

## Assessment of the Status, Innovation Demand, and Acceptance of Technology and Production Equipment of Cottage Industrial Co-Operations in Vietnam Today

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### Abstract:

*The cottage industrial Co-operative (CI Co-op) is an important economic component contributing to job creation, poverty alleviation and hunger eradication, improvement of socio-economic life, and preservation and development of traditional industries and cultures in rural and mountainous areas. In the trend of international economic integration with the important role of the 4.0 industrial revolution, improving the management level and promoting the application of scientific and technological innovation to production is an inevitable direction to ensure the improvement of competitiveness, change in quality to help goods of CI Co-ops overcome technical barriers to enter the world market [1]. This study assesses the current situation, the need for technological innovation, and the receptiveness of CI Co-ops as the basis for formulating, promulgating mechanisms, policies, solutions to support and encourage the promotion of technological innovation. The results show that: The technological status of industrial cooperatives is average and relatively uniform, the level of investment and equipment innovation is still low; the production machinery and equipment are mainly semi-automatic, multi-power, without automation equipment under the fixed program. The leadership level of CI Co-ops is low but the level of determination to invest in innovation and supplement equipment and technology is relatively high, the ability to accept technology is quite flexible and it does not much depend on the support of the state. The biggest impact on the ability of CI Co-ops to receive technology is the lack of capital and production facilities to ensure compliance with environmental regulations [2].*

**Keywords:** *collective economy, co-operatives, cottage industry, technology needs*

### Introduction

*The cooperative economic sector with the core of cooperatives, despite facing many difficulties, has increasingly changed in quality and has played an important and comprehensive role in terms of economy, politics, and society. However, this economic sector still has a lot of limitations, most of which are small-scale cooperatives with weak capacity, instability, and lack of transparency. The proportion of effective cooperatives is still too low compared to the total number of existing cooperatives, cooperatives in the field of effective agriculture account for only 50%, while non-agricultural cooperatives account for about 60%, including small-scale industrial co-operatives.*

*CI Co-ops have taken advantage of raw materials, labor, land, and local's traditional occupations to operate effectively, help create jobs, improve income, stabilize the lives of their members, contribute to transforming the rural economic structure. However, the co-operatives still have many limitations, in addition to the subjective causes left by the history of management mechanisms and the weakness of the executive staff, the ability to adapt to the dynamics of the market economy, and especially the innovation of production technology to improve productivity and quality of the product is very essential. Especially in the context of the current shortage of productive labor in rural areas. Therefore, in addition to supporting activities in training, promotion, trade, capital, etc., the assessment of current status, needs, and ability to receive technology to offer solutions to support and encourage the innovation of production technology, promote the connection of technology supply and demand for industrial cooperatives is very important. This is also a necessary step to see the overall picture of the strengths and weaknesses of cooperatives in the trend of changing production technology, improving product quality and value.*

*The study focuses on the cottage industries in which participated co-operatives have large export turnover including 05 industries: wood furniture production and wood products; rattan, bamboo, woven leaves; ceramic, crockery, porcelain; paper and textile production, embroidery, garment. Conduct a field survey of 420 co-operatives of 05 types of co-operatives including 125 co-operatives producing wood and wood products equivalent to 29.8%, 97 co-operatives weaving, sewing, and lace embroidery equivalent to the rate of 23.1%; 118 co-operative producing rattan, bamboo, and woven leaves equivalent to 28.1%; 34 cooperatives manufacturing paper and related-paper products equivalent to 8.1% and 46 co-operatives in the field of Ceramics, crockery, porcelain equivalent to 10.9% [3].*

*The classification of co-operative size is based on one of two criteria: membership size or capital size (Circular No. 01/ 2020 TT-BKHDT dated February 19, 2020 of the Ministry of Planning and Investment on the guidance on the classification of assessment of co-operatives), if the cooperative meets either capital or membership criteria, it will be classified. Through actual investigation, the cooperatives have a small number of members, not enough according to the classification criteria of membership size but the capital size is sufficient or vice versa. The survey results show that the co-operatives are mainly in micro and small scale, these proportions account for 45.21% and 39.72% respectively of the total number of surveyed co-operatives, while the number of co-operatives with medium and large scale production accounted for only 14.96% and 0.12% of surveyed co-operatives. The total proportion of small- and micro-scale cottage industrial co-operatives accounted for 84.92%, the number of large-scale co-operatives, mainly those producing furniture and wood products, accounted for 0.12%. In the type of ceramics producing co-operatives, the proportion of micro-and small-scale co-operatives accounted for 76.43%, the proportion of medium-sized co-operatives accounted for 23.57%. There are no large-scale cooperatives. Type of co-operative producing wood and wood related products, the proportion of cooperatives with micro and small scale accounts for 83.36%, while the large scale accounts for only 0.56% of surveyed cooperatives, the rest is the medium scale with 16.08%. Type of paper production co-operatives, the proportion of micro-and small-scale co-operatives currently accounts for 83.15%, the rest are medium-sized co-operatives accounting for 16.85% of surveyed co-operatives, there is no large-scale cooperative. In the type of textile and lace embroidery co-operative, the proportion of micro-and small-scale co-operatives accounts for 86.03%, while medium-sized co-operatives account for only 13.97%, this type of production also does not have large-scale co-operatives. [3].*

*Some concepts:*

*- Assessing the current state of technology: is the level of achievement, the efficiency of use, the ability to organize and exploit the existing production technology of CI Co-ops- Assessing technology needs: is to assess the need to innovate production technology to improve productivity and product quality of CI Co-ops.*

*- Assessing the ability to receive technology: is the assessment of skills and capacity to absorb knowledge to master the production technology of CI Co-ops.*

## **2. Research subjects and methods**

**- Research subjects:** 420 co-operatives in 5 sectors (rattan, bamboo, woven leaves; ceramic, crockery, porcelain; Wood and wood related products; Textile, garment, lace embroidery; Paper).

**- Research methods:**

+ Investigative methods:

Design of survey slips: pursuant to the circular guiding on the state's investigation work, consult experts to develop a sample of the ballot to ensure the full evaluation criteria, briefly and simply in accordance with the ability of co-operative members to respond.

Research content: Investigating the status, needs, and ability to accept technology of small-scale industrial co-operatives across the country.

Investigation plan: Coordinate with the Alliance of Cooperatives of provinces and cities to organize the survey of the sample number of 420 co-operatives in 30 provinces and cities in 7 economic regions, the number of survey votes corresponds to the number of co-operatives.

+ Data analysis method: Use Excel software to synthesize and analyze survey data according to the system of each question according to the evaluation analysis criteria. From those metrics, using Origin 2021 software processed into a chart... to compare, analyze the data in a visual and objective way.

+ Method of reviewing experiences: Researching and reviewing practical results to draw lessons learned and propose additional, revising, and recommending new solutions.

+ Expert methods: Develop seminars, seminars to ask for comments from experts on research content.

+ Method of assessing the current state of technology: According to circular No. 17/2019/TT-BKHCN dated December 10, 2019 of the Ministry of Science and Technology on guiding the assessment of production technology qualifications and capacity (enclosed with the guiding annexes). The study selected 07 criteria to assess the current state of production technology including:

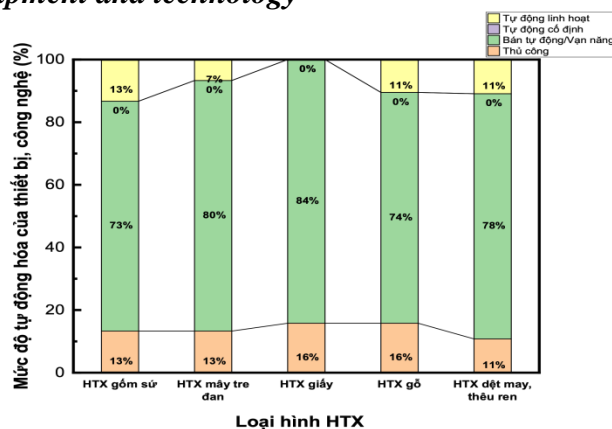
**Table 1. The target groups assessed the current state of production technology of 05 types of cooperatives [4].**

TT	Evaluation criteria	Score the criteria	
		Minimum	Maximal
1	The level of wear and tear of equipment and technology	1	5
2	Intensity of equipment and technology capital	1	3
3	Level of equipment and technology innovation	1	2
4	Level of automation	1	2
5	Percentage of energy production costs	1	4
6	Percentage of cost of manufactured materials	1	4
7	Product standards of production lines	1	3
Sum		7	23

### 3. Results and discussions

#### 3.1 Technological status of CI co-operatives

##### (1) Level of automation of equipment and technology



**Figure 1. The level of automation of the device, the technology [3].**

The results of the investigation showed that the level of automation of equipment and production technology of cottage industrial co-operatives is very low, equipment for production is mainly semi-automatic, universal accounts for from 73.4% to 84.2% depending on each type of co-operative [3]; the percentage of equipment automation according to the fixed program is not available. Only 04 types of co-operatives specializing in ceramic production, bamboo knitting, producing woodwork, and textile and garment and lace embroidery are equipped with automation equipment according to the flexible program, but mainly CNC

equipment, 3D scanners, and computers. The reason is those co-operatives mainly produce products with fine art, require high manual content, besides the number of manufactured goods is not much, the market is unstable, so it is impossible to invest in automatic production lines under the fixed program. Devices with flexible degrees of automation are often used to design molds and produce products in small quantities.

The level of automation of the technology equipment line is up to 3 points and reflected through the "Automation Coefficient" (KTD) is calculated by the following formula:

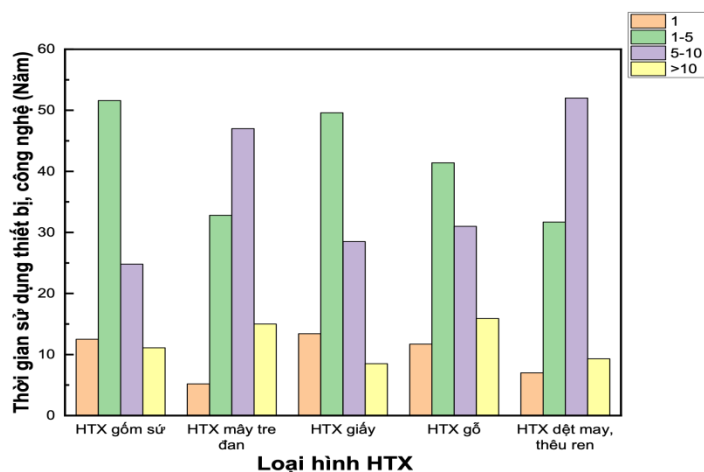
$$K_{tdh} = \frac{G_{sx}}{M_{tt}}$$

In which: - G<sub>sx</sub> is the total value of the current equipment technology; M<sub>tt</sub> is the total number of workers directly involved in the production process [4].

Calculation according to survey data shows: The level of automation of equipment and technology of ceramic co-operatives is 1 point; The level of automation of equipment and technology of bamboo rattan co-operatives is 0 points; The level of automation of equipment and technology of paper co-operatives is 1 point; The level of automation of equipment, the technology of wood co-operatives and wood products is 2 points; The level of automation of equipment, the technology of textile co-operatives, lace embroidery is 0 points.

**(2) The degree of wear and tear of equipment and technology**

The time of use of equipment and technology of co-operatives is mainly in the period of 1 to 10 years, however, the proportion of equipment used over 10 years in co-operatives is relatively small, the paper production co-operatives accounting for the lowest proportion of 8.5%, the furniture production co-operatives accounting for the highest rate of 15.9%, The bamboo rattan co-operatives is at the rate of 15%. With an expected depreciation period of 10 years, the proportion of equipment value remaining in co-operatives fluctuates from 48% in bamboo rattan co-operatives to 63% in ceramic ones [3].



**Figure 2. The level of equipment wear and tear, technology [3].**

The level of depreciation of equipment and technology (hereinafter abbreviated as ET) is a gradual reduction in the use-value of ET over time reflected through the "ET Depreciation Calculation Coefficient" (K<sub>kh</sub>) calculated by the following formula:

$$K_{kh} = \frac{G_{bd} - G_{sx}}{G_{bd}} \cdot 100 \quad (\%)$$

In which: G<sub>bd</sub> is the total value of the original ETs (full price); G<sub>sx</sub> is the total value of the current ET (which has been depreciated); The value of ET is derived from the financial statements of the year preceding the year of assessment of the level and capacity of production technology of co-operatives [4].

The results of calculations according to the survey data show that: the level of depreciation of equipment and technology of ceramic co-operatives is 4 points; Bamboo rattan co-operative is 3 points; Paper co-operatives are 3 points; Furniture co-operative is 3 points; Textile, lace embroidery-operative is 3 points.

**(3) The intensity of equipment and technology capital**

The source of equity including investment and working capital of all types of co-operatives is quite high. Ceramic and porcelain co-operatives have the highest capital level (VND 5.926 billion), followed by co-operatives producing woodwork, paper, embroidery and the lowest is bamboo rattan co-operatives (0.588 billion). The ratio of equity / total capital in furniture co-operatives is the highest accounting for 83%, followed by bamboo rattan co-operatives accounting for 80%, co-operatives producing Paper, Ceramics, and Textiles, lace embroidery is almost equivalent, respectively 73%, 70.7%, and 70%. The capital source of ceramic co-operatives is superior to other types of co-operatives, on average, each co-operative invests in production and business up to nearly 6 billion VND [3]. In addition to the high production value, high material value, the investment in equipment and machinery produced in the area of large industrial co-operatives, most equity is focused on investment in machinery, equipment and factories, production materials, and other costs mainly loans, mobilizing from co-op members. In fact, most co-operatives do not have access to state interest rate support capital for co-operatives, mainly loans from the mobilization of members, external loans, and bank loans.

The intensity of ET capital characteristic of the enterprise's investment capital in the SBV reflected through the "Coefficient of the capital intensity of pit capital" (KCD) is calculated by the following formula:

$$K_{cd} = \frac{G_{sx}}{G_{dt}} \cdot 100(\%)$$

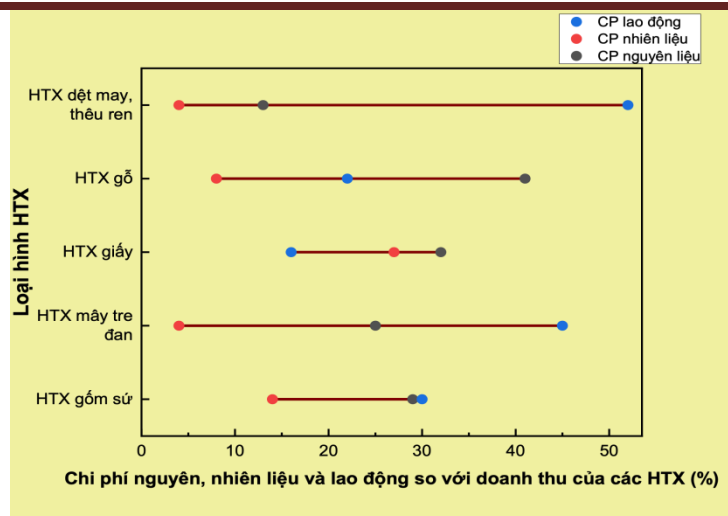
In which:  $G_{sx}$  is the total value of the current ET;  $G_{dt}$  is the total value invested including technological equipment in the last three years.

Calculation according to survey data shows Points of criteria of equipment capital intensity, ceramic production technology = 2 points; The point of the criteria of equipment capital intensity, the technology of production of bamboo rattan knitting = 1 point; Points of criteria of equipment capital strength, textile production technology, lace embroidery = 2 points; The score of the criteria of equipment capital intensity, Paper production technology = 2 points; The score of the criteria of equipment capital intensity, wood production technology, and wood products = 2 points.

#### **(4) Ratio of material and energy costs**

In the five industries, the cost ratio for raw materials is relatively high, the highest in the co-operatives producing furniture with the cost of raw materials up to 41%, the lowest is textile and garment co-operatives, lace embroidery is 13% of their revenue (because those co-operatives mainly process according to orders, raw materials provided by their customers). Fuel costs have a significant difference, the highest one is the co-operatives in the field of paper production accounting for 27%, followed by ceramics production co-operatives accounting for 14%, the cooperatives producing furniture accounted for 8% and the lowest is textile, lace embroidery, bamboo rattan ones with the lowest fuel consumption of 4%. On the contrary, the ratio of labor costs/revenue of textile and garment, lace embroidery co-operatives is the largest accounting for 52%, followed by bamboo rattan production ones accounting for 45%, ceramic ones accounting for 30%, cooperatives producing wood art accounted for 22% and the lowest is paper production ones accounting for 16% [3]. It can be seen that the cost of fuel is inversely proportional to the ratio of labor costs in the production of cottage industrial co-operatives, which can also be understood that the handicraft sectors have a high labor use rate, the level of mechanization in production technology decreases.





**Figure 3. Raw materials, fuel, and labor costs vs. revenues of co-operatives [3].**

The proportion of energy cost produced specifically for production efficiency in terms of energy use reflected through the "Energy Cost Coefficient" ( $K_{nl}$ ) is calculated by the following formula:

$$K_{nl} = \frac{G_{nl}}{G_{sp}} \cdot 100 \quad (\%)$$

Of which:  $G_{nl}$  is gross energy value (power, coal, gasoline, petrol, firewood...) that has been used;  $G_{sp}$  is gross product value per year;  $G_{nl}$  and  $G_{sp}$  are collected from financial report of the preceding year of the assessment of production technology qualifications and capabilities of enterprises. The point for this criterion is determined by its correlation with the coefficient of the average energy cost of each industry according to the appendix of Circular No. 17/2019/TT-BKHCHN dated December 10, 2019 [4].

The statistics show that the criterion of the rate of energy cost for ceramic production got 1 point, the criterion of the rate of energy cost for bamboo production got 1 point, the criterion of the rate of energy cost for garment production got 1 point, the criterion of the rate of energy cost for paper production got 1 point, the criterion of the rate of energy cost for wood production and wood products got 1 point.

- The rate of material costs characterizes production efficiency in terms of material usage was reflected by "Material Cost Coefficient" ( $K_{nvl}$ ) which is calculated by the following formula:

$$K_{nvl} = \frac{G_{nvl}}{G_{sp}} \cdot 100 \quad (\%)$$

Of which:  $G_{nvl}$  is the gross material value (all kinds of material) spent in a year;  $G_{sp}$  is gross state product in a year;  $G_{nvl}$  and  $G_{sp}$  are collected from the financial report of the preceding year of the assessment of production technology qualifications and capabilities of enterprises.[4]

The point for this criterion is determined by its correlation with the coefficient of the average material cost of each industry (K standard 3). The research team said that the classification of production in cooperatives is unclear for furniture, textile, and embroidery so the coefficient standard 3 is calculated according to the average value.

The calculation shows that the criterion of the rate of material cost for ceramic production got 2 points, the criterion of the rate of material cost for bamboo production got 3 points, the criterion of the rate of material cost for garment and embroidery production got 4 points, the criterion of the rate of material cost for paper production got 3 points, the criterion of the rate of material cost for wood production and wood products got 2 points.

##### **(5) The innovation level of equipment, technology, and product standards of the production line.**

Paper industry cooperatives have the highest rate of equipment investment in the first period, reaching 13,4%. Meanwhile, the bamboo cooperatives have the lowest with a rate of 5,2%. In the past 05 years, the level of equipment innovation and investment of cooperatives has been relatively high. The highest is ceramic cooperatives reaching 64.1%, followed by paper industry cooperatives with 63%, furniture cooperatives with 53.1%. The value of innovative equipment and technologies was average in 03 years of different types of

cooperatives including additional equipment to improve productivity, quality of production, and repairs and replacement. The value of the same types of equipment of cooperatives and members has a difference in value due to the difference in origin, however, the research team has done the calculation based on the average value of the same types. Ceramic cooperatives have the highest rate of equipment and technology innovation costs to the total value of equipment in the last 03 years at 31.74%, the lowest rate belongs to bamboo co-operatives with 18.37% [3].

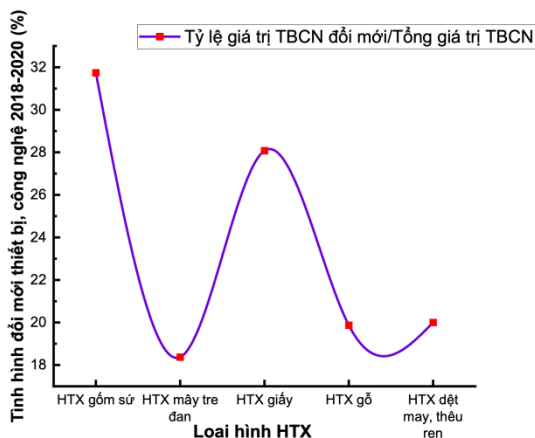


Figure 4. The situation of equipment and technology innovation in the period of 2018 - 2020 [3].

- The level of equipment and technology innovation is the additional investment with a view to replacing and upgrading the system of equipment and technology reflected by the “Innovation coefficient of equipment and technology” (Kdm) which is calculated by the following formula:

$$K_{dm} = \frac{G_{tbn}}{G_{sx}} \cdot 100 \quad (\%)$$

Of which” Gtbn is the converted value of equipment and technology (have been installed and operated in 3 years up to the time of assessment) and is determined as follows:  $G_{tbn} = (2G_{tbn1} + G_{tbn2})/2$ ; Gtbn1 is the value of newly installed types of equipment for production expansion; Gtbn2 is the value of replaced types of equipment. If the newly-installed or replaced equipment and technologies are second-hand, they are not included in this criterion. Gsx is the total value of current types of equipment and technologies.[4]

According to calculation and statistics, the equipment and technology innovation of ceramic cooperatives and paper industry cooperatives has 1 point, the other types of cooperatives do not have points.

- Product standard of the production line is determined through an advanced level of quality standards of which products can meet.

The number of cooperatives proclaiming international product standards is limited, only ranging from 3% to 11% depending on each type. The cooperatives of bamboo products and furniture have the highest rate with 11% and the cooperatives of the paper industry get the lowest rate [3]. As for the cottage industrial Co-operatives, only a few register basic technical standards mainly to serve the domestic market, majority of cooperatives export their products to other countries must meet the standards of the importers. Basically, they have to comply with quarantine regulations.

This criterion is calculated as follows: The international standard products get 3 points, national standard products get 2 points, the basic standard products get 1 point. According to the survey result, almost products of the cottage industry are for export, the products for internal consumption also have good quality so the criteria for manufacturing industries are calculated on average of 2 points.

#### 6) Evaluating state of technology of 5 types of CI Co-ops

TT	Type of HTX	Average score for the state of technology (Maximum score: 24 points)

		Level of Science and Technology	Intensity of equipment and technology capital	Level of equipment and technology innovation	Level of E-commerce and THSX	Energy cost ratio	NVL Cost Ratio	Product standards	Total points achieved
1	Ceramic Cooperative	4	2	1	2	1	2	2	14
2	Bamboo rattan cooperative knitted	3	1	0	1	1	3	2	11
3	Paper production cooperative	3	2	1	1	1	3	2	13
4	HTX furniture manufacturing	3	2	0	3	1	2	2	13
5	Textile and garment cooperatives, lace embroidery	3	2	0	1	1	4	2	14

**Table 2. The average point evaluating technology of 05 types of CI Co-ops [3]**

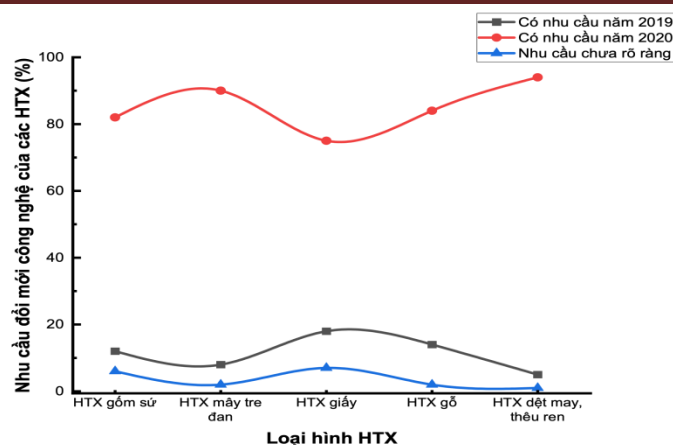
The table shows the technology of 5 types of CI Co-ops is in average condition and relatively uniform with the total average scores ranging from 11 to 14 points, equivalent to 47% and 60% of the total score to be achieved. The level of equipment investment and innovation is still low. The ceramic and textile cooperatives reached the highest level (14/23 points) due to high competitiveness. Equipment innovation is necessary to improve the service quality of internal consumption and export purpose.

### **3.2 The need for innovation and the ability to receive production technology of the CICs**

#### ***(1) The need to innovate the production technology of CI Co-ops***

The evaluation of the need for technology innovation of CICs is determined by the following criteria: Understanding of the purpose of technological innovation; production and business development plan, product development and innovation needs; the determination to innovate technology; factors that hinder technological innovation and problem-solving solutions. The survey criteria are intertwined to complement and make objective and accurate assessments.





**Figure 5: The need for technological innovation of cooperatives [3].**

The CI Co-ops identify the purpose of equipment technology innovation in their own way due to the difference in the level of understanding and qualifications of cooperative staff. For ceramic cooperatives, the purpose of technological innovation includes all 3 factors (Increase productivity, quality; revenue, profit, and save expenses) was the highest at 41%, followed by paper production cooperatives at 37%, furniture production cooperatives at 30%, the lowest belongs to bamboo, textile and embroidery cooperatives accounting for 16%, 18% [3]. The common thing is that the CI Co-ops are aware of the investment in equipment will improve production and business efficiency and the need for technological innovation of all types of cooperatives also reflects the level of technological development and the competition in quality and product designs of industries.

Regarding the level of determination to innovate equipment and technology in the year (2019-2020) which reached a rate of 5-18%, the textile and embroidery cooperatives have the lowest rate while the paper industry cooperatives reached the highest. The other cooperatives have plans to invest in technological innovation in the following year and they are very determined to conduct the plan. The rate of cooperatives that do not have a plan to invest in innovation is very low which takes only 7%, of which 1% is the textile and embroidery cooperatives. Cooperatives whose investment need is high also show their big determination. The investment requirement for innovated and upgraded equipment and technology of the cooperatives in the year of research and the following year is relatively high, accounting for over 90%. The survey also showed that the need for technological innovation is the highest at ceramic cooperatives accounting for 65%, the lowest being the embroidery, textile, and bamboo cooperatives of 27% and 21% [3].

The source of information on technology innovation of the CI Co-ops is mainly from customers and production facilities in the same industry accounting for over 50%, the rate ranges from 51 to 69%, the other sources are from media and the internet. Only ceramics production and paper industry cooperatives access information from regulatory agencies and authorities, equivalent to 8% and 6% respectively [3]. The main reason is the requirements of changing equipment technology in order to improve and treat environmental pollution.

There are many factors obstructing the innovation of production technology such as capital sources, management levels, land, and factories. The capital sources play the most important role, accounting for 49% to 72%. Meanwhile, the factor of qualifications is relatively low, the highest is in textile and embroidery cooperatives accounting for 28%, the rest of the cooperatives are less than 20% [3].

**Summary:** It can be concluded that the need for innovation in the production technology of CICs is relatively high; the biggest obstacle is the lack of capital and land for production development; The fact shows that the main reason is the community characteristics of the model of CICs. The concentration, determination, and capital mobilization from members to invest in product development encountered many difficulties. In addition, ensuring the production environment is also the main cause preventing technological innovation due to the demand for land and factories planned in the locality.

## (2) The ability to access technology of CI cooperatives

The study assesses the ability to access technology based on the results of the investigation of 03 main factors: the level of management staff, the level of readiness to receive supported technology, and solutions of CI cooperatives to improve the capacity to receive technology.

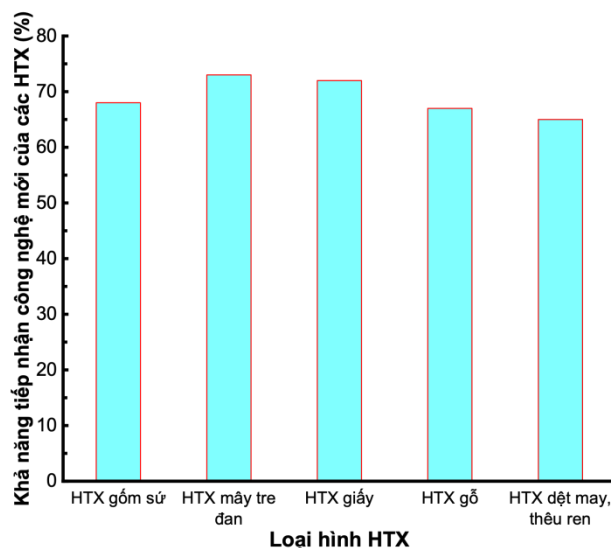
Assessing the level of management staff including subjects who are the Chairman of the Board of Directors and the Board of Directors through degrees, certificates, not evaluating the method of vocational training. The results showed that the level of the management staff of cooperatives is very limited, the proportion of staff with training qualifications through university-level only accounts for 6-21% depending on each type of co-operative. Most managers have only received vocational and intermediate training colleges are 51% - 69%. It is quite special when comparing training levels between types of cooperatives shows that paper cooperatives have the highest rate of higher education and university level at 21%, untrained managers also account for 7%. In contrast, bamboo rattan cooperatives, with the lowest rate of higher education and on the University accounted for the lowest rate of 6%, untrained managers also accounted for the highest proportion of 43%. [3]

Most of the cooperatives surveyed said they were ready to receive technology when transferred, but when asked about reciprocal capital mobilization with a rate of 50-70% according to the state support regulations, the readiness rate has decreased from 65-73%. The reasons for not being ready to receive technology due to the lack of financial preparation ranged from 35.7 to 51.5% respectively in the types of cooperatives producing paper and furniture (accounting for 51%) [3]. The answer rate of the cause is not ready due to not preparing the factory, the land has the difference between the types of cooperatives producing furniture, paper production, ceramic production, and bamboo rattan and textile and embroidery cooperatives, this is in line with the results of the investigation on factors hindering technological innovation in all types of cooperatives.

Regarding financial mobilization solutions, cooperatives choose credit loan solutions, accounting for 63-73%. The mobilization of capital from members is very little accounting for only 5-16%, accounting for the highest proportion of 16% are the cooperatives producing furniture, the lowest are ceramic cooperatives, textile embroidery lace and bamboo rattan knitting accounted for 5%, and 6% [3]. In fact, in order to be able to mobilize investment capital for production, in addition to mobilizing from credit sources, cooperatives often mobilize from advance, hot loans from regular customers or from members who are legal entities of cooperatives. In particular, there are cooperatives that also borrow black credit to settle urgent payments.

Investigation of solutions for land and factories to improve reception capacity: The proportion of cooperatives relying on support from local authorities is relatively low. Cooperatives choosing rental solutions account for 31-76%, the highest being paper production cooperatives and the lowest being lace embroidered textile cooperatives [3]. When asked about the reasons for choosing a solution to rent rather than borrow or cooperate with members to organize production, cooperatives with a high rental/purchase option ratio said that the hiring of planned concentrated production areas will limit the problems of environmental pollution in production. However, there is a fairly clear difference between the selection rate of land loan solutions, members' factories between the types of bamboo rattan cooperatives, textile-embroidery lace, and other types of cooperatives, through surveys showing that the type of bamboo rattan cooperative, textile-embroidery lace chooses to borrow houses, Members' land accounts for 43%, 35% is 2.3 times higher than ceramic, paper and furniture cooperatives with a rate of 11%, 8%, 12%, respectively.

In order to improve the capacity to receive technology, in solutions to improve the level, cooperatives choose solutions to visit and learn from the largest production facilities of the same industry; regarding financial mobilization solutions, co-operatives choose credit loans; Regarding the solution of expanding land production facilities and factories, co-operatives choose the largest rental and purchase solution [5].



*Figure 6. The ability to receive technology of TTCN cooperatives [3]*

## 1. Conclusion

Assessing the current state of production technology of industrial cooperatives according to 5 main industry groups: Bamboo rattan, wood, and products from wood, paper, ceramics, embroidered textiles throughout the country. The total average score of the current state of technology of cooperatives in 5 industries varies from 11 to 14 points, equivalent to a rate of 47% to 60% of the total number of points to be achieved. The current state of technology of commercial cooperatives is average and relatively uniform, the level of investment and equipment innovation of cooperatives is still low, the highest is the type of ceramic and textile cooperative is 14/23.

Regarding the demand for innovation in production technology of VTS cooperatives is relatively high; the biggest obstacles are the lack of investment capital and the lack of factory land to develop production; In fact, the main reason is due to the characteristics of the model of cooperatives with a community nature, focusing the level of determination and mobilizing capital contributions from members to invest in product development is difficult. In addition, the factor of ensuring the production environment is also the main cause of hindering technological innovation due to the demand for land and factories planned in the locality.

Although CI cooperatives have not highly qualified management, the ability to receive technology is quite flexible, not depending much on the support of the state but relatively active in solutions to mobilize resources to develop production. The biggest impact on the ability of commercial cooperatives to receive technology is the lack of capital and the lack of factories to ensure compliance with environmental regulations.

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