Digital Skill Components of Labours in Health Service Workplaces

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ABSTRACT

This research aimed to study the digital skill components of labours in health service workplaces. Quantitative research method was employed. The purposive sample group was 1,452 people who worked health service workplaces and had experience using the internet from micro data of the 2020 Household of Information Technology Use Survey project of the National Statistical Office. The data was collected using an interview form and was analyzed with descriptive statistics and exploratory factor analysis. The result found that labours in health service workplaces are mostly female, 82.6 percent. They were in the Generation Y age group, 44.8 percent (average age 39.5 years), had the status of head of the household, 39.7 percent, had a bachelor's degree, 72.2 percent, and almost one out of every three people, or 31.8 percent lived in the central region. In terms of work status, it was found that the majority of labours worked as professional nurses, 35.1 percent and worked in hospitals, 84.2percent. The digital skill components of labours in health service workplaces were determined to have eight components, including: government and health information access, computer usages for work, creating and downloading content, computer system management, working online with others, content management and networking, purchasing products and services, and finding jobs and studying online. All of these variables were able to account for 59.7 percent of digital skills of labours in health service workplaces.

Keywords: Digital skills, Labour, Health Service Workplaces

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Introduction

Industries are impacted by sudden digital change, or "digital disruption." To thrive in the rapidly evolving digital landscape, workplaces must adjust and implement new tactics on a regular basis (Pradhan & Pattanaik, 2020). Concurrently, the COVID-19 pandemic emergency Organizations can use it as a catalyst to expedite the development of their internal infrastructure and shift their personnel to a digitally-savvy work model (Savić, 2020). Especially health service workplaces that have to deal with the health care of patients including the use of physical disease treatment tools that avoid direct contact with patients and the use of digital technology to communicate and collaborate on the internet (Baudier et al., 2023). If we consider the phenomenon of change in work skills in digital capitalism from a social science perspective. Workers will have the advantage of digital skills to negotiate with employers as capital according to the Neo-Marxist for their own freedom of work and higher wages (Fuchs & Sevignani, 2013). As evidenced by Work-From-Home scheme, including the use of access to the social welfare data of workers in the e-Governance system and everyday life in the digital environment (Lowe, 2022), so healthcare workers everywhere need digital skills for a new way of working (New Normal) in order to have a better quality of working life.

However, some people are unable to function in a modern technology-based work environment. This is due to a lack of digital abilities at work. Workers face the risk of being laid off or replaced by artificial intelligence technology in the future (Chang & Huynh, 2016), as well as unequal access to social welfare benefits via the Internet. As a result, workers must continually rely on social capital or seek assistance from people with digital skills (Chaker, 2020). In Thailand, the Ministry of Public Health recognized the significance of the issue and developed a health information technology strategy to ensure the Thai public health system's transition to Health 4.0 by developing digital skills to prepare the workforce as human capital in health care facilities and provide Thai people with accessible and quick access to health care, while also improving service quality in response to abrupt digital developments (Kanokwan Mapong et al., 2017). As a result, Thai labours in health service workplaces should be given the opportunity to learn digital skills in order to advance their careers and earn a living. Although work and living habits have evolved with the times, workers must learn to adapt to these changes.

It is evident from the aforementioned issue of shifting work patterns in the digital age that employees in healthcare institutions must use digital abilities in both their professional and

personal lives. Some labor groups, meanwhile, are experiencing job uncertainty. This is brought on by a lack of digital literacy and a resistance to change. This piqued the curiosity of researchers who wanted to examine the digital competencies of labours in health service workplaces relies on the research question as what are the elements of digital skills for those labours. This study employed the concept of digital skills required to survive in a digital society. The findings will be useful in developing policies for upgrading the digital skills of this workforce including improving the quality of working life of labours in the modern world to be more efficient.

Objective

To investigate the digital skill components of labours in health service workplaces.

Conceptual Framework

The researcher synthesized factors from the concepts of digital skills for livelihoods in a digital society proposed by EU Digital Skills and Jobs Coalition (2022) and van Dijk (2020). There are five components to content: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving (Figure 1).

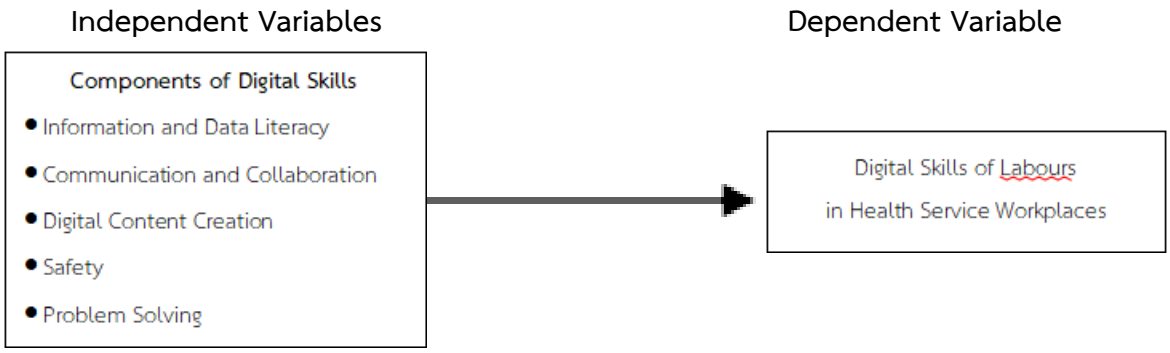

Figure 1 Conceptual Framework

Research Methodology

This study used a quantitative research methodology to examine the components of digital skills among labours in health service workplaces by using individual secondary data (micro-data) from the National Statistical Office. Those data were used in the usage of information and communication technologies in households 2020 project and collected via

interview form between October and December 2020. The research population comprised of 220,351 people who had used the internet within the three months preceding the interview date. The population was employed stratified random sampling, which divides the population into strata based on their residency characteristics, including provincial strata in each region and administrative divisions that are separate from one another (National Statistical Office, 2020). The researcher then selected a purposive sample group to be in line with the research objectives, namely labours who (1) have worked in Thai health service workplaces and (2) have Internet experience. As a result, the research sample comprised 1,452 individuals.

In terms of defining variables and their levels, the researcher gathered relevant concepts, theories, and research works. and analyze secondary data from the National Statistical Office. As a result, the factors used in this study were the characteristics of labours in health service workplaces, such as gender, household status, area, occupation, type of workplaces, and internet access location and devices. Their variable level was assessed using a nominal scale. The variable level of age was determined using a ratio scale, and the variable level of education level was quantified using an ordinal scale.

The researcher combined elements from the notions of digital skills for livelihoods in a digital world proposed by EU Digital Skills and Jobs Coalition (2022) and van Dijk (2020). Content consists of five components: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving. This is congruent with secondary data from self-evaluation questions concerning internet experience and computer skills, which total 42 indicators. The researcher assigned one indicator as one variable. It was based on internet use experience of the labours are deemed to have one of the following abilities if they have completed a certain task. Thus, the variable's level is measured with a nominal scale.

This study analyzed data using descriptive statistics for univariate analysis and exploratory factor analysis were used to derive digital skill components from the work field data of labour in health service workplaces. The criteria for extracting components were met by using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) index to test the relationship between variables and taking into account the results of Bartlett's Test of Sphericity, which is the extraction of components using Principal Component Analysis. It was rotated component axes one pair at a time as Orthogonal Rotation with the Varimax technique, which is Eigen values equal to or higher than 1. Each variable must have a factor loading equal to or greater than 0.5, and each component must contain at least three variables.

Results

The research findings address two issues: the characteristics of labours in health service workplaces, and the digital skills components of the labours in health service workplaces. The details are as follows.

1. Labours characteristics in health service workplaces. The majority of labours in health service workplaces are female, 82.6 percent, they are from Generation Y, 44.8 percent (average age 39.5 years, S.D. = 10.2). Most of them are the head of the home, 39.7 percent, finished with a bachelor's degree, 72.2 percent, and 31.8 percent are living in the central region. In terms of employment status, it was discovered that the majority of labours (35.1 percent) were professional nurses, while just 2.3 percent worked in information and communication technology, science, and engineering, and the majority of them worked in hospitals, 84.2 percent. The center provides care for the disabled, mental health problems and drugs addicted persons only had 0.5 percent. In terms of internet access, it was found that the majority of labours connected to the internet within their own households (98.0 percent), followed by their workplaces at 96.6 percent. All labours in health service workplaces used mobile phone devices to access the internet (100.0 percent), followed by desktop computers connection, 89.3 percent.

2. Digital skills components of the labours in health service workplaces. When analyzing the components of digital skills, the researcher examined the conditions of factor analysis and found that a total of 42 variables were imported into the analysis and there was no pair of variables had a correlation higher than 0.75 or there was no problem of linear relationship, so-called multi-collinearity. It also evaluated combined with the KMO index of 0.854 and Bartlett's Test of Sphericity with statistical significance (Sig. = 0.000), indicating that they are related to each other without uniformity. This data was appropriate for analyzing the components of digital skills among labours in health service workplaces. In this regard, the Principal Component Analysis method's variables had an Initial Communality value of 1 and Extraction Communality values were larger than 0.300 (0.389-0.829). When assessing the variance (Eigen Values) of the components, the values are more than 1 (1.002-6.858), with a total of 14 components. The component had a cumulative variance of 59.7 percent of the cumulative percentage of variance. It was possible that each variable can be measured as a shared component. As a result of orthogonal rotation of the axis, the researcher used the Varimax approach for 9 rounds, selecting only variables with a factor loading equal to or greater than 0.5,

as well as components with three or more variables. So, there were eight components in all (Table 1).

Component 1: Government and health information access. It can be explained by four key variables with component weights ranging from 0.533 to 0.777. There are searching for government information (0.777), completing transactions with government sectors (0.737), looking for health information (0.661), and scheduling health appointments on websites (0.533). This component has a variance value of 6.858 and a percentage of variance of 16.3, indicating that all four factors combine to best explain this component. When examining the variance of the variables with all 8 components, it holds the highest priority as a result.

Component 2: Computer usages for work. It can be explained by five key variables with component weights ranging from 0.528 to 0.653. There are connecting and installing new equipment (0.653), transferring data files between computers and other devices (0.616), using presentation programs (0.588), installing and setting software (0.570), and using basic formulas in spreadsheets (0.528)**.** This component has a variance value of 2.588 and a percentage of variance of 6.2, indicating that all five factors combine to best explain this component. When examining the variance of the variables with all 8 components, it holds the second priority as a result.

Component 3: Creating and downloading content. It can be explained by four key variables with component weights ranging from 0.603 to 0.751. There are creating and uploading content on websites (0.751), downloading online content (0.684), chatting online (0.614), and downloading software or applications (0.603). This component has a variance value of 2.013 and a percentage of variance of 4.8, indicating that all four factors combine to best explain this component. When examining the variance of the variables with all 8 components, it holds the third priority as a result.

Component 4: Computer system management. It can be explained by three key variables with component weights ranging from 0.682 to 0.740. There are installing operating systems (0.740), configuring browser security (0.712), and programming (0.682). This component has a variance value of 1.762 and a percentage of variance of 4.2, indicating that all three factors combine to best explain this component. When examining the variance of the variables with all 8 components, it holds the fourth priority as a result.

Component 5: Working online with others. It can be explained by three key variables with component weights ranging from 0.481 to 0.664. There are using online software

to edit documents (0.664), online meetings (0.645), and using online space to store documents (0.481). This component has a variance value of 1.461 and a percentage of variance of 3.5, indicating that all three factors combine to best explain this component. When examining the variance of the variables with all 8 components, it holds the fifth priority as a result.

Component 6: Content management and networking. It can be explained by three key variables with component weights ranging from 0.448 to 0.805. There are managing a home page (0.805), managing content on an own blog (0.803), and connecting to an online working network (0.448). This component has a variance value of 1.247 and a percentage of variance of 3.0, indicating that all three factors combine to best explain this component. When examining the variance of the variables with all 8 components, it holds the sixth priority as a result.

Component 7: Purchasing products and services. It can be explained by three key variables with component weights ranging from 0.448 to 0.805. There are ordering/reserving goods and services (0.726), making financial transactions (0.647) and seeking information on products and services (0.466). This component has a variance value of 1.158 and a percentage of variance of 2.8, indicating that all three factors combine to best explain this component. When examining the variance of the variables with all 8 components, it holds the seventh priority as a result.

Component 8: Finding jobs and studying online. It can be explained by three key variables with component weights ranging from 0.577 to 0.729. There are searching or applying for jobs online (0.729), taking online courses (0.594), and using online encyclopedias (0.577). This component has a variance value of 1.066 and a percentage of variance of 2.5, indicating that all three factors combine to best explain this component. When examining the variance of the variables with all 8 components, it holds the last priority as a result.

Table 1 Digital skill components of labours in health service workplaces

Digital Skill Components	Factor Loading	Variance Value	Percentage of Variance
Component 1: Government and health information access		6.858	16.3
1. Searching for government information	0.777		
2. Completing transactions with	0.737		

government sectors			
3. Looking for health information	0.661		
4. Scheduling health appointments on websites	0.533		
Component 2: Computer usages for work		2.588	6.2
1. Connecting and installing new equipment	0.653		
2. Transferring data files between computers and other devices	0.616		
3. Using presentation programs	0.588		
4. Installing and setting software	0.570		
5. Using basic formulas in spreadsheets	0.528		
Component 3: Creating and downloading content		2.013	4.8
1. Creating and uploading content on websites	0.751		
2. Downloading online content	0.684		
3. Chatting online	0.614		
4. Downloading software or applications	0.603		
Component 4: Computer system management		1.762	4.2
1. Installing operating systems	0.740		
2. Configuring browser security	0.712		
3. Programming	0.682		
Component 5: Working online with others		1.461	3.5
1. Online software to edit documents	0.664		
2. Online meetings	0.645		
3. Using online space to store documents	0.481		

Component 6: Content management and networking		1.247	3.0
1. Managing a home page	0.805		
2. Managing content on an own blog	0.803		
3. Connecting to an online working network	0.448		
Component 7: Purchasing products and services		1.158	2.8
1. Ordering/reserving goods and services	0.726		
2. Making financial transactions	0.647		
3. Seeking information on products and services	0.466		
Component 8: Finding jobs and studying online		1.066	2.5
1. Searching or applying for jobs online	0.729		
2. Taking online courses	0.594		
3. Using online encyclopedias	0.577		

However, when comparing digital skills by component, labours in health service workplaces have the highest average percentage of digital skills in component 7, which purchasing products and services (90.0 percent). But it is worth noting that the labours have only 3.33 percent digital skills in component 6, content management and networking (Table 2). As a result, while getting information and contacting government and health agencies is the first critical step. However, employees still lack digital abilities in content management and networking. As a result, it is critical to encourage employees to develop digital skills in content management and to create work networks that are best appropriate for their job descriptions.

Table 2 Average percentages of digital skill components of labours in health service workplaces

Digital skill components	Mean	S.D.	Min.	Max.	Average percentage
1. Government and health information access	1.8	1.4	0.0	4.0	45.0
2. Computer usages for work	2.4	1.6	0.0	5.0	48.0
3. Creating and downloading content	2.8	0.2	0.0	4.0	70.0
4. Computer system management	0.2	0.6	0.0	3.0	6.7
5. Working online with others	0.7	0.9	0.0	3.0	23.3
6. Content management and networking	0.1	0.4	0.0	3.0	3.33
7. Purchasing products and services	2.7	0.7	0.0	3.0	90.0
8. Finding jobs and studying online	0.2	0.5	0.0	3.0	6.7

Discussion and Recommendation

The results of research on the components of digital skills of labours in health service workplaces found that There are 8 components: government and health information access, computer usages for work, creating and downloading content, computer system management, working online with others, content management and networking, purchasing products and services, and finding jobs and studying online. The above components of digital skills may be novel discoveries. This is because digital skills are described via the lens of labours in health service workplaces settings. As a result, it differs from the EU Digital Skills and Jobs Coalition (2022) and van Dijk's (2020) definitions of digital skills, which group digital skills for use in researching the general population. Examples include content creation, information and data literacy, communication and collaboration, and so on. However, the digital skills elements from this study can be isolated and organized based on specific job descriptions within health service workplace settings.

Considering each component was examined, it was discovered that the component is government and health information access. It has the greatest degree of variation and can be considered a necessary ability for the vast majority of the labours. According to Thoranis

Bunkhaeng (2023) research findings, accessing information and contacting government and health institutions is basic work. Labours in government health-care sector, in particular, require precise access to database information. This includes searching for information on diseases and medications from credible sources.

While taking into account the average percentage of the digital skills component, it was discovered that labours in health service workplaces have poorer digital skills in content management and networking than other components. It is possible that website homepage management skills and the ability to maintain content on one's own blog are required for specific work roles, such as those in the website maintenance department, department of public relations, etc. As a result, labours have little experience applying these skills. This is consistent with studies conducted by the International Labour Organization (2021) discovered that abilities linked to website content management are advanced skills acquired through practice and are frequently the talents of workers with degrees in information and communications technology.

According to the research findings, health service workplaces should prioritize increasing their workforce's digital abilities for information access components, as well as contacting government and health sectors. Specifically, public hospitals have access to and communication of health information in accordance with the health information technology (e-Health) development policy. This is because each labor is a crucial capital in driving the country's public health system development agenda. Developing digital skills for accurate access to government agencies' health information systems is thus a critical matter. Because of access to correct information influences timely and accurate health-care decisions. Although some groups of labours in health service workplaces undertake technical and basic tasks, digital skills should be developed so that they can access the health care system and treatment information on the same level as other professional workers in the health service context. As a result, having adequate digital abilities is required to function in this environment. Thus, labours who receive health treatments may also have a higher quality of life at work.

In addition to content management and networking, successful candidates will possess digital abilities for maintaining website material, which are role-specific. As a result, the average percentage is smaller than other components, but it still demonstrates the ability to connect the work networks within the aforementioned components, which are

required for workers in health care institutions. Health service workplaces should implement procedures to encourage the formation of work networks on social media, such as learning how to utilize LinkedIn and research networks on ResearchGate. However, the use of secondary data to assess the components of digital skills limits this study's scope. The further work should do in-depth field research on health care labours in their work environments. Survey data was then collected to test assumptions about the factors that influence digital abilities. It may also re-analyze the digital skills composition of the health-care workforce to ensure the reliability of the findings.

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