ISSN 2730-2601
RICE Journal of Creative Entrepreneurship and Management, Vol.2, No.2, pp. 24-37,
May-August 2021

doi: 10.14456/rjcm.2021.28
Received 17.07.21/ Revised 5.08.21/ Accepted 15.08.21

An Innovative Organization Model for Efficient Industrial Business Operations in the Digital Era

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Abstract

The objective of this research was to propose an innovative organization model for efficient industrial business operations in the digital era under the new normal condition in Thailand. The researchers used a qualitative method by conducting in-depth structured interviews with 50 business executives from 50 best practices in the industrial sector, participating in the study on a voluntary basis. Data collection was done in four stages: (1) analysis of documents and relevant research reports, (2) data collection and model component categorization, (3) analysis and synthesis of the categorized components, and (4) component validation and verification by seminar with nine experts. The research results revealed that an innovative organization model for efficient industrial business operations in the digital era under new normal situation in Thailand consists of eleven elements: (1) establishing a vision and strategy that will lead to an innovation organization; (2) setting an appropriate innovation organizational structure; (3) creating an organizational culture that supports all dimensions of innovation; (4) setting models, processes and practices that facilitate innovation; (5) determining appropriate hardware, software and digital platforms for service; (6) developing innovative leadership team striving for a systematic innovation organization; (7) forming the team with innovative habits in creating quality innovation; (8) creating uniqueness of atmosphere and innovative ecosystem; (9) creating efficiency in innovative knowledge management; (10) encouraging personnel to initiate and exchange knowledge freely; and (11) inspiring digital learning across the organization.

Keywords: *Innovative organization, industrial business, digital era, new normal situation.*

1. Introduction

The 21st century has arrived with global rapid changes driven by knowledge, innovation, technology, society, culture, and public demand for environmental friendliness (Edwards-Schachter, 2018). Thailand has currently faced disruption and risks in the development of the

country in almost every dimension. In the midst of the changes in modern society that relies on knowledge known as the knowledge-based society, Thailand has stepped into a new dimension of digital life. In all types of organizations--the government sector, the business sector, state enterprises, and services, it is necessary to build talents with determination to meet the expectations of society as an advantage under the conditions of competition. Especially in the small industrial sector, small- or medium-sized enterprises (SMEs) are regarded as the main source of employment in the country and are vitally important to the economy for various reasons: (1) help create jobs, (2) create added value, (3) generate income, (4) reduce imports of foreign products, (5) operate cost-effective business, (6) link with large-scale activities and other manufacturing sectors, (7) be a source of skill development, and (8) strengthen the Thai economy. This is a necessity for executives at all levels to pay close attention to their own knowledge and continuous changes in business development and management to survive and achieve its objectives. As Charles Darwin (1809-1882) said, "It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change."

As widely known, in the digital economy, the world's trade and service model has changed dramatically. The export structure of Thailand over the past 40 years has changed along with the other newly industrialized countries in Asia, namely Taiwan, South Korea and Singapore. The importance of resource-based products and labor-intensive products tends to decline while science-based products are on the rise. Such a trend requires research and development (R&D) as well as creative design for new products. When considering the proportion of investment and expenditure on research and development with the Gross National Product (GDP), entrepreneurs need to look at the innovation development process for success in business investment and operations. Fostering an innovative culture and the creation of innovative systems and organizations definitely counts for business success in the digital age (Serdyukov, 2017; Brunetti et al., 2020). The country's competitive advantage in education and human resource development is essential in that search for new knowledge for applications in modern technology and adaptation to benefit life and work efficiently. Therefore, for industrial enterprises to succeed and survive in the rapidly changing world, their leaders need to create innovation from their traditional organization top to bottom in the first place. Their operations and plans must be transformed into those of an innovative organization (World Bank, 2019; Brunetti et al., 2020), which requires an effective management development model. New administration and personnel need training in application of technology and innovation, and new innovative habits for employees at all levels in the organization. This will result in new working styles and digital learning modes for industrial business organizations in line with the digital age society. Creativity as the origin of innovation has been a valuable intangible asset that makes excellence possible in business productions and operations, yet not easy to find in personnel of an organization (Phakamas et al., 2021). Moreover, it has been noted that the concepts of excellence, luxury and prestige count for a positive image of the organization from the perspective of stakeholders regarding image creation and overall performance. These concepts help identify a unique vision, mission, structure and culture, and the creation of a

physical environment to return benefits to the society. Striving to develop excellence in each area of the organization is the overall image or reputation for organizational excellence (QE). Organizational excellence arises from the components of an organization—intelligence in learning and innovation (Sriboonnark, 2020).

Since the creative economy is driven by innovation, its system is dynamic in nature and rapidly changing. Thus, the characteristics of modern human resources rest upon communication, creativity, cooperation, coordination and adaptation for higher value of products or services than those in basic manufacturing. The digital learning network can connect individuals, departments and organizations together, enable the exchange of knowledge, ideas, information, news and resources, and promote missions for greater success and efficiency (Alves et al., 2018). In this regard, the researchers of this study explored innovative organizational patterns for efficient digital business operations under the new normal condition in Thailand. A qualitative research method was used to collect data from Thai best-practice businesses on the importance of innovation, the process of creating and developing innovation, dissemination of innovation, and creation of an innovative organization in the digital age industry under the new normal condition. The researchers expected to identify a business operations model with practical components as a guideline to help develop innovative organizations in the business and industrial sector pertinent to the National Strategy 20 Years 2018-2037 of Thailand.

2. Objectives

The objective of this research was to propose an innovative organization model for efficient industrial business operations in the digital era under the new normal condition in Thailand.

3. Research Methodology

The researchers used a qualitative research method to identify the innovative organization model for efficient digital industrial business operations under the new normal condition in Thailand.

3.1 The Participants

The participants were 50 key executive informants from 50 best-practice industrial businesses in Thailand by purposive sampling. Their specific variables were:

(1) They were business executives or entrepreneurs of the industrial sector who have received awards in various categories or quality system certification from the Ministry of Industry Thailand, other ministries, or institutions.

(2) Their companies are listed on the Stock Exchange of Thailand (SET) with paid-up capital after IPO of 300 million baht or more.

(3) Their companies are listed on the secondary market (MAI) with paid-up capital after IPO of 50 million or more.

(4) They had management experience in the industrial business group for small- and medium-sized enterprises (SMEs) for at least 3 years.

(5) They were successful executives or entrepreneurs with an empirical quality award for creating an innovative organization at all levels.

3.2 The Research Instrument

The research instrument was structured interview with open-ended questions on the issues on digital innovation organizations for efficient digital industrial business operations under the new normal condition in Thailand. The listed issues on innovative organizations included:

(1) Definition of industrial business innovation,
(2) Process of industrial business innovation creation and development,
(3) Dissemination of industrial business innovation,
(4) Creating innovative organizations in business, industry, digital, powerful under way of a new normal,
(5) Factors of innovative organizations in business, industry, digital, powerful under way of a new normal, and
(6) Innovative organization model for efficient digital industrial business operations under the new normal condition.

The instrument was presented to the experts for content validity, and then tested for internal consistency of the items by Cronbach's Alpha Coefficient at 0.986.

4. Data Collection

4.1 There were four steps prior to data collection:

1) Analyzing relevant documents and research reports
2) Planning for data collection and determining model components
3) Synthesizing a model
4) Verifying model components by nine experts in innovation and technology (connoisseurship)

4.2 Data collection was by interviewing 50 participating business executives both

offline and online between January - March 2021.

5. Data Analysis

The researchers analyzed the obtained interview data by content analysis to synthesize a model of an innovative organization with efficiency in digital industrial business under the new normal condition in Thailand.

6. Results of the Study

The research results from data analysis were reported according to the research objectives as follows:

6.1 Definition of Industrial Business Innovation

Innovation introduces new ideas, new practices, or new inventions, or improved aspects of a product or service to suit the current situation. In general, they are tested, proved and developed step by step in a systematic way to ensure their reliability, better results, and improved practices. The aspects of efficiency in industrial business innovations include:

1. Business Strategy Concepts Innovation
2. Service and Product Innovation
3. Delivery Innovation
4. Process and Organization Administration Innovation
5. Process Interaction Innovation

6.2 Process of Industrial Business Innovation and Creation

The researchers comprehensively analyzed literature and research reports related to innovation, followed by in-depth interviews with 50 industrial business executives to conclude the process of creating and developing industrial business innovations of high quality as six standard steps in accordance with the work by Konst & Kairisto-Mertanen (2020). They are:

Step 1: Determining: determine what to develop, that is, set goals and key points in solving problems or developing desirable attributes of innovation.

Step 2: Identifying: identify innovation, that is, find the conceptual framework of the learning process which consists of media or materials, equipment, techniques, methods and processes that are thought to be most appropriate for solving problems or developing business operations to meet needs.

Step 3: Creation and Development: create and develop, that is, determine the method for creating the innovations in detail with a quality audit and a performance audit during creation and development. And then complete the innovation to meet the requirements by using the research and development (R&D) process.

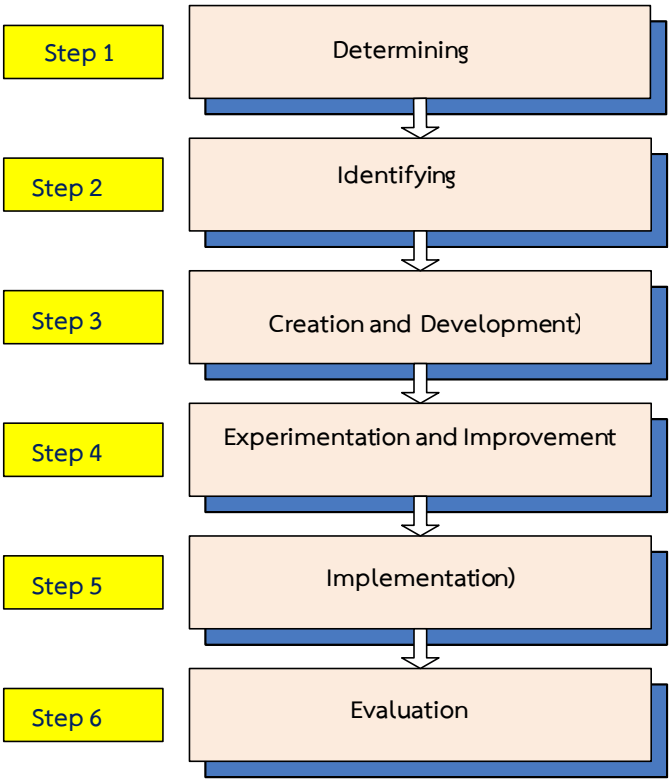
Step 4 Experimentation and Improvement: trial and improve, that is, improve and complete before using it. This includes the examination of quality by determining the effectiveness or efficiency of the innovation.

Step 5 Implementation: apply in a real situation, that is, experiment with innovations and improve them until they are in the expected quality of the innovation and then put it into practice in the real operations while collecting data along from time to time.

Step 6 Evaluation: evaluate the use, that is, collect data on the results of the innovation by various techniques, which will reflect the quality as specified to be used for report writing of research and development, to further expand the results and disseminate the innovations.

The overall process of industrial business innovation and creation is summarized in Figure 1

Figure 1: Process of Industrial Business Innovation and Creation



6.3 Dissemination of Industrial Business Innovation

Dissemination is a process through which innovation is transmitted through communication channels for a period of time to gain acceptance from members of a social system. According to the analysis of the nature of dissemination, there are five relevant factors that influence the operations of the dissemination process:

(1) the innovation itself,
(2) the information or information used to communicate in the matter of innovation,
(3) time conditions,
(4) nature of the social system or community in which innovation will be disseminated, and
(5) acceptance of research in the field of innovation dissemination.

It should be noted that these five factors interact with each other in promoting adoption and use of the products of innovators and technologists.

Dissemination of innovation in industrial business is a process that leads to adoption and use of innovation. It can be divided into six steps of effective innovation dissemination as follows:

(1) Injection: a process to introduce new ideas or methods to introduce and inform members of the organization.

(2) Examination: new ideas or methods presented to get the attention of members of the organization, research, planning and research are being carried out, as well as the formation of a committee.

(3) Preparation: those involved in the institute or organization prepare themselves to experiment with that innovation in the training for innovation development.

(4) Sampling: the innovation applied for the first time. Then sampling is for some users to try for the results of users.

(5) Spread: it is the distribution or extension of trial on effective innovations to a large target group of users, especially those who are trusted with sufficient potential for innovation.

(6) Institutionalization: innovation is recognized and applied in practice for a wide scope to become a common practice by all members.

6.4 Creating an Innovative Organization for Efficient Digital Industrial Business under The New Normal Condition

From the analysis of documents and the results of interviews with 50 key executive informants from 50 best-practice industrial businesses in Thailand, it was found that a successful innovation organization contains related elements as follows:

6.4.1 The organization's direction in innovation consists of:

(1) *A shared vision* is established by the leader to bring in innovation and change intentions and actions to adjust the focus of the organization. The organization's workforce has to be clear with its vision to work together to achieve the organization's objectives. Dedication of top management to the organization is fundamental to the success of innovation. It is a challenge for managers to be able to transform ideas into actions while taking a risk of innovation in possible failure.

(2) *Organizational design* for its structure is a critical component of the organization's performance to achieve its objectives. In addition, the corporate network counts as an essential part of the organization and a mechanism for the organization's systems to work in harmony.

(3) *Individuals' contribution* to facilitate innovation in teamwork with good understanding of the technology hidden in innovation and abilities to solve problems. Sponsors and customers may not need to know all about technology, but have confidence in the potential of that innovation. Tech keepers are to act upon a selection of news and forwarding important information on created innovation to stakeholders.

6.4.2 Creating continuous innovation

It is important to link and form at the same time a sense of unity in driving innovation organizations.

(1) Have an efficient working team. The working team is used to solve various problems properly, invest in the selection and build collaboration to get the quality results.

(2) Develop long-term practice for expansion. Training and development of personnel to have operational skills serves as an important tool to foster innovation in the organization. Personnel need to know the reasons for the changes and who holds decision-making power to give confidence in creating innovation within the organization.

(3) Communicate in all directions. Communicating within the organization, between organizations and outside the organization for clarity of the goals of the implemented innovation. Within the organization, there are three ways of contact: contact with a higher, lower level and the same level. Organizations can use multiple communication channels and use different media to reduce differences between and within the organization that perform different functions. This is to create an understanding of how the organization's activities are run in one specific direction.

(4) Open to the angle. Looking from the outside, the organization has its operations directed from the perspective of both internal and external clients, and opportunities or threats via organizational communication. This will help the organization to cope with various threats while seeking new opportunities for innovation in the organization.

6.4.3 Enabling sustainable innovation

(1) Create a culture that makes creativity a common sense of the organization. The culture that promotes innovative behaviors for people, such as the challenges of starting something new, the courage and the daring spirit to do it.

(2) Build knowledge management systems and learning organizations. Organizations need to create a knowledge management system in order for knowledge to circulate and create a continuous learning organization.

(3) Continue improvement of the organization. It has a high influence on innovation and a direct impact on innovation that comes from existing modifications or developments. Continuous quality improvement can find defects in products or services. This includes expanding policies with specific goals in each job that requires a hierarchical understanding of those particular policies.

Creating an innovative organization for efficient digital industrial business under the new normal condition prompts an organization to restructure, adapt, and bring in innovation to make better products and services. It is certain that personnel have to change their learning process quickly and develop the ability to innovate and do things differently in the work process. As a result, an administrative model in creating a new working style is to maximize the workforce’s potential in coping with innovation with newly required transactions effectively

7. Factors for Efficiency of an Innovative Organization in Digital Industrial Business under the New Normal Condition

As mentioned earlier, the researchers would like to propose a model of innovative organization under the new normal condition that can be applied to all types of industrial

enterprises in Thailand. The researchers first looked at the factors affecting an innovative organization in the work of Teece et al. (2018), Rehman & Iqbal (2020), Reetu & Redhu (2020), and Phakamas et al. (2021) that report such main factors as innovative leadership, innovation atmosphere, innovative habits, shown in this section.

7.1 Innovative Leadership

The characteristics of innovative corporate executives in the areas of innovative leadership are: (1) organizational executives have a clear vision, policy and framework; (2) executives in the organization are ready to listen to opinions and set a good example to personnel, and (3) executives in the organization pay attention to the development of work processes. As for the key roles of human resource managers in advancing to a successful innovative organization, the key points are: (1) Human resource managers must work together with corporate executives and be business partners and support each other; (2) Transformation and Business Risk Management; (3) Strategic Human Resources Executives; and (4) Human Resources Executives who support and coordinate the organization-wide (Phakamas & Pancharatanakorn, 2020; Phakamat et al. (2021).

The key leadership development approaches in the development process of industrial business executives contain the following standard steps:

(1) Leading to Learn is part of the innovative thinking development process in an event focused on opening up new ideas / methods of work, and being ready to learn from a variety of perspectives.

(2) Leading to Think: executives must think with vision or strategic thinking, can analyze the strengths and development points of the organization, and foresee opportunities and obstacles to use the analysis results to formulate plans and strategies for corporate development.

(3) Leading to Change: driving the organization through new plans or strategies will bring about change. Therefore, positive change must begin with a positive attitude adjustment process in order to provide all personnel with a collaborative direction through constructive communication. Management has a role to play in influencing and negotiating so that all personnel have a common understanding of how the upcoming changes will have a positive impact on them.

(4) Leading to Innovate. When personnel within the organization realize the benefits of such a change, executives must support factors that promote innovative learning, such as the ICT system, online learning resources, media and equipment, and various platforms to lead to quality innovation.

(5) Leading to Dissemination. When it is certain that the created innovation has been tried with the desired quality and efficiency, the innovation is ready to be disseminated to be known, accepted and used widely. Executives need to understand the formats and methods of innovation dissemination and continue to be a promoter of official dissemination.

7.2 Innovative Climate

Rehman & Iqbal (2020) and Reetu & Redhu (2020) identified four aspects of innovative climate: (1) the development of creativity in the management process for the development of innovation, (2) development of creativity in professional personnel, (3) Promotion and development of digital technology systems for work, and (4) Building research and development cooperation.

7.3 Innovative Behavior

(Teece et al., 2018) reports innovators with the following traits:

(1) Leadership of professional work with consciousness and work ethics toward the identified goals,
(2) Creativity with positive thinking and expertise in technology and innovation,
(3) Ability to work effectively with others, and create works according to the standard,
(4) Readiness with both primary and secondary skills, multitasking or multi-functions to change and adapt to keep pace with changes, and
(5) Ability to use technology widely suitable for the job.

8. The Model of an Innovation Organization with Efficiency in Digital Industrial Business Operations under the New Normal Condition

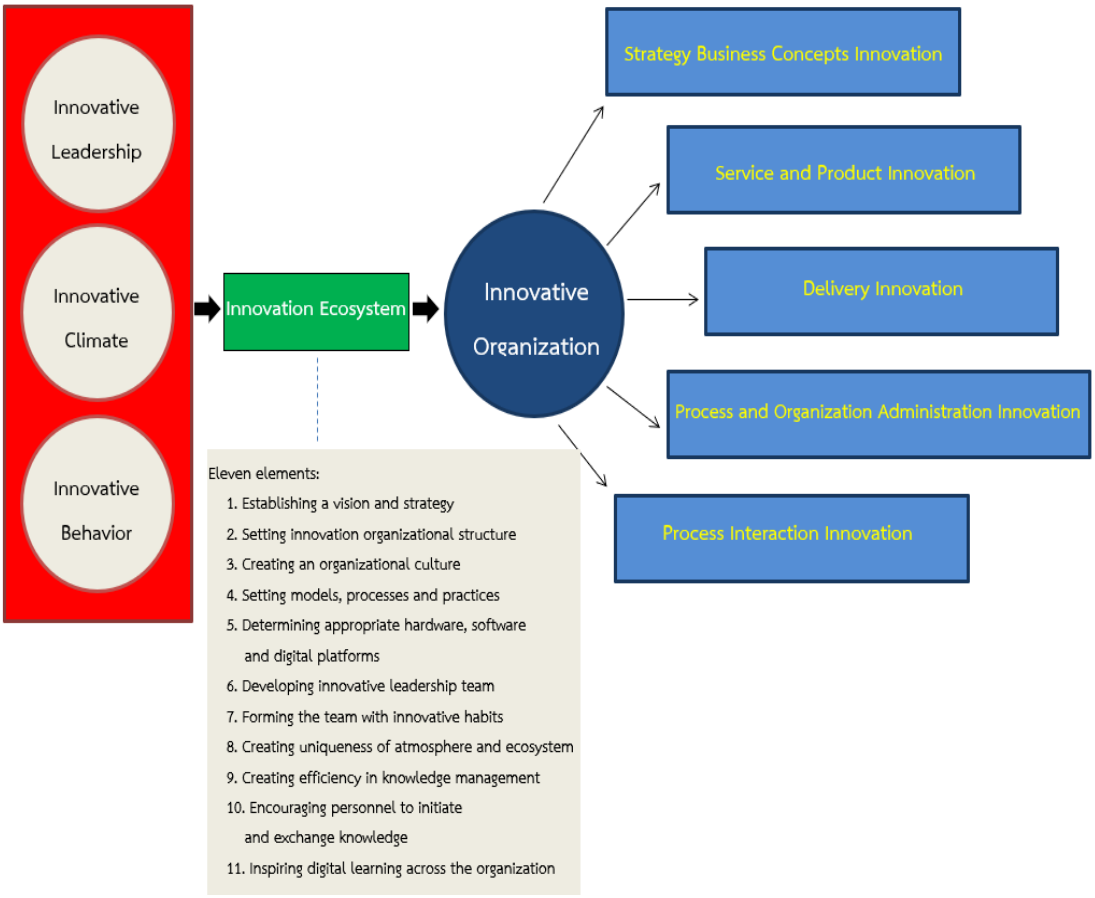
Based on the information reported in Section 7, the researchers collected relevant interview data with discretion from 50 industrial business executives regarding the innovative organization model with efficiency in digital industrial business in the digital era under the new normal condition in Thailand. The obtained data were content-analyzed for possible elements or factors and later validated by nine experts in business management and leadership.

The obtained results point to both internal and external elements which are fundamental to form an innovation organization model with efficiency in digital industrial business under the new normal condition as follows:

(1) Establishing a vision and strategy that will lead to an innovation organization,
(2) Setting an appropriate innovation organizational structure,
(3) Creating an organizational culture that supports all dimensions of innovation,
(4) Setting models, processes and practices that facilitate innovation,
(5) Determining appropriate hardware, software and digital platforms for service,
(6) Developing innovative leadership team striving for a systematic innovation organization,
(7) Forming the team with innovative habits in creating quality innovation,
(8) Creating uniqueness of atmosphere and innovative ecosystem,
(9) Creating efficiency in innovative knowledge management,
(10) Encouraging personnel to initiate and exchange knowledge freely, and
(11) Inspiring digital learning across the organization.

The model of an innovation organization with efficiency in digital industrial business operations in the digital era under the new normal condition, integrates three factors for efficiency of an innovative organization in digital industrial business under the new normal condition as described in Section 7. The innovation organization model is shown in Figure 2.

Figure 2: The Model of an Innovation Organization with Efficiency in Digital Industrial Business In the Digital Era under the New Normal Condition



9. Conclusion and Discussion

The results of this research focus on an innovative organization that adopts appropriate digital technology and relevant digital strategies to help increase organizational efficiency. In addition, organizations must be able to manage research and innovation well for management and learning management. Personnel in industrial enterprises enjoy the high standard that the organization wants and have been continuously using creativity to developed various aspects of innovation. Organizations are capable of managing research in line with the needs of innovators and contribute to the development of a sustainable learning society. In addition, executives should endeavor to encourage researchers and innovators to be involved and participate in business operations. Moreover, the leader or management should allow everyone

to independently express opinions and take part in shaping the organization's direction in a creative way to become a digital innovation organization that can grow sustainably in the long run.

The researchers synthesized research results of the earlier works (see Section 7) with the interview data obtained from 50 Thai executives of the best-practice industrial businesses, and seminars with business management experts. The proposed innovative organization model for efficient digital industrial business under the new normal condition in Thailand carries eleven key elements as shown in Section 8 and Figure 2.

The results can be discussed in light of the main issues on innovative organization studied by Granstrand & Holgersson (2020), Phakamas & Pancharatanakorn (2020) and Striteska & Prokop (2020). These earlier works report that the management plays an important role in setting a direction to achieve goals. Various types of leaders, particularly transformational leaders have a vision of management that is ready for change and an atmosphere of creative innovation by providing adequate support. Human resource development supports creating and disseminating innovation with international quality. There are incentives and determination to create new innovations to be successful in the digital age. Brunetti et al. (2020) and Reetu et al. (2020) emphasized the importance of organizations to support research to cultivate innovative ideas at the foundation level for researchers and innovators of domestic and international organizations for excellence in operations. The results of this study identify an innovation organization model with eleven components in accordance with the findings of the preceding researchers. All of the foregoing can confirm that the proposed innovative organization model can serve as a practical guidance for digital industrial enterprises to operate effectively under the new normal condition in Thailand.

10. Suggestions

Based on the findings of this study and the proposed innovation organization model, the researchers would like to recommend business transformation with innovation as guided by the model of eleven elements. Training in innovative thinking and personnel creativity with good support in digital technology should make it possible to create an appropriate innovative organization to fit in a particular context. Intentional change with visionary planning from the management along with support from the personnel can bring out the best potential of the workforce to attain the goal on becoming an innovation organization. This is for such an innovation organization to succeed and survive well in the digital era that has currently faced with the new normal condition imposed by the Covid-19 pandemic, followed by its post-impacts on the country’s economy in the upcoming years.

11. Acknowledgement

The researchers gratefully thank Rajamangala University of Technology Rattanakosin for providing a research fund for the research project.

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