasize that technological capabilities are key drivers of improved business outcomes.

The results further reveal that Business Performance Perception (BPP) has a significant positive effect on Income Satisfaction (IS) ($\beta = 0.485$, $t = 5.137$, $p < 0.001$), thus supporting H2. This relationship can be explained through the theoretical lens of loss aversion (Kahneman and Tversky, 1979), which suggests that individuals' satisfaction is strongly influenced by their perceived economic conditions. In particular, improvements in business performance, such as higher sales, increased productivity, and more stable income streams, contribute positively to workers' financial well being and perceived economic security. In the setting of Nha Xa silk village, where income is closely tied to production outcomes and market demand, the perception of strong business performance directly translates into a higher level of income satisfaction. This finding aligns with the work of Liu & Wang (2017), which highlights that subjective income satisfaction is largely shaped by perceived rather than absolute income conditions.

The analysis also demonstrates that Business Performance Perception (BPP) has a strong and statistically significant positive effect on Occupational Commitment (OC) ($\beta = 0.723$, $t = 12.197$, $p < 0.001$), thereby supporting H3. Notably, this is the strongest relationship observed in the model, indicating that perceived business performance plays a central role in shaping workers' commitment to their occupation. When workers perceive that their business activities are successful, stable, and capable of generating sustainable income, they are more likely to develop a sense of pride, attachment, and long term dedication to their profession. This finding is consistent with previous studies by Lumley et al. (2011) and Cook & Wall (1980), which suggest that positive work related experiences and outcomes significantly enhance commitment. In traditional craft villages such as Nha Xa, where occupational decisions are strongly influenced by economic viability, business performance becomes a key determinant of whether workers remain in or leave the profession.

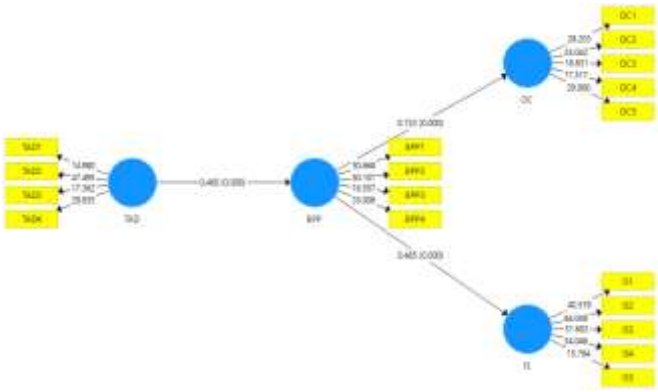

**Figure 2:** PLS Bootstrapping Model

*Source: Data analysis by SmartPLS3*

The mediation analysis provides evidence that Technology Adoption (TAD) has a significant indirect effect on Income Satisfaction (IS) through Business Performance Perception (BPP) ($\beta = 0.223$, $t = 3.435$, $p = 0.001$), thus supporting H4a. This result indicates that the influence of technology adoption on income satisfaction operates through improvements in perceived business performance rather than directly. In other words, the adoption of technology only leads to higher income satisfaction when it produces tangible economic benefits, such as increased productivity, higher earnings, and more stable operations. This highlights the critical role of performance perception as a mechanism that translates technological inputs

into meaningful economic outcomes, which is consistent with the findings of Terek et al. (2018).

Similarly, the results indicate that Technology Adoption (TAD) has a significant indirect effect on Occupational Commitment (OC) through Business Performance Perception (BPP) ($\beta = 0.333$, $t = 4.364$, $p < 0.001$), thereby supporting H4b. It supports the recent study by Yahaya & Ebrahim (2016). This finding suggests that technology adoption enhances workers' commitment to their occupation primarily by improving their perception of business performance. When technological application leads to better outcomes such as increased efficiency, expanded market opportunities, and more stable income, workers are more likely to remain engaged and committed to their profession. Conversely, if technology adoption does not result in noticeable improvements in performance, its impact on commitment may be limited. Overall, these findings emphasize that business performance perception serves as a critical mechanism linking technology adoption to both economic satisfaction and long term occupational commitment in traditional craft settings.

## 5. IMPLICATIONS AND CONCLUSION

This study extends the Technology Acceptance Model (TAM) by shifting its explanatory focus from mere technology usage to broader socio-economic and occupational outcomes in traditional craft village contexts. Specifically, it demonstrates that technology adoption influences income satisfaction and occupational commitment only indirectly through business performance perception, highlighting the mediating role of perceived economic outcomes. In addition, the study contributes to occupational commitment literature by identifying business performance perception as a key determinant of workers' long-term attachment to traditional craft occupations. The findings show that occupational commitment is primarily driven by perceived business success, suggesting that career retention in informal craft economies is largely performance-based rather than technology-driven alone.

The findings of this study carry important implications for policymakers, local authorities, and stakeholders involved in the development of traditional craft villages, particularly in the context of digital transformation. A central insight emerging from the results is that occupational commitment represents the most critical outcome variable in the model, both in terms of explanatory power and substantive importance. This indicates that the sustainability of traditional silk weaving in Nha Xa village depends less on the mere presence of technology and more on whether workers perceive their occupation as economically viable, stable, and worth sustaining in the long term. From a policy perspective, this suggests that digital transformation initiatives in craft villages should not be evaluated solely based on the rate of technology adoption, but rather on their ability to generate meaningful improvements in business performance perception. Technology should be understood as an enabling tool rather than an end goal. Without clear and visible improvements in production efficiency, market access, and income generation, technology adoption is unlikely to translate into stronger occupational attachment. Therefore, policy interventions should shift from a supply-oriented approach (providing tools and platforms) to an outcome-oriented approach that ensures these tools effectively enhance business performance.

The strong influence of business performance perception on occupational commitment highlights a critical behavioral mechanism that workers remain committed to traditional occupations when they perceive consistent economic returns and stable future prospects. In the context of Nha Xa silk village, this means that occupational retention is fundamentally driven by perceived business success rather than cultural attachment alone. While cultural heritage and identity may contribute to initial engagement, long-term commitment is sustained primarily through economic rationality. This finding has important implications for rural development strategies, suggesting that preserving traditional crafts requires making them economically competitive in modern markets. Accordingly, efforts to strengthen occupational sustainability should prioritize interventions that directly enhance business performance outcomes. These may include improving access to digital marketplaces, supporting branding and product differentiation strategies, strengthening logistics and distribution networks, and facilitating direct connections between producers and consumers. Such measures are more likely to increase perceived business success, which in turn reinforces occupational commitment among workers.

Income Satisfaction, while positively influenced by business performance perception, plays a secondary role compared to occupational commitment. This suggests that short-term financial improvements alone are insufficient to ensure long-term retention in traditional occupations. Workers may experience temporary increases in income satisfaction, however, sustained engagement in silk production depends on broader perceptions of stability, growth potential, and career viability. Therefore, policy measures should focus not only on increasing income levels but also on enhancing income stability and predictability over time. Another important implication relates to human resource sustainability within traditional craft villages. The findings suggest that younger generations are more likely to remain in or return to traditional occupations when they perceive clear economic benefits from engaging in digitally supported production systems. This highlights the importance of integrating digital skills training with entrepreneurship development programs, enabling workers not only to use technology but also to transform it into competitive business advantages.

This study is limited by its cross-sectional design, which restricts causal interpretation, and by its reliance on self-reported data that may introduce subjective bias. In addition, the focus on Nha Xa silk village limits the generalizability of the findings to other craft contexts. Future research could use longitudinal data, incorporate objective performance

indicators, and expand the model to other regions while including additional factors such as digital literacy, social capital, and institutional support to better explain long-term occupational outcomes

## 6. ACKNOWLEDGMENT

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## 7. REFERENCES

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