The need for productivity and quality training to meet the growing demand for high-quality human resources

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Abstract

Training productivity and quality are crucial for the stability, continuity, sustainability, and success of an enterprise. The research aims to analyze the importance and the necessity of productivity and quality training in universities to increase highly qualified human resources in Viet Nam. This research surveyed 1,682 students and 368 lecturers in the specialized fields and majors and training programs related to the field of productivity. The result shows that the level of interest of lecturers and students in productivity and quality training programs is significantly high. Therefore, productivity and quality training programs at universities are necessary and significantly impact the success of the mission of expanding knowledge of productivity and quality at Viet Nam's universities in 2020-2030. Furthermore, a theoretical basis for developing productivity and quality training programs was proposed, and some suggestions to deploy productivity and quality training programs efficiently were also provided.

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Keywords

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1 Introduction

High-quality human resources have become increasingly crucial in various organizations [1]. They are trained in a primary and specialized manner to meet the requirements and tasks of the current labor market. Developing high-quality human resources is a core element in ensuring economic development, sustainability, stability, and integration in developing a knowledge-based economy in globalization, international integration, and the fourth industrial revolution.

The Vietnamese government has always focused on the human resources development strategy, which is crucial in promoting industrialization, modernization, and international integration [2].

The average country's population in 2021 is more than 98 million people, of which the labor force participation rate was about 67.7 % in the fourth quarter of 2021. This is a highly favorable advantage to exploit for socio-economic development and serves national construction and development. Statistics have shown that high-quality human resources are essential in implementing economic and social development targets and contents in each agency, unit, and locality. In 2021, the rate of trained workers accounted for about 64.5 %; 81.1 % of which had college degrees, 60.4 % had intermediate degrees, and 23.8 % had university degrees or higher performed jobs that required lower technical expertise/skills than their technical expertise/skills (according to degrees/certificates). On the other hand, about 35.1% of the workers do jobs that require higher technical expertise/skills than their degrees [3].

The demand for qualified human resources in Ho Chi Minh City in the period from 2015 to 2025 ex expected as about 270,000 vacant jobs per year (with postgraduate education accounts for 2 %, of which Bachelor's degree

account for 13 %, The Degree of Associate account for 15 %, Intermediate Degree account for 35 %, elementary-level vocational training account for 20 %, and Untrained labor account for 15 %) [4]. Therefore, prioritizing the development of specific training policies and programs is urgent and most important.

With the development of industrial, agricultural, and manufacturing systems, all systems are evaluated by the productivity of various input resources such as human, material, capital, and electricity. The performance of human factors and the use of raw materials, energy, machinery, and equipment in production and service systems are significant issues that affect the productivity management system in the national economy. Therefore, Productivity and quality improvement programs have become extremely important in achieving optimal performance levels within an organizational system. This requires strategic planning and a focus on ongoing implementation processes and procedures. The types of tools or methods used to establish and maintain productivity or improve performance over time and the performance of people at all levels in the organization must be ensured. Education and training are the main steps in enhancing human resources' knowledge, competence, and skills. Productivity and quality training allow managers and executives to expand their employees' knowledge base. Continuous learning is a way for employees to stay aware of the latest developments in their industry and keep up with their peers in other organizations. It also allows them to understand any changes better to remain relevant.

2 Literature Review

2.1 Human Resource

In all types of organizations, the human element is the fundamental element in the development of organizations, as the development of human resources is one of the primary tasks that any organization can achieve the goal of economic growth, deep integration, sustainability, and stability in developing a knowledge-based economy [5]. To carry out all organizational tasks and responsibilities, they must be well-informed, including their educational qualifications, skills, and abilities. The abilities are persuasion, planning, organizing, directing, leading, negotiating, controlling, coordinating, emotional intelligence, systems thinking.... On the other hand, the skills include communication, decision-making, critical thinking, problem-solving, analytical, technical, creative, negotiation, leadership, personal, presentation, professional, and intellectual skills [5].

2.2 Training and Development

Developing the human resource capacity requires education and training. Training and education are parts of the organization's efforts to improve human skills. Training and development are crucial for understanding, improving skills, developing behavior, and changing attitudes toward human resources. Training and development programs aim to provide learners with methods and knowledge that they can use to carry out their job duties better according to the standard or develop their talents, learning, and experiences to enhance their productivity and the success of their current job. Content and teaching construction in these programs must use appropriate instructional methods that follow the job requirements and organizational goals.

Motives for Training and Development include improving efficiency, cost savings, raising learners' morale and cognitive engagement, and failure to work. Efficiency improvements refer to the ability of workers to become more skilled and carry out their activities better according to the standard through training and development. Cost savings refer to the training systems that help workers save time in understanding their work style and working process. Training systems produce more gains than expenses. Raising learners' morale and cognitive engagement means enhancing their understanding of the importance and need for knowledge for their future jobs through training and education, contributing to their career success. Failure to work refers to industrial accidents or injuries associated with activities at work. The training prepares learners to know the best methods of operating the machine, production system, and process operation and prevent or reduce these accidents or injuries [5].

2.3 Productivity and Quality

In business, Productivity and quality determine competitiveness and create a solid foundation for each country's development. In today's industry, the importance and position of productivity have extended so much that it is considered the knowledge of increasing quality, productivity, and resources to match the institution's goals. Productivity is not production. It has a broader meaning than just the finished products from the production line. Productivity is not the cost of production. Performance and Productivity are not the same, although

Productivity is related to these concepts [6]. Different definitions of Productivity exist. Productivity is the measure used to determine the degree to which the output produced with the resources (inputs) is achieved. Productivity is the ratio of input and output achieved at a certain point using available resources efficiently. In other words, it is the output ratio of production to one of the factors of production [7]. Productivity is defined as a measure of performance that includes efficiency and effectiveness [8]. In other research, Productivity refers to the function of seven factors: ability, job recognition, organizational support, motivation, performance feedback, credibility, and environmental compatibility. Promoting any of these factors will increase human resource productivity [9]. Increasing Productivity means (1) maximizing the use of resources (Inputs such as labor, facilities, machines, and other resources), (2) applying scientific production systems to reduce production costs, (3) developing markets, and (4) improving living standards to benefit customers [10]. There are two factors affecting productivity improvement: internal factors (including products, machinery and equipment, technology, materials, energy, people, organizations, systems, working methods, and management) and external factors (including Structural (economic, social, and demographic changes), Natural resources (workforce, land, fuel (energy), and raw materials), and Government and infrastructure (Institutional mechanisms, Policies and strategies, Infrastructure, and Public enterprises) [11].

"Quality" can be defined as a general description of goods and services in promoting, designing, assembling, and maintaining, which makes the goods and services used to meet the buyer's assumptions. In addition to increasing the industry's Quality, it is also necessary to increase productivity. Product quality is the function, physical condition, and nature of goods or services that are identified based on customers' desired level of Quality (such as reliability, accuracy, durability, ease of operation, product repair service, and other product attributes) to match and satisfy customer needs. Otherwise, Quality is suitable for customers' requirements. A well-designed product can only be considered Quality if it meets the customers' initial needs or requirements. Quality is defined based on the customer's perceptions and how well a good or service's design meets the original specifications. Quality management ensures consistency in a good or service. It has four main elements: quality planning, quality control, quality assurance, and quality improvement. Quality management focuses on product and service quality and how onions work to achieve it. Productivity management includes designing, developing, and deploying techniques and methods to increase output by effectively utilizing and optimizing inputs, while maintaining quality standards and specifications and satisfying the consumer's needs. Therefore, productivity and quality management are essential to an organization's management structure [12].

2.4 The Productivity and Quality Training Programs in Vietnamese Universities.

Countries worldwide, especially developed and developing countries, have been systematically implementing education programs to improve Productivity and quality in the national education system. Countries like the U.S., Canada, France, Germany, and the Netherlands have applied Productivity - Quality training program into the national education program for many years [13]. Asian countries such as Korea, China, Indonesia, Japan, Singapore, Malaysia, and Thailand have also included training in knowledge and skills to improve Productivity and quality in the training program from high school to college and university with different methods and approaches such as integrating into the training program and short-term courses [13]. Most training programs focus on Quality knowledge. Meanwhile, productivity knowledge is more limited and is integrated into production management, operations management, and process improvement management [13].

Asia-Pacific Economic Cooperation (APEC) membership, Viet Nam has launched the training program on Productivity - Quality since the Busan Declaration (Korea) 2005, especially after the statement of the Ministers of member countries from the APEC conference in Vietnam in 2006: "Ministers recognized the importance of education on productivity improvement and encouraged members to develop curricula and reference materials to emphasize the significance of productivity improvement to promote businesses and facilitate trade in the region." The projects were implemented to unify training program materials and guidelines for education on productivity improvement [14].

In addition, implementing practical and specific measures to improve workers' quality (knowledge, skills, and attitudes) is essential in enhancing productivity. Therefore, it is necessary to include productivity and quality training programs in education to improve

national productivity. Education and training influences are long-term, and the results are sustainable. This is also in line with the general development trend of countries worldwide [13].

The country has various training institutions, including organizations providing productivity courses and programs for enterprises, non-students, universities, and colleges. Customized courses for enterprises, whereas the contents of courses offered to university students are similar. Some of the well-known state organizations offering productivity courses are The Assistance Center (TAC) for Small- and Medium-sized Enterprises in Ha Noi and Ho Chi Minh City; Public institution training programs for enterprises (Public universities, colleges, and institutes not only offer courses to students as National Economics University and the University of Economics and Business (UEB) at Viet Nam National University, Hanoi); Productivity training in private training institutions (include Viet Nam Chamber of Commerce and Industry (VCCI), Viet Nam, Association of Small and Medium Enterprises (VINASME), the Ha Noi Small and Medium Enterprise Association (HASMEA), the Viet Nam Textile and Apparel Association (VITAS), and the Ho Chi Minh City Association of Apparel, Textile and Embroidery (AGTEK); projects as the Ha Noi Business Incubator (HBI) [13].

Teaching knowledge and skills to improve productivity and quality in Vietnam also has some areas for improvement in the productivity programs offered by the universities. Some lecturers lacked practical business knowledge. Some did not have exciting teaching methods. Although students often had a presentation or project in each course, the teaching method was still considered boring. And reading materials were not highly rated. In some courses, reading materials were not fully updated [13].

One of the tasks of The National Program themed "Improving Productivity and Quality of Products and Goods of Vietnam's Enterprises in 2020" was developed by the Ministry of Science and Technology and formally approved by the Prime Minister in May 2010 stated that "Train leaders, managers, and workers in productivity and quality. Add productivity and quality courses in training programs at vocational schools, business management training institutions, etc [13].

Productivity - Quality improvement in enterprises in Vietnam still needs to be focused on; the layout of production areas could be more optimal, and the culture of continuous improvement through identifying waste in the production and operation process has yet to be established regularly. To improve Productivity and quality and create a competitive advantage, Vietnamese enterprises must approach it comprehensively to determine the Productivity-quality standards applicable to the target market. Then, they must organize production and business activities to ensure product/service quality, reduce waste, reduce production costs, and optimize work processes. To do this, Vietnamese enterprises need a management and operation team with knowledge and skills in building advanced management systems that can be deployed well with productivity and quality improvement tools.

Improving Productivity and Quality plays an increasingly important role in deep and wide global integration, helping to facilitate trade based on mutual recognition but posing challenges and meeting parties' requirements according to common standards. To realize the meanings, roles, and applications of tools to improve Productivity and Quality, education, training, and development of appropriate human resources to deploy and apply knowledge about improving Productivity and quality into practice is essential.

3 Research Methodology

The research aims to investigate the need for productivity and quality training programs in Vietnamese universities. The study investigated the training needs on Productivity and Quality with the survey subjects, including lecturers, students, and alumni in the specialized fields and majors and training programs related to the field of productivity of seven member universities of Viet Nam National University, Ho Chi Minh City (VNU-HCM), including Ho Chi Minh City University of Technology (HCMUT); Ho Chi Minh City University of Science (HCMUS); The University of Social Sciences and Humanities; University of Information Technology (UIT); International University (IU); the University of Economics and Law (UEL); and An Giang University.

The questionnaire was designed in Microsoft Word and Google Docs formats and then distributed and collected through e-mails and via messaging applications like Messenger and Zalo. In seven months of 2021, the author

collected information from 2,000 students and alumni and 560 lecturers in member universities. However, 318 students, alumni, and 192 lecturers have yet to respond to the questionnaire. The finalized group of participants included 1,682 students and 368 lecturers in member universities. Microsoft Excel software was used to process data.

The survey statements were followed by a scale of 5 grades, including the two highest grades (4-5) as positive opinions, the third grade (3) as neutral, and the two lowest grades (1-2) as negative opinions. The primary content of the questionnaire mentions the level of interest in improving productivity, including “Very interested,” "Interested," "Interested but have not had the opportunities to learn," "Know but not interested," to “never heard” options.

4 Result and Discussion

Characteristics of the survey sample are presented in Table 1.

Table 1 Sample Characteristics

[1] **Student and alumni**			[2] **Lecturers**		
[3] **Characteristics**	[4] **Data**	[5] **Percentage (%)**	[6] **Characteristics**	[7] **Data**	[8] **Percentage (%)**
[9] **Gender**	[10] Male	[11] 54.03	[12] **Age**	[13] < 30 years old	[14] 13.9
	[15] Female	[16] 45.97		[17] 30-40 years old	[18] 63.2
[19] [20] [21] [22] [23] **Areas of expertise**	[24] Technology Industry	[25] 26		[26] 41-50 years old	[27] 36.7
	[28] Natural sciences	[29] 32		[30] over 50 years old	[31] 14
	[32] social science and humanities	[33] 12	[34] **Degree**	[35] Professor doctor or Associate Professor	[36] 9.3
	[37] Management and Economics major	[38] 23		[39] PhD	[40] 36
	[41] Pharmaceutical industry	[42] 1		[43] Master	[44] 41.9
	[45] others	[46] 6		[47] others	[48] 12.8
[49] [50] [51] [52] **School year or experience**	[53] Third-year student	[54] 19.2	[55] **Teacher's participation in activities related to productivity and quality**	[56] Currently working in a unit related to productivity and quality.	[57] 11
	[58] 4th-year student	[59] 44.2		[60] Coordinate project implementation with consulting/training units and individuals.	[61] 18.8
	[62] Recent graduates	[63] 1.8		[64] Had a direct internship at the company	[65] 5.2

	[66] Working in a government agency	[67] 3.5		[68] Participate in seminars introducing related content.	[69] 21
	[70] Working in business	[71] 29.8		[72] Never participated in related activities.	[73] 44
	[74] self-employed	[75] 1.5			

The result shows that the most significant number of survey participants were students, mostly majoring in Engineering & Technology from the University of Science and Technology, accounting for 24 %, and students majoring in Economics & Management from the University of Economics and Law, accounting for 27 %. Regarding lecturers, the proportion of lecturers participating in the survey in Engineering & Technology, Natural Sciences, and Economics & Management accounted for more than 70 %. This shows that the level of interest of lecturers and students in improving productivity and the high effectiveness of teaching courses which is related to improving productivity at schools is high (Table 2).

Table 2 Statistical of the Level of Interest of Students and Lecturers in Improving Productivity.

The level of interest in improving productivity	**Students' Concerns about Productivity**		**Lecturers' Concerns about Productivity**	
	Number of students	**Percentage (%) of the level of interest in improving productivity**	**Number of lecturers**	**Percentage (%) of the level of interest in improving productivity**
Very interested	757	45.01	151	40.92
Interested	572	34.01	170	46.07
Interested but have not had the opportunities to learn	320	19.02	39	10.57
Know but not interested	17	1.01	8	2.17
Never heard	16	0.95	-	0.00
Total	1,682	100	368	100

Table 1 shows the level of interest in the productivity and quality of lecturers and students in the member universities, with more than 60 % being interested in and very interested in the field of productivity and quality. The proportion of engineering & technology and natural sciences students who were very interested in productivity and Quality accounted for more than 50 %, and economics and management accounted for 23 %. The proportion of lecturers in Engineering & Technology, Natural Sciences, Economics and Management accounted for about 86 %.

In addition, Training programs in Vietnamese universities had good practices. However, there were also some weaknesses. One of these weaknesses was that reading materials and textbooks were not highly rated, sufficient, and fully updated. Therefore, Reading materials and textbooks must be fully updated, adequate, and relevant to courses [13].

Based on the survey results described in Table 1 and some limitations of productivity and Quality training programs, Figure 1 shows a proposed theoretical basis for developing productivity and quality training programs.

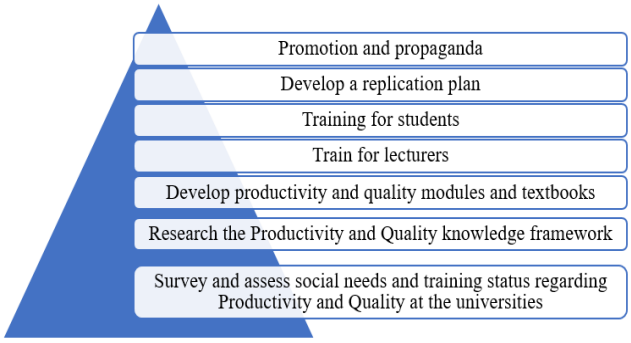

Fig 1 The theoretical bases for developing productivity and quality training programs.

4 Conclusion

This research indicated that developing productivity and Quality training plans for all universities in Vietnam is essential. Productivity and quality training programs help perform the required skills and adapt them to current conditions and situations to achieve the design goals, thus contributing to time optimization and worker productivity. A theoretical basis for developing productivity and quality training programs is proposed.

Moreover, to efficiently deploy productivity and quality training programs, the training facility should analyze and assess social needs and training status regarding Productivity and Quality at the universities to identify skills, educational programs, and planning.

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References

1. Al Qasimi., M. A. . (2021). The importance of training as a factor in increasing the efficiency and productivity of private sector employees in the UAE. *Academic Journal of Research and Scientific Publishing.*

2. Văn kiện Đại hội đại biểu toàn quốc lần thứ XI. NXB Chính trị quốc gia Sự thật, Hà Nội, 2011, tr. 130

3. General Statistics Office. (2022). Report on labor force survey 2021. *Statistical Publishing Housing-2022.*

4. Careerviet. (2024). Forecasting human resources from 2020-2025. Retrieved Jun 15, 2024, from: https://careerviet.vn/vi/talentcommunity/du-bao-nhu-cau-nguon-nhan-luc-tu-2020-2025.35A515DC.html

5. Patricius. D .P., Lady. L., Chelsea. M. P. H., & Dania. H. A. (2023). The Influence of Education and Training on Labor Productivity in Indonesia. *Journal of International Conference Proceedings (JICP).*

6. Dunwell. P., Pitfield. H., & Savill. M. H. C. (1971). Management by Objectives in R&D. *In R&D Management*.

7. Fani. K. P., Ambiyar. N., Fahmi. R., Hasan. M., & Faisal. A. A. (2024). The Impact of Quality Control Implementation on Productivity and Product Quality in Industry. *COMPENDIUM by paper ASIA.*

8. Hamidreza. A. (2018). Effective Environmental Factors on Designing Productive Learning Environments. *Armanshahr Architecture & Urban Development.*

9. Sena, V. (2020). Measuring productivity. *In Productivity Perspectives.*

10. Agashe. Dr. A., Band. Dr. G., & Pais. Dr. R. (2020). Measurement of Total Factor Productivity in Commercial Airlines Sector using Malmquist Index and Data Envelopment Model. *In International Journal of Recent Technology and Engineering (IJRTE).*

11. Hassan. A. I., Salma., A., & Mohammad. I. N. (2024). Reviewing the Concepts of Productivity Management. *International Journal of Management and Humanities (IJMH).*

12. Okolie P. C., Obika E. N., & Nwuzor. I. C. (2018). Quality and Productivity Management. *Proceedings of the World Congress on Engineering and Computer Science.*

13. Pradip K. R. (2019). Improvement Alternatives for Productivity courses - A review of training courses in APO member countries. *Asian Productivity Organization.*

14. Asia-Pacific Economic Cooperation. (2006). "Key APEC Documents". *APEC Secretariat, page 23*

Nghiên cứu nhu cầu đào tạo năng suất và chất lượng để đáp ứng nhu cầu ngày càng tăng về nguồn nhân lực chất lượng cao

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Tóm tắt Đào tạo năng suất và chất lượng là yếu tố quan trọng nhất đối với sự ổn định, liên tục, bền vững và thành công của doanh nghiệp. Nghiên cứu đề cập đến tầm quan trọng của việc đào tạo năng suất và chất lượng trong việc phát triển nguồn nhân lực chất lượng cao tại Việt Nam. Để phân tích nhu cầu về các chương trình đào tạo năng suất và chất lượng tại các trường đại học Việt Nam, nghiên cứu đã tiến hành khảo sát 1 682 sinh viên và 368 giảng viên ở các lĩnh vực chuyên môn, chuyên ngành và các chương trình đào tạo liên quan đến lĩnh vực năng suất. Kết quả cho thấy mức độ quan tâm của giảng viên và sinh viên đối với các chương trình đào tạo năng suất và chất lượng là rất cao. Do đó, các chương trình đào tạo năng suất và chất lượng tại các trường đại học là cần thiết và tác động đáng kể đến sự thành công của sứ mệnh mở rộng kiến thức về năng suất và chất lượng tại các trường đại học Việt Nam trong giai đoạn 2020-2030. Hơn nữa, cơ sở lý thuyết để xây dựng các chương trình đào tạo năng suất và chất lượng được đề xuất và cũng đưa ra một gợi ý để triển khai các chương trình đào tạo năng suất và chất lượng một cách hiệu quả.

Từ khóa đào tạo, năng suất và chất lượng, ngành đại học, nguồn nhân lực

MỤC LỤC

C KINH TẾ - QUẢN TRỊ