

# THE IMPACT OF FACTORS THAT CAUSE ISSUES FOR NON-ICT BACKGROUND WORKERS IN ICT JOBS ON THEIR JOB SATISFACTION

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## ABSTRACT

It is not uncommon to see non-ICT educated workers doing ICT-based roles and jobs. Through a preliminary assessment, it is discovered that workers with non-ICT background that work in ICT-based roles often face issues. The identified issues consist of four factors: the lack of information and documentation, insufficient training, insufficient mentorship, and the lack of prior IT knowledge and competencies. These issues cause effects and behaviour that indicate dissatisfaction in their work life. Working performance and person job fit were also thought to act as the bridge between these issue-causing factors and the worker's job satisfaction. Prior studies regarding job satisfaction, working performance, and person-job fit in various fields have delved in these aspects for various fields, but not in the ICT area – especially in Indonesia. Hence, this study aims to verify if these factors contribute to job satisfaction overall, as well as its mediating variables. It is discovered that prior ICT knowledge and competencies have a significant impact towards job satisfaction through working performance and person-job fit – and greatly impacts both factors. Working performance is also impacted by the information and documentation regarding ICT technologies. However, the lack of information and documentation, training, and mentorship do not affect job satisfaction significantly. Consistent with other research in various fields, working performance and person-job fit have great impact towards job satisfaction. From this study, it is discovered that the prior ICT knowledge and competencies of the worker are key aspects that can contribute to their performance, fit, and job satisfaction overall. These findings may be used as input for various recruitment and preparation strategies for companies that seek to hire ICT workers from other educational backgrounds.

**Keywords:** *Knowledge Management, Background-Work Mismatch, Person-Job Fit, Job Satisfaction, Information Technology, Working Performance*

## 1. INTRODUCTION

Digitalization forces businesses in Indonesia to expand rapidly, deeming it to be one of ASEAN's biggest digital economy forces in 2022 [1]. This development is also paralleled with the annual rise of GDP and number of workers in the ICT area [2]. However, it is observed that not all people who work in the ICT industry, or ICT-related jobs, have ICT-related educational backgrounds. It should be quite common, as various Indonesian university tracer study results show that roughly 20% of their alumni end up in jobs that do not relate to their educational background. However, it is also observed that such people tend to face issues during their working experience. To explore this phenomenon further, a preliminary assessment was conducted. It was found that 13 out of 17 non-

ICT educated workers that work in ICT jobs face issues during their adaptation and working period. These issues are reported to cause stress, confusion, absenteeism, and turnover intention – which are also caused by low job satisfaction [3]. Hence, it is thought that such issues influence the job satisfaction of non-ICT educated workers in ICT jobs.

Through the preliminary assessment, several key issues that are frequently mentioned by the non-ICT educated workers are:

1. The lack of information and documentation sources regarding how to operate the system or applications required,
2. The worker's lack of prior knowledge and competencies, and

3. The workplace conditions that do not support training or mentorship.

Upon further analysis, these factors can be linked to the context of knowledge management, specifically during the knowledge identification, acquisition and sharing stages [4]. The processes and approaches in knowledge management have a positive impact on job satisfaction and work performance [5], which indicates that knowledge management is important for the company.

It is also thought that the mismatch of one's education background and their work – in this case ICT jobs and roles – also contribute to the diminishing of job satisfaction. Person-job fit and background-work mismatch, along with its correlation between working performance and job satisfaction have been widely researched in various settings. Fadilah [6] discovered that education background and work experience significantly impact the employee performance. Similarly, Kim & Choi [7] found that job mismatch has a significant impact towards job satisfaction. These findings provide strong evidence that educational background and work mismatch may play an important role in the performance and job satisfaction of workers.

Various studies in other fields of work have been done to assess the aspects of job satisfaction, working performance, and person-job fit. However, little is known about its implications on ICT roles, jobs, and industries in Indonesia or even globally. There is little research that specifically delve in the ICT industry, especially to observe the phenomenon of non-ICT educated workers that work in ICT roles and jobs. Hence this study is important to fill in the gap of understanding the worker aspects in the ICT field, especially in Indonesia.

The goal of this study is to discover the effects of the identified issue-causing factors on job satisfaction in ICT-based jobs for non-ICT educated workers in Indonesia. This knowledge can be useful to understand employee behaviour in general, and for companies and employers to form strategies that could help such workers thrive in their jobs.

## 2. LITERATURE REVIEW

### 2.1. ICT-Based Jobs in Indonesia

The availability of workforce in the information, communication, and technology (ICT) sector is

very important to support digital transformation [2]. The 2018 data from the survey of national workforce (SAKERNAS) shows that the ICT sector employs 894,000 workers. Interestingly, the ILO Rapid Assessment in 2020 shows that 39,4% from 436 job vacancies accept workers from any background. The ICT-related jobs reviewed in this rapid assessment come from a wide range of job titles, starting from IT Support, IT System Programmer, IT Web Designer and Developer, Creative Content, Mobile App Developer, IT Software Engineer, and even social media / Digital / Multimedia / SEO Specialist.

### 2.2. Job Satisfaction

Job satisfaction refers to what extent a person feels happy, comfortable, or satisfied with their job [8]. Job satisfaction is essential because it affects the initiative, enthusiasm, and involvement in work [9]. Various studies have been conducted around the context of job satisfaction. Lim [10] found that (1) Salary, (2) A sense of belonging, (3) Faith in wanting to belong, (4) A feeling of acceptance, (5) Job autonomy, and (6) promotion due to technical expertise are positively related to job satisfaction. Similarly, Kozarevic et al. [11] argues that job satisfaction is affected by (1) Demographic characteristics, (2) Management / supervision, (3) Material compensation, (4) Immaterial compensation, (5) Working environment and the content of work, (6) Social atmosphere at work, and (7) General satisfaction with life. Job satisfaction is also related with job stress, which has a significant negative relationship with job satisfaction [12].

### 2.3. Job Performance

Job performance as the total the total value that is estimated for an organization that comprises of the actions of an individual in a certain period [13]. In other words, job performance refers to the actions of an individual that can be observed and provides values for a company and contributes to achieve the organization's goals [14]. Koopmans et al. [15] define several indicators to measure job performance:

1. Task Performance: Work Quality, Planning and Organizing Work, Being Result-Oriented, Prioritizing, Working Efficiently
2. Contextual Performance – Interpersonal: Taking Initiative, Accepting and Learning from Feedback, Cooperating with Others, Communicating effectively.
3. Contextual Performance – Organizational: Showing Responsibility, Being Customer-

- Oriented, Being Creative, Taking on Challenging Work Tasks
- Adaptive Performance: Showing resiliency, coming up with creative solutions to novel and difficult problems, keeping job knowledge up to date, keeping job skills up to date, dealing with uncertain and unpredictable work situations, adjusting work goals when necessary.
  - Counterproductive Work Behaviour: displaying excessive negativity, doing things that harm the organization, doing things that harm co-workers or supervisor, purposely making mistakes.

#### 2.4. Job Fit Theory

Job fit refers to the compatibility between a worker and their work that must be done in their workplace [16]. Earlier empirical research defines “person-job fit” as the compatibility between the desires of a worker (employee related) and demand for manpower (job related). On the other hand, “person-organization fit” is the compatibility between a person and an organization that is formed when an entity fulfils the needs of the other entity, or they have the same essential feature, or both [17]. These two factors have a positive and significant impact on employee job performance [16].

There are various reasons why employees take up jobs that do not match their educational background. According to “Indonesia’s Occupational Employment Outlook 2020” by the Ministry of National Development Planning of the Republic of Indonesia, job mismatches in Indonesia are caused by:

- Lack of information in the labour market
- Low rate and quality of education
- Limitations of Chances to On-the-job-training
- High cost of workforce mobility
- Changes in structure and the rapid development of technology

#### 2.5. Skill Mismatch

McGuinness et al. [18] define several measures measurement method of skill mismatch in company level. These measures are:

- Overeducation and Undereducation: measured based on the qualification of a worker. The worker’s qualification could be over or under the company’s job requirements.
- Over-skilling and Under-skilling: measured based on the skill level of the worker, based on their own judgement.

- Horizontal Mismatch: measures to what extent a worker is employed in an occupation that does not relate to their main educational background.
- Skill Obsolescence: a skill becomes obsolete when it is no longer required in a job. Hence, this measure is used to see if a worker’s skill becomes obsolete in their job. This usually happens to manual jobs that is replaced with technology.
- Skill Gaps: it is used to measure how far a worker lacks the skills required to do their job.
- Skill Shortages: it refers to the job vacancies that are difficult to be filled or emerges because of the absence of candidates that have the right qualifications.

#### 2.6. Knowledge Management

Knowledge management is the application of knowledge from the experience of decision making, with the aim of increasing organization effectiveness [19]. Yip et al. [20] built a knowledge management framework, in which a certain knowledge is identified, processed, and then applied. These elements, as discovered by Mumere Sarah & Soye Peniel [4], have a positive impact in the efficiency of workers:

- Knowledge Identification: The process of identifying the knowledge that is required to support business strategies, audit the organization’s knowledge base, and renew the knowledge base to bridge the gap of knowledge in the organization.
- Knowledge Acquisition: Gathering knowledge can strengthen the knowledge pool of an organization. Zack [21] explains that the acquisition of new knowledge can be done by internal sources (daily experience) or external sources. Knowledge acquisition can also be done through reports, meetings, trainings, previous job experiences, workshops, seminars, etc.
- Knowledge Sharing: It comprises of the exchange of information between individuals in a team, unit, and organization [22]. Knowledge sharing is important to increase the abilities of an individual to receive new data and new resources for learning, problem solving, and self-improvement [23].
- Knowledge Application: After knowledge is identified, acquired, and shared, the next important step is to apply the knowledge in real-life situation. [24] defines knowledge application as the application of knowledge in a task or to solve problems.

### 2.7. Hypothesis Development

The suspected variables of issue causes discovered in the preliminary assessment – information and documentation, training, mentorship, and prior IT knowledge and competencies – are part of knowledge management because they revolve around the employee’s experiences and the company’s efforts to identify, acquire, and share knowledge. The role of training and mentorship is found in other studies, such as one by Limbu et al. [25], in which is mentioned that training and support has an insignificant impact on administrative performance. Similarly, Gebczynska [9] found that job satisfaction in project-based organizations can be increased with a combination of person organization fit, supervisor support, and organizational commitment. Previous research does not refer to ICT-based job roles but provide a basis to connect the findings of the preliminary assessment to well-known factors such as job performance and person-job fit. As person-job fit is already known to have a positive effect on performance [16], the connection between person-job fit and working performance is not further assessed in this study. Rather – the two variables are assessed as mediating variables between the knowledge management aspects and job satisfaction – although the indirect effect of knowledge management will also be examined. Information and documentation, as well as training and mentorship are thought to be more dependent on external factors – such as the provision of information sources and trainings by the companies themselves. Whereas the prior IT knowledge and competencies of the workers are internal factors that determine a person’s “fit” for the job, but also may affect their working performance. Hence, based on this thought process, several hypotheses can be formed:

*H1: Information and documentation impact Working performance*

*H2: Training impacts Working performance*

*H3: Mentorship impacts Working Performance*

*H4: Prior IT knowledge and Competencies impacts Working performance*

*H5: Prior IT knowledge and Competencies impacts Person job fit*

There are numerous studies that cover topics that relate to employee-background mismatch, employee performance, and employee job satisfaction. Employee turnover is caused by numerous factors, such as job stress, morale

motivation, emotion management, job engagement, and employee-organization relationships [26]. Similarly, the higher the skill mismatch between employee and their job, the higher the stress level that they will endure [27]. Job satisfaction is considered it has a significant negative relationship with job stress [12]. In a nutshell, the lower the stress, the higher the job satisfaction. As for performance, Fadilah [6] discovered that educational background, work experience, and the interaction between the two variables have a positive and significant impact on employee performance. However, this study is done as a case study in one specific Indonesian company and does not relate specifically to the ICT area. Similarly, Kim & Choi [7] found that the performance and job satisfaction of post-doctoral graduates in STEPI, Korea, are significantly affected by the degree of job-mismatch. Hence it is believed that working performance is a contributing factor to job satisfaction – in the case of non-ICT background workers in ICT jobs. Several hypotheses can be derived from the previous statements:

*H5: Working performance impacts Job satisfaction*

*H6: Person job fit impacts Job satisfaction*

### 2.8. The Gap

Prior works have discovered the relationship between job satisfaction, working performance, and person job fit in other international fields of work or population [7]. Also, the connection between some knowledge management related factors such as training and working performance is also confirmed [28]. However, this study highlights the connection between the knowledge management variables itself with job satisfaction. This connection is explored in a less-discussed field in Indonesia, which is the ICT area. Hence, it is important to highlight the findings of this study as it can be used to pioneer further related research in the future, which can help to better understand the work psychology and contributing factors of Indonesian ICT workers that did not receive prior ICT education – which in a sense is not the ideal condition, but is a condition that happens in practice.

### 3. RESEARCH METHOD

To find the background issue, a preliminary assessment is conducted on a small number of non-ICT background workers who work in ICT roles in various companies that operate in Indonesia. The

result of this study is then analysed to derive the key factors that is suspected to cause issues for them, based on the respondents' answers. Then, the problem statement is formulated, followed by the study goal setting and its benefits. After a more extensive literature review, which will updated accordingly throughout the study, a theoretical background, and the related variables – as well as the proposed study model - were built. It is stated in the study hypothesis. It is then followed by calculating the sample size, collecting data, processing data, and analysing the data to derive conclusions of the study. The relationship between each variable, which is derived from the preliminary assessment results and literature review, can be found in Figure 1. Also, the list of variables and their corresponding indicators can be found in Table 1.

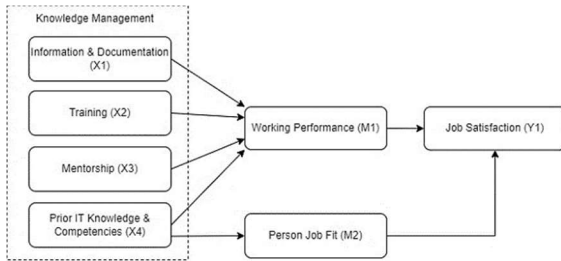


Fig 1. Research Model

Table 1: List of Variables and Indicators

Variable	Indicator	Reference
Job satisfaction (Y1)	Individual responses to satisfaction / dissatisfaction (aggression)	[29]
	Individual responses to satisfaction / dissatisfaction (withdrawal)	[29]
	Contentment of work	[11]
	Working environment	[11]
	Management / supervision	[11]
	Material compensation	[11]
Working performance (M1)	Task Performance: Work quality, result-oriented	[15]
	Task Performance: Efficient working	[15]
	Contextual Performance: Taking initiative	[15]
	Contextual Performance: Accepting and	[15]

	learning from feedback	
	Contextual Performance: Communicating Effectively	[15]
	Contextual Performance (Organizational): Showing responsibility	[15]
	Contextual Performance (Organizational): Taking on challenging tasks	[15]
	Adaptive performance: Showing resiliency (coping with stress and difficult situations)	[15]
	Adaptive performance: Keeping job knowledge up to date	[15]
	Counterproductive work behavior: Displaying excessive negativity, doing things that harm organization	[15]
Person-Job Fit (M2)	Knowledge fit	[30]
	Skills fit	[30]
	Abilities fit	[30]
	Interest Fit: Job Interest	[30]
	Interest Fit: Compatibility	[30]
Information and documentat ion (X1)	Availability of information source and documentation	Preliminary Assessment
	Ease of access to information source and documentation	Preliminary Assessment
	Quality of information source and documentation: Up to Date information	Preliminary Assessment
	Quality of information source and documentation: Information detail	Preliminary Assessment
	Quantity and Volume of information source and documentation	Preliminary Assessment
Training (X2)	Degree of in-class training: Availability	Preliminary Assessment
	Degree of in-class training: Helpfulness	Preliminary Assessment

	Degree of external training: Availability	Preliminary Assessment
	Degree of external training: Helpfulness	Preliminary Assessment
Mentorship (X3)	Degree of guidance and mentoring	Preliminary Assessment
	Degree of on-job-training effectiveness: Availability	Preliminary Assessment
	Degree of on-job-training effectiveness: Helpfulness	Preliminary Assessment
	Degree of on-job-training effectiveness: technology use	Preliminary Assessment
Prior Knowledge and Competencies (X4)	Degree of educational background – work mismatch (Horizontal mismatch)	[18]
	Degree of educational background – experiences during study	Preliminary Assessment
	Individual judgement of prior knowledge	Preliminary Assessment
	Individual judgement of prior competencies	Preliminary Assessment
	Manager or peers’ judgement of prior knowledge and competence level	Preliminary Assessment

The connections between these variables are created based on the understanding and suspected behaviours from the preliminary assessment. Questions to measure each indicator are made and compiled in a questionnaire, which is given out to workers who fulfil the study’s criteria:

- Has a non-ICT related educational background, at least at an undergraduate level. The reference for ICT related backgrounds is based on the ACM Computing Curricula 2020 [31]
- Has experiences working in an ICT-based role, at least for one year.
- Works in a company that operates and is demographically based in Jakarta or Bandung, Indonesia

To calculate the minimum sample size, the 10-times minimal sample size method is used. The sample size should be greater than 10 times the maximum number of inner or outer model links

pointing at any latent variable in the model [32]. Because the largest number of indicators used in this study is 10, it can be concluded that the minimum sample required in this study is 100 samples. The snowball sampling method is used for this study to ease the distribution of questionnaire. The data is collected using a questionnaire that is designed based on the list of variables and related indicators. The questionnaire is distributed to respondents by Google Form to ease the data collection process. After the data is collected and cleansed from the entries that do not fulfil the study’s requirements, the data is tested for its reliability and validity.

#### 4. RESULT & DISCUSSION

Data was collected from 122 participants who did not pursue ICT-based education and has worked in an ICT-based role in Jakarta or Bandung-based companies. Several demographic information is collected to elaborate the educational background, ICT-based role, and companies where the participants work. The list and number of participants according to each educational background is displayed in Table 2. The data in Table 2 show that the participants come from a multitude of educational backgrounds. However, most of them had a degree in industrial engineering or economics. As for the ICT-Based roles of the participants, it is evident that the choices of ICT-based roles that are pursued by non-ICT educated workers varies greatly.

Table 2: Educational Backgrounds of Study Participants

Educational Background	Quantity
Industrial Engineering	46
Economics: Accounting / Management	38
Electrical Engineering	5
Mechanical Engineering	3
Business Administration	3
Civil Engineering	2
Chemical Engineering	2
Physics	2
Marine Engineering	1
Nuclear Engineering	1
Metalurgy & Material Engineering	1
Environmental Engineering	1
Physics Engineering	1
Literature	1
Microbiology	1

Mathematics	1
Political / Social Sciences	1
Finance	1
Business	1

The details of ICT-based roles of the respondents of this study can be seen in Table 3. It is observed that most of the participants are consultants, developers, and business analysts. This finding is consistent with the preliminary assessment that was conducted to formulate the study’s problem. The companies in which the participants work varies greatly in terms of field – ranging from IT consulting, audit, finance, e-commerce, banking, FMCG, and even automobile distributors.

Table 3: ICT-Based Roles of Study Participants

ICT-Based Role	Quantity
IT Consultant	47
Business Analyst	17
Developer / Software Engineer	16
Product Manager	6
Sales / Presales Product & IT Services	3
Finance Analyst	3
IT Auditor	4
IT Analyst	3
Digitalization Vice President	1
Testing Analyst	1
System Analyst	1
Software Development Engineer in Test (SDET)	1
Quality Assurance	1
Project Manager	1
Program Manager	1
Product Designer	1
IT Purchasing	1
IT Network	1
Data Scientist	1
Data Analyst	1
Audit Specialist	1

There are several interesting findings from the respondents’ demographic information. Most of the participants have an educational degree in industrial engineering and economics, either accounting or management. Most of the participants from these educational backgrounds work as IT consultants. They are responsible for conducting user requirement gathering, application setup and configuration, creating flowcharts,

creating scripts or queries, and conducting sessions such as User Acceptance Tests. Some consultants that participate in this study are also responsible for system auditing.

Aside from consulting, respondents with an industrial engineering background mostly work as business analysts and product managers. Their job description is like those of IT Consultants, but they work internally within their companies – as opposed to consultants who design and implement their designs in their clients’ environment. On the other hand, respondents with economics background also work as sales or presales of ICT products and services, auditors, business analysts, product managers, and even developers and data scientists. Most likely, the wide range of roles that can be taken by people with these educational backgrounds is due to the general nature of the courses taught during their studies.

It is also discovered that there are several unexpected educational backgrounds that some ICT workers had. Some of them stem from other streams of engineering, such as civil engineering, machinery, chemical engineering, even nuclear engineering and physics engineering. They also end up as consultants, business analysts, and even developers. Some unlikely educational degrees, such as microbiology and literature, also produce business analysts and project managers, respectively. This shows that educational background does not strictly dictate the job role that one could pursue.

The collected data is processed using SMART-PLS to ensure its validity and reliability. Based on the outer loading calculations, some indicators are identified to be invalid. Hence, the invalid indicators are removed until all indicators produce a valid number in terms of outer loading. The list of used indicators and its respective outer loadings value are stated in Table 4. The Cronbach’s Alpha value for each variable is higher than 0.7, which can be observed in Table 5. Hence, the data and model can be concluded as valid and reliable.

Table 4. Indicator Outer Loadings

Variable	Indicator	Outer Loadings	Valid
Information & Documentation	ID-1	0.878	Yes
	ID-2	0.858	Yes
	ID-3	0.842	Yes
	ID-4	0.900	Yes

	ID-5	0.802	Yes
Job Satisfaction	JS-3	0.930	Yes
	JS-4	0.819	Yes
Person Job Fit	PJF-1	0.828	Yes
	PJF-2	0.872	Yes
	PJF-3	0.794	Yes
	PJF-4	0.774	Yes
	PJF-5	0.861	Yes
Prior Knowledge & Competencies	PKC-4	0.845	Yes
	PKC-5	0.912	Yes
Training	TR-1	0.766	Yes
	TR-2	0.761	Yes
	TR-3	0.919	Yes
	TR-4	0.844	Yes
Mentorship	MT-1	0.721	Yes
	MT-2	0.825	Yes
	MT-3	0.899	Yes
	MT-4	0.902	Yes
Working Performance	WP-1	0.778	Yes
	WP-2	0.834	Yes
	WP-3	0.784	Yes
	WP-4	0.778	Yes
	WP-5	0.773	Yes
	WP-6	0.827	Yes
	WP-7	0.734	Yes

Table 5. Variable Reliability

Variable	Cronbach's alpha	AVE	Reliable
Information and Documentation (X1)	0.909	0.734	Yes
Training (X2)	0.849	0.681	Yes
Mentorship (X3)	0.860	0.706	Yes
Prior IT Knowledge and Competencies (X4)	0.711	0.773	Yes
Working performance (M1)	0.897	0.620	Yes
Person-Job Fit (M2)	0.884	0.683	Yes
Job satisfaction (Y)	0.710	0.768	Yes

To test the study's hypotheses, the T Statistics values from the bootstrapping calculation result are analysed. The total direct effects calculation can be seen in Table 6. The T Statistics results prove that Working Performance is highly influenced by Information & Documentation and Prior IT Knowledge & Competencies but not by Training and Mentorship. As for Person Job Fit, the Prior IT Knowledge & Competencies has a significant effect on the mediating variable. This shows that two of the four suspected variables in this study do impact the overall performance and fit of the person to his or her job. Also, it is confirmed that Job Satisfaction is greatly impacted by working performance and person-job fit.

Table 6. Total Direct Effects of Variables

Path	T Statistics	Significant
Information & Documentation (X1) -> Working Performance (M1)	2.014	Yes
Training (X2) -> Working Performance (M1)	0.575	No
Mentorship (X3) -> Working Performance (M1)	0.789	No
Prior IT Knowledge & Competencies (X4) -> Working Performance (M1)	4.311	Yes
Prior IT Knowledge & Competencies (X4) -> Person Job Fit (M2)	7.553	Yes
Working Performance (M1) -> Job Satisfaction (Y)	3.575	Yes
Person Job Fit (M2) -> Job Satisfaction (Y)	2.676	Yes

Table 7. Specific Indirect Effects

Path	T Statistics	Significant
Information & Documentation (X1) -> Working Performance (M1) -> Job Satisfaction (Y)	1.518	No
Training (X2) -> Working Performance (M1) -> Job Satisfaction (Y)	0.543	No



<b>Mentorship (X3) -&gt; Working Performance (M1) -&gt; Job Satisfaction (Y)</b>	0.742	No
<b>Prior IT Knowledge &amp; Competencies (X4) -&gt; Working Performance (M1) -&gt; Job Satisfaction (Y)</b>	3.050	Yes
<b>Prior IT Knowledge &amp; Competencies (X4) -&gt; Person Job Fit (M2) -&gt; Job Satisfaction (Y)</b>	2.604	Yes

On the other hand, the specific indirect effects and total indirect effects can be seen in Table 7 and Table 8, respectively. It is discovered that only one variable has a significant indirect effect towards job satisfaction. Prior IT knowledge and competencies effect job satisfaction more through the mediating effect of working performance. Hence, to enhance the job satisfaction of non-ICT educated workers in ICT jobs, it is important to pay attention and promote their working performance through various means.

Table 8. Total Indirect Effects

Path	T Statistics	Significant
<b>Information &amp; Documentation (X1) -&gt; Job Satisfaction (Y)</b>	1.518	No
<b>Training (X2) -&gt; Job Satisfaction (Y)</b>	0.543	No
<b>Mentorship (X3) -&gt; Job Satisfaction (Y)</b>	0.742	No
<b>Prior IT Knowledge &amp; Competencies (X4) -&gt; Job Satisfaction (Y)</b>	5.470	Yes

Information and documentation help to improve the working performance of an individual. This is proven by total direct effects between information & documentation and working performance. User guides, manuals, modules, and other helpful information sources that are readily accessible and easy to use can aid non-ICT background workers in further understanding the technology, system, or application that is used for their job. Documentation is also important to retain

professionals' knowledge when they retire, move to other jobs, or leave the organization [33]. However, information and documentation itself do not significantly impact job satisfaction.

Training and mentorship are initially thought to be a factor that contributes to the overall job satisfaction and issues faced by the non-ICT workers in ICT jobs. Instead, the study results show otherwise. Training and mentorship do not have a significant impact on job satisfaction, let alone the working performance of the non-ICT worker. In general, employee training and development assists the organization and employees to reach various goals, such as improving morale, sense of security, employee engagement, and overall competencies necessary to perform a particular job [28]. However, in the case of ICT-based roles, it may not be the determining factor that shapes a person's job fit as well as their working performance – as it is observed from the research participants' responses that the will to learn is mostly internally driven.

It is observed that Prior IT Knowledge and Competencies have a significant impact on Job Satisfaction through their mediating variables – although the effect is greater through the mediating effect of working performance. The person's working performance is determined by their work efficiency, initiative, and willingness to learn from other's opinion [15]. As for person-job fit, it is the compatibility between the person and their job performed at their workplace [16]. This proves that the educational background – which shapes the prior IT knowledge and competencies of the participants – does impact the person's job satisfaction in ICT jobs. Compared to other studies, such as one by Fadilah [6], this finding is consistent even for other areas of work. Also, it influences the person's self-assessment on how well they fit their job. The more they feel that they suited for the ICT-based job, the higher they feel satisfied with their ICT-based job.

In this study, working performance and person job fit are proven to affect job satisfaction greatly. Rajper et al. [16] found that person job fit has a positive affect towards employee job performance. This study shows that the combination of these two factors have a positive significant impact towards job satisfaction for non-ICT educated workers in ICT jobs. Compared to similar studies by Kim & Choi [7], this study shows a similar pattern in terms of the effect of job-mismatch. Educational

background and work mismatch in ICT-based roles do affect the performance and job satisfaction of employees, and this has not been researched in detail. Hence this study can be used as a steppingstone to discover more contributing factors to job satisfaction, performance, and fit in ICT-based jobs and roles – especially if the employees do not have matching education background, in which we have discovered that this is a real phenomenon.

Other issue-causing factors outside this study can be further explored, as the R-Square values of the mediating variables (working performance and person-job fit) and dependent variable (job satisfaction) is quite low. As seen in Table 9, the R-Square calculation result for Job Satisfaction is 0.368 - which indicates that 36.8% of the independent variables affect Job Satisfaction. Also, only 24,8% of factors contributing to working performance and 27,1% of factors contributing towards person-job fit is covered in this study. This shows that there is still a lot of undiscovered variables that affect job satisfaction in ICT-based roles or jobs.

Table 9. R-Square Calculation Results

Variable	R-square
Working performance (M1)	0.248
Person-Job Fit (M2)	0.271
Job satisfaction (Y)	0.368

In this study, 122 participants were managed to be gathered for data collection. However, this number could be increased in order to achieve more accurate results, and also to better represent the population of non-ICT educated workers in ICT jobs in Jakarta and Bandung. It is also rather surprising to find out that the lack of training and mentorship are found to not effect working performance nor job satisfaction. Based on the information gathered from the study's preliminary assessment, training and mentorship are some of the main facilities that the workers received to better prepare them for their role. Other studies that delve into the importance of training show that it impacts working performance [28], which contradicts the findings of this study. Nevertheless, it could be partly because of the sample size and various factors that affect the study's variables – which could be explored in future studies.

## 5. CONCLUSION

This study contributes to the exploration of widely discussed worker-related topics, such as job satisfaction, working performance and person-job fit, in a very specific area that is seldom covered: ICT in Indonesia. Especially in the era of intense digitalization in Indonesia, the do-er of the ever-developing technologies used today is equally important as the technology itself. As it is impossible to develop, implement, and run in various business processes without them. Aside from being well-equipped to the job, it is also important that they are satisfied with what they do – hence enabling them to perform even better in ICT job roles.

This study also contributes to the current knowledge regarding various workplace psychology elements and its connection to knowledge management in the workplace. Various studies have shown that job satisfaction, working performance and person-job fit are inter-related – but not to the extent of knowledge management factors that may impact these variables. By knowing more about the “small” root causes that may deter one's job satisfaction and overall performance in work, we can better prepare practical strategies to ensure that these causes do not impact the workers and the company in any negative way.

It is found that only prior IT knowledge and competencies contribute to job satisfaction, which is mediated through working performance and person-job fit. It is also confirmed that person-job fit and working performance are influential towards the workers' job satisfaction. Although information and documentation are also impactful towards working performance, it does not promote job satisfaction. Additionally, it is found that training and mentorship do not significantly impact job satisfaction through working performance and job satisfaction. Hence, to improve the job satisfaction of non-ICT educated workers in ICT jobs, it is wise to invest in activities and programs that promote the improvement of a worker's working performance. Also, it is important to note that the person-job fit that is shaped from the prior knowledge and competencies received during their time in university plays a role in ensuring the happiness of non-ICT educated workers in ICT-based jobs.

This study also shows that there is potential in hiring non-ICT educated workforce in ICT-based

roles, but there is a catch – they should at least prepare the mandatory ICT skills and competencies to strengthen their working performance, as well as increase their job-fit perception. This in return will increase their overall job satisfaction and helps them to thrive in their ICT-based roles. Training and mentorship might help, but it is recommended to focus more on the preparation of the workers' prior ICT skills and competencies that they require – through ICT-related certifications and trainings during their study periods or incorporating basic ICT knowledge and skills in various degrees. Information and documentation are also beneficial for helping non-ICT workers expand their knowledge and skills.

However, the most important aspect comes from within the employees themselves. They must be *willing* to do their job well and perceive themselves as a good fit for their ICT-based role. This may be achieved by educating them through various means – workshops, seminars, even social media posts – about the vast technological advances, ICT job role potential, and ICT-related knowledge and competencies that may be extensively used for various industries.

## 6. LIMITATIONS & FUTURE STUDIES

This study is conducted on a general Jakarta and Bandung based population in terms of educational background and non-ICT role types. It is aimed to gain prior knowledge on this field of study – especially in Indonesia, as it has never been studied before. In future studies, studying a population of ICT workers with a specific non-ICT educational background would give more insight to other factors that contribute to their working experiences. More samples could be collected to give a more precise result – and perhaps more insight to additional factors that have not been accounted for in this study. Also, the scope of the companies where the non-ICT educated workers pursue their ICT jobs, in terms of employee number, is not limited in this study. This aspect may contribute to the practical actions that companies can take to ensure that their workers that are not ICT-educated can thrive better in ICT jobs. In short, there is still a lot of room for development in this topic – and requires a more comprehensive approach to enrich the findings of this study.

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