

Freelancer Competences: National Analysis Report

Indonesia

Version 4.1

Document details

| | |
|-----------------------------------|--|
| Project title | Fostering Entrepreneurship through Freelancing |
| Project acronym | ENTEEF |
| Project number | 2024-1-PL01-KA220-HED-000248152 |
| Project website | https://enteef.uek.krakow.pl/ |
| Project duration | 24 months, 01.11.2024 - 31.10.2026 |
| Project coordinator – institution | Krakow University of Economics 27 Rakowicka Street, 31-510 Kraków, Poland |
| Project coordinator – name | Grażyna Paliwoda-Pękosz paliwodg@uek.krakow.pl |
| Title of the report | Freelancer Competences: National Analysis Report - Indonesia |
| Work package | WP3: Research on freelancer competences |
| Activity | A2 - Data gathering and analysis Indonesia |
| Report leading institution | Universitas Islam Indonesia |
| Responsible persons | Ratih Dianingtyas Kurnia, Beni Suranto, Febrianti Nurul Hidayah |
| Version number | 4.1 |
| Status (Internal/Public) | Public |
| Date of release | 17.04.2026 |

Version history

| Version number | Date | Status (Internal/Public) | Description |
|----------------|------------|--------------------------|---|
| 1.0 | 22.01.2026 | Internal | The first section has been completed. |
| 2.0 | 12.02.2026 | Internal | Sections 2 and 3 have been completed. |
| 3.0 | 17.02.2026 | Internal | Sections 4 and 5 have been completed. |
| 4.0 | 20.02.2026 | Internal | Sections 6, 7, and Conclusions have been completed. |
| 4.1 | 17.04.2026 | Public | Final version after technical review. |

Contributors

Beni Suranto, Universitas Islam Indonesia

Febrianti Nurul Hidayah, Universitas Islam Indonesia

Ratih Dianingtyas Kurnia, Universitas Islam Indonesia

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Co-funded by the European Union. Views and opinions expressed are however those of the author or authors only and do not necessarily reflect those of the European Union or the Foundation for the Development of the Education System. Neither the European Union nor the entity providing the grant can be held responsible for them.

The quantitative analysis of the national datasets within the ENTEEF project was carried out by Florin Stoica (Lucian Blaga University of Sibiu), following a standardized methodological framework. This centralized approach ensured consistency, comparability, and methodological rigor across all participating countries.

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Introduction

Research on Freelancer Competences within the ENTEEF project. The report presents a quantitative overview of the freelance market in Indonesia, drawing on primary survey data collected from two key stakeholder groups: freelancers representing the supply side of the market and organizations or companies that engage freelancers representing the demand side. By integrating perspectives from both groups, the report aims to capture the structure, dynamics, and competence-related challenges of Indonesia's evolving freelance ecosystem. The overarching purpose of this report is to examine the alignment between freelancer competences and market expectations, as well as to identify areas where professional development and training interventions are needed. Specifically, the analysis seeks to address the following research questions:

- RQ1: What are the key competences (skills, knowledge, attitudes, and experience) required by freelancers across different sectors and countries?
- RQ2: How do freelancers and hiring companies perceive skill gaps and competence mismatches in the freelance economy?
- RQ3 (adapted for data analysis purposes): How can freelancers' training needs be identified and aligned with their professional development objectives?

All analyses presented in this report were conducted in accordance with the methodological framework developed under Activity 3.1 of WP3 and follow the standardized quantitative analysis procedures agreed upon for all national datasets within the ENTEEF project. This ensures methodological consistency and comparability across participating countries.

The report is organized into several thematic chapters. The first chapter outlines the socio-demographic and professional characteristics of the respondents, covering both freelancers and hiring organizations, based on descriptive statistical analysis.

Chapter 2 focuses on competence assessment, examining perceived importance and self-reported proficiency levels. Chapter 3 extends this analysis through cross-tabulations that explore relationships between competence importance, proficiency, and perceived gaps. In Chapter 4, differences in competence perceptions across respondent groups are examined using analysis of variance (ANOVA). Chapter 5 presents a detailed gap analysis based on paired sample t-tests, highlighting the most critical discrepancies between competence importance and actual proficiency as perceived by both freelancers and hiring companies in Indonesia. To further understand heterogeneity within the respondent population, Chapter 6 applies segmentation and profiling techniques, including k-means clustering and CHAID analysis, to identify distinct respondent groups based on seven key characteristics. Finally, Chapter 7 synthesizes the findings to identify priority training needs, which serve as a foundational input for the subsequent work package of the ENTEEF project, namely, the design and development of MOOCs tailored to the identified competence gaps. The report concludes with a summary of key findings and outlines directions for future research and implementation.

1 Descriptive Statistics:

Respondent Profiling

As part of the ENTEEF empirical study, information on freelance professionals operating in Indonesia was obtained through a web-based survey administered in late 2025. Participation was open to individuals actively engaged in freelance work, regardless of sector, provided that Indonesia constituted their primary country of work. Once the data collection phase was completed, the responses were subjected to quality control procedures, including verification of completeness, consistency checks, and the removal of unusable entries.

Following this selection process, 78 responses met all inclusion criteria and were therefore included in the final dataset. These observations form the empirical foundation for the Indonesian national analysis. The section that follows outlines the principal features of this respondent group, offering contextual insight into their demographic background and professional profiles, which is essential for interpreting the competence analyses presented in subsequent sections.

1.1 Freelancers

The gender composition of Indonesian freelancers participating in the survey shows a moderate predominance of male respondents. Figure 1 shows the gender distribution of Indonesian freelancers. More than half of the sample identifies as male (56.8%), indicating that freelance activities captured in this study remain slightly male-dominated. Female freelancers constitute a substantial proportion of the sample at 40.5%, reflecting a strong presence of women within Indonesia's freelance workforce. A small share of respondents (2.7%) chose not to disclose their gender, suggesting limited non-response on this variable.

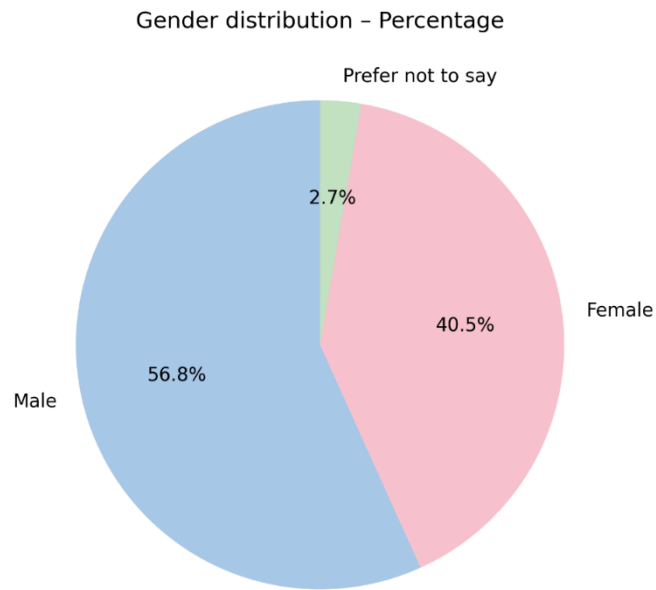


Figure 1. Gender Distribution of Indonesian freelancer.

Beyond gender differences, the demographic profile of Indonesian freelancers is further characterized by a strong concentration in younger age groups. The age profile of Indonesian freelancers in the sample is strongly concentrated in early and mid-career stages (Figure 2). The largest proportion of respondents falls within the 24–28 age group (44.6%), indicating that freelance work in Indonesia is particularly prevalent among young professionals who are in the initial phase of their careers. This is followed by freelancers aged 29–36 years (24.3%), suggesting continued engagement in freelance activities as individuals accumulate professional experience. A notable share of respondents is also found among those under 24 years of age (20.3%), highlighting the role of freelancing as an entry point to the labour market for younger individuals, including students and recent graduates. In contrast, participation declines markedly in older age brackets. Freelancers aged 37–44 years account for 8.1% of the sample, while respondents aged 45–60 and 60 years or above represent only marginal proportions (1.4% and 1.4%, respectively).

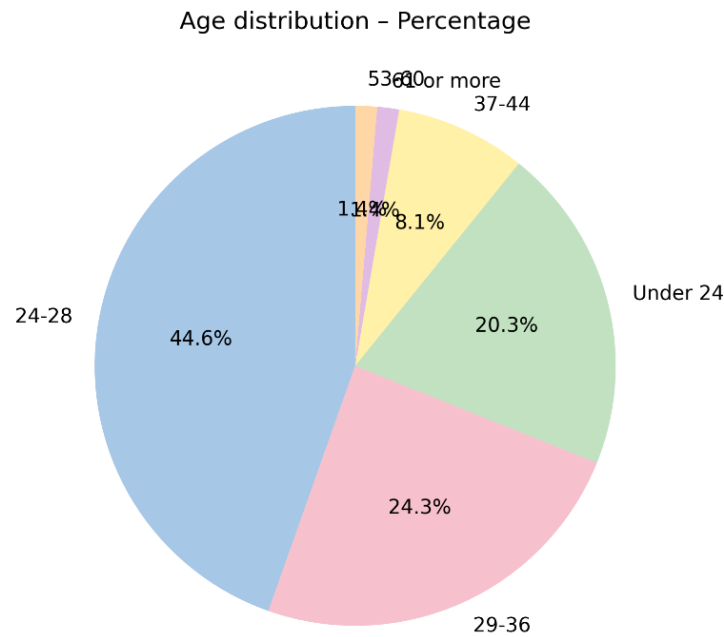


Figure 2. Age distribution of Indonesian freelancer.

The distribution of educational attainment among Indonesian freelancers shows a pronounced skew toward higher education degrees, as seen on Figure 3. This pattern suggests that freelancing in Indonesia is predominantly engaged by individuals with formal tertiary education, especially at the bachelor's level. The predominance of bachelor-level freelancers aligns with global patterns where higher education increases the capacity to engage in project-based and digital work (Knoblauch, 2022). The distribution of fields of study reveals a strong concentration in technology and applied disciplines (Figure 4). The most frequently reported educational background is in Information and Communication Technology (ICT), with 24 freelancers identifying this as their field. This is followed closely by Engineering and Management Construction (21) and Business, Administration & Law (10 respondents). Other fields such as Education (8) and Social Sciences & Journalism (7) are also represented, but to a lesser degree. The concentration in ICT and business-oriented fields supports findings that digital literacy and applied skills are significant predictors of freelance labour participation (Awais et al., n.d.; Bejaković & Mrnjavac, 2020). Digital literacy is directly linked to employability, as it encompasses the knowledge and skills necessary to navigate the digital economy. This is crucial for securing and maintaining employment, particularly in freelance and gig economy roles (Vrana, 2016; Hu et al.,

2025). Moreover, domains such as natural sciences, mathematics, humanities languages, and services have relatively smaller counts, while areas like agriculture/forestry/veterinary and self-taught/no formal training are marginal.

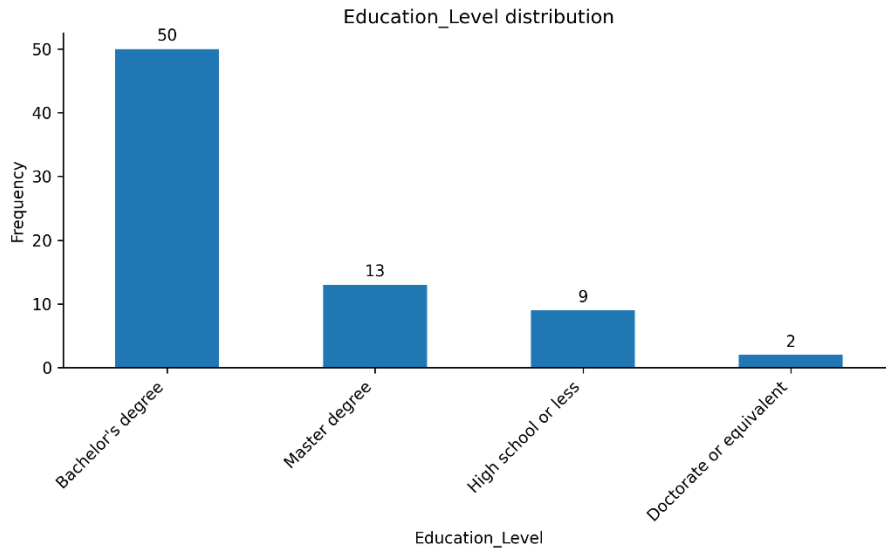


Figure 3. Education level of Indonesian freelancer.

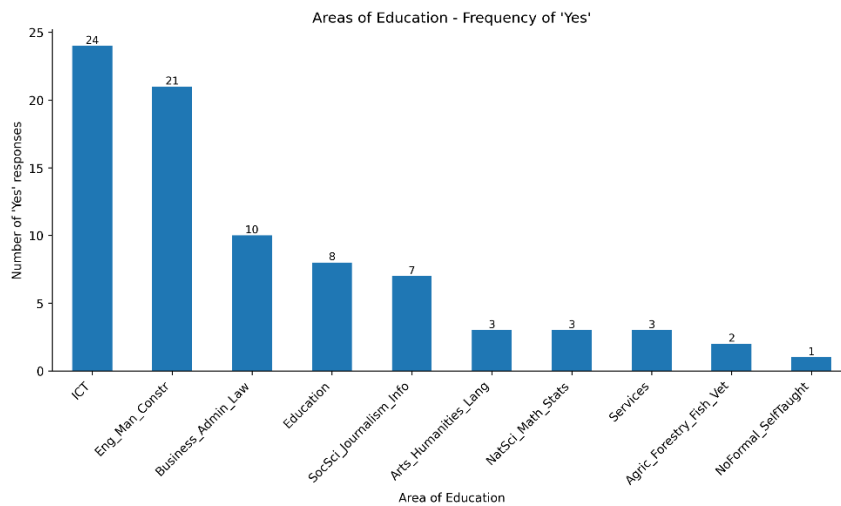


Figure 4. Areas of education of Indonesian freelancer.

Figure 5 presents the distribution of main freelance activities among Indonesian respondents, revealing that freelance work is largely concentrated in creative and multimedia services (28.4%), software development and IT (21.6%), and technical engineering (12.2%). This pattern highlights the dominance of digitally mediated and

skill-intensive activities, reflecting the broader transformation of freelance work toward knowledge-based and creative sectors. Similar trends have been observed globally, where creative and ICT-related services constitute the core of platform-based freelance markets due to rising digital demand and relatively low entry barriers (Endress, 2024; Duggan & Sulbout, 2025; Pulignano et al., 2025). The prominence of these sectors suggests that Indonesian freelancers are actively positioning themselves within globally competitive digital labour markets rather than relying on traditional, location-bound freelance roles. Building on the nature of freelance activities, Figure 6 shifts the focus from what freelancers do to how they engage with clients, as reflected in the number of clients served over the past 12 months. The distribution is highly skewed, with most freelancers serving a relatively small number of clients, while only a limited number manage large client portfolios. This pattern is consistent with existing research on online labour markets, which shows that freelance work is often characterized by irregular project flows and unequal access to clients, where a minority of highly visible or experienced freelancers capture a disproportionate share of opportunities (Kitching & Iskandarova, 2019; Oprins, 2025). When interpreted alongside Figure 5, this finding suggests that even in high-demand sectors such as IT and creative services, freelancers commonly operate with selective or episodic client engagement, rather than continuous high-volume contracting. While diverse channels facilitate the acquisition of freelance clients, sustaining a freelance career appears to require integrative methods that combine personal branding, hybrid skill sets, and long-term client engagement strategies. This study suggests freelancers to increasingly adopt multi-layered marketing strategies, including personal branding, platform diversification, and niche specialization, to cope with market competition and income instability in the gig economy (Anand, 2025; Janani et al., 2025).

Main Freelancer Activity - Percentage

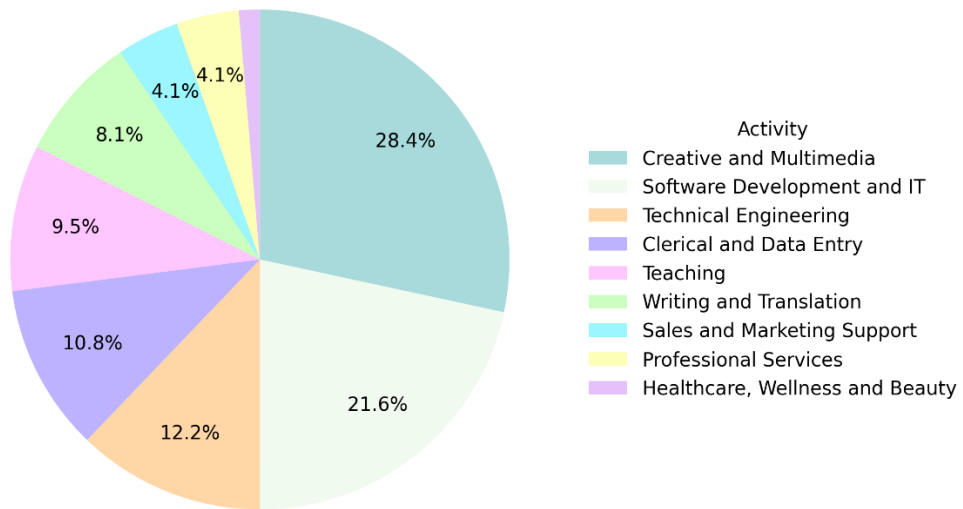


Figure 5. Distribution of main freelancer activity.

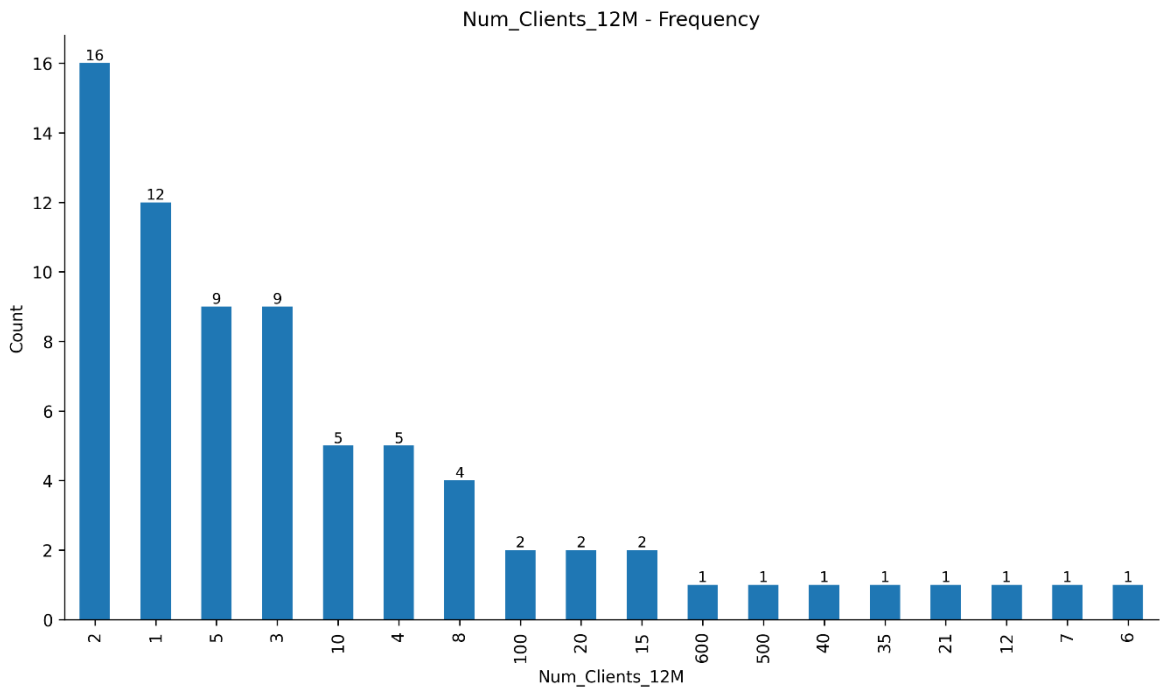


Figure 6. Number of clients handled by Indonesian freelancer in 12 months.

Extending this behavioural insight further, Figure 7 contextualizes client acquisition patterns by examining freelancers’ years of experience. The results indicate a strong concentration of respondents within the 1–5 year experience range (70.3%), with substantially fewer freelancers reporting longer professional trajectories. This

experience profile aligns with global evidence that freelancing is particularly attractive to individuals in early and mid-career stages, who value flexibility, skill development, and alternative career pathways (Blaising et al., 2021; Gussek & Wiesche, 2024). When read in conjunction with Figures 5 and 6, the dominance of relatively less-experienced freelancers helps explain the observed client distribution: freelancers who are still building reputations and networks are more likely to work with fewer clients and rely on short-term or project-based engagements. Together, these three figures depict an Indonesian freelance workforce that is digitally oriented, early-career dominated, and characterized by uneven client intensity, reflecting structural patterns widely documented in contemporary gig economy research.

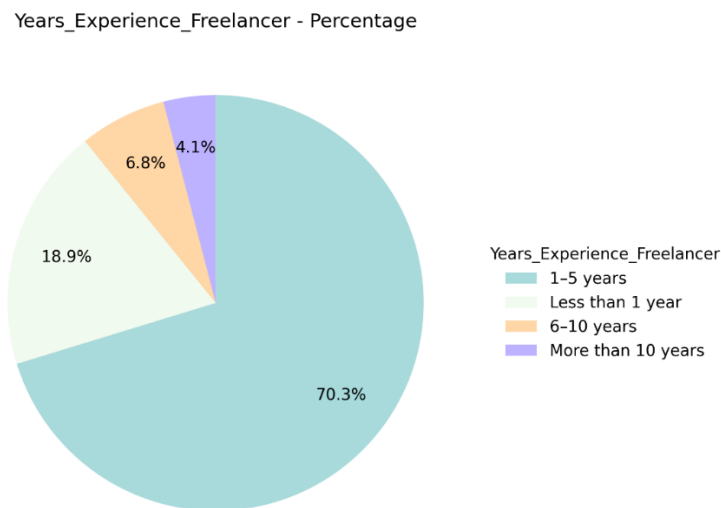


Figure 7. Years of experience of respondents.

The pie chart shown in Figure 8 indicates that Indonesian freelancers mainly find jobs through social networks (44.0%) and personal contacts (32.1%), showing that freelance work is still largely driven by relationships, trust, and informal connections. Recent studies support this finding, noting that social capital helps freelancers reduce uncertainty and access opportunities, especially in emerging economies where trust is a key factor in work arrangements (Athanassiou & Maznevski, 2015; Toth et al., 2020; Тюлюпо, 2021). Digital platforms contribute 11.0% of job acquisition and professional networking accounts for 7.3%. Meanwhile, agencies (3.7%) and personal websites (1.9%) play only minor roles, reflecting freelancers' preference for direct client relationships and the challenges of maintaining effective personal branding.

How freelancers find jobs - Percentage of 'Yes'

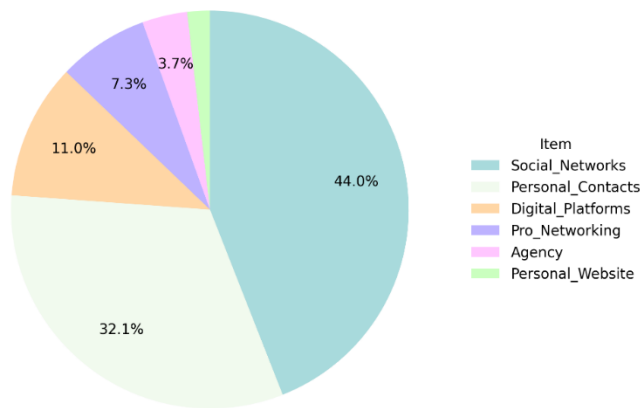


Figure 8. How freelancers find jobs.

Regarding the use of digital labour platforms specifically, the distribution appears relatively balanced among the main providers. Freelancer and Upwork each account for 30.4% of usage, positioning them as the most commonly utilized platforms among respondents. Fiverr follows with 26.1%, demonstrating a slightly lower but still significant presence. Other platforms collectively represent 13.0%, indicating some diversification beyond the dominant global marketplaces. This pattern suggests that Indonesian freelancers who engage with digital platforms tend to distribute their presence across several major services rather than relying exclusively on a single provider, possibly as a strategy to broaden market reach and increase exposure to potential clients (Mou & Faruk, 2024).

Digital labour platforms - Percentage of 'Yes'

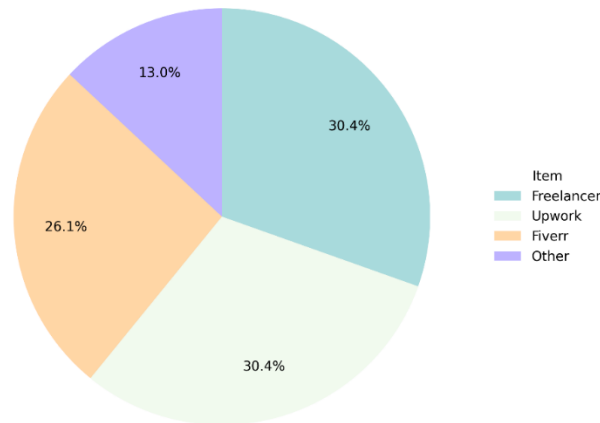


Figure 9. Digital labour platforms used by Indonesian freelancers.

Among freelancers who rely on social media to secure assignments, LinkedIn clearly stands out as the primary channel, accounting for 46.6% of responses (Figure 10). This suggests that respondents tend to position themselves within more professionally oriented networks when searching for clients. Facebook follows with 19.0%, indicating that more general social platforms still play a meaningful role in job discovery. Instagram represents 13.8%, reflecting the importance of visual presentation and portfolio-based exposure, particularly for creative work. TikTok contributes 12.1%, showing that short-form content platforms are also emerging as spaces for professional visibility. Smaller shares are attributed to other platforms (5.2%) and WhatsApp (3.4%), which appear to function more as supporting communication tools rather than primary channels for client acquisition. Overall, the structure is relevant with previous research stating that freelancers strategically combine professional and mainstream platforms to expand reach and visibility (Ahmad et al., 2025; Anand, 2025).

Social networks - Percentage of 'Yes'

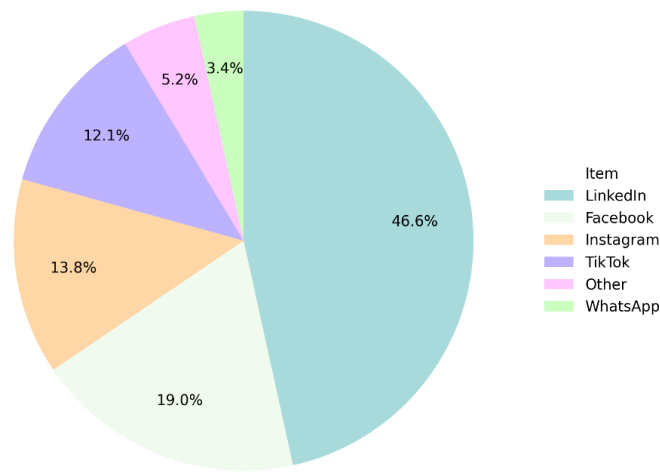


Figure 10. Popular social networks for job findings.

In terms of pricing strategies, the vast majority of Indonesian freelancers charge on a fixed-price basis per project, representing 85.1% of responses (Figure 11). This clearly demonstrates a preference for project-based agreements, which provide clarity on scope and payment before work begins. Hourly rates are used by 9.5% of respondents, while monthly arrangements, mixed methods, and unit-based pricing each account for only marginal proportions. The dominance of fixed pricing suggests that freelance engagements are typically structured around defined deliverables rather than long-term contractual relationships (Wang & Huang, 2022). Such an approach may also reflect client expectations on digital marketplaces, where project packages are commonly standardized and transparent (Ludwig et al., 2022).

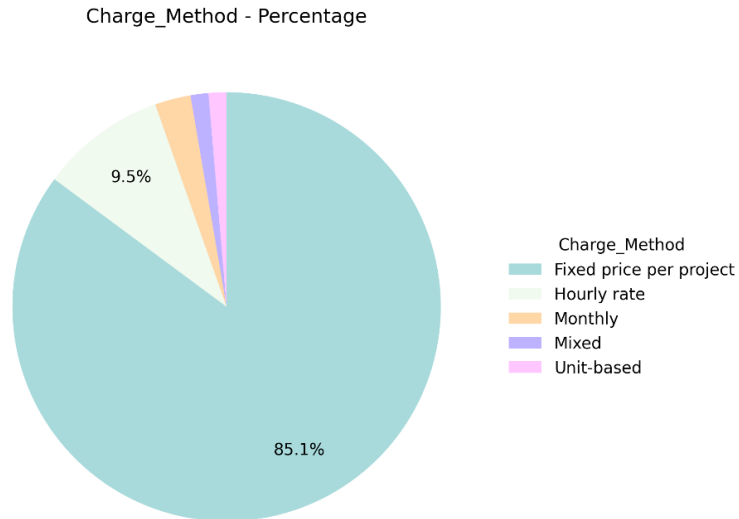


Figure 11. How freelancers charge for their works.

Looking ahead, respondents anticipate several challenges in sustaining their freelance careers. As seen on Figure 12, the most frequently mentioned concern is market change and shifting demand (23.7%), indicating sensitivity to fluctuations in client needs and industry trends. The difficulty of maintaining consistent income follows at 19.3%, confirming that income stability remains a central issue in freelance work. The need to continuously upgrade skills and adapt to new trends accounts for 17.9%, while evolving customer expectations and contractual conditions represent 15.0%. Maintaining resilience and self-discipline is cited by 14.5% of freelancers, highlighting the personal dimension of independent work. Project complexity (7.7%) appears as a secondary concern, while competition, automation, and regulatory or economic factors represent only minor shares. These findings show that perceived risks are largely connected to market dynamics and professional adaptability rather than institutional constraints.

Future challenges - Percentage of 'Yes'

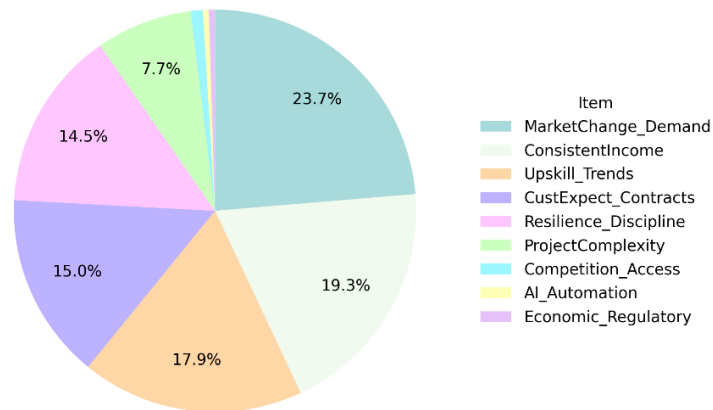


Figure 12. Future challenges of the freelance market.

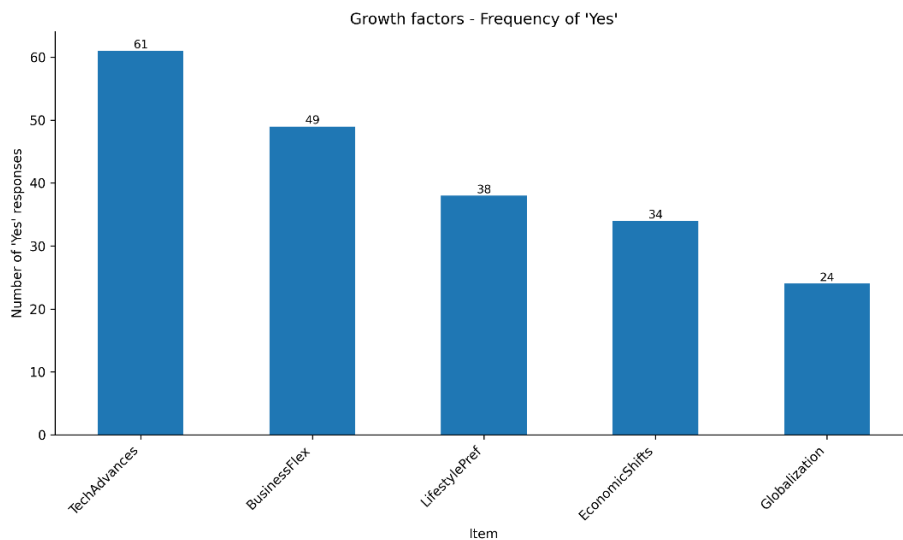


Figure 13. Growth factors of freelancers.

Figure 13 presents the key drivers behind the expansion of freelancing in Indonesia. Technological advances appear as the most influential factor, with 61 respondents identifying them as a primary driver. This highlights the central role of digital tools, remote collaboration platforms, and automation in enabling individuals to offer services independently. Business flexibility follows with 49 responses, suggesting that both companies and workers value more adaptable forms of engagement compared to traditional employment structures. Lifestyle preferences rank third (38 responses), indicating that autonomy, work–life balance, and location independence are significant motivations for choosing freelance careers. Economic shifts are also recognized as an

important factor (34 responses), reflecting how changes in labour markets and employment stability encourage alternative work arrangements (Mas & Pallais, 2020). Globalization, although still relevant, receives comparatively fewer mentions (24 responses), implying that while access to international markets matters, domestic technological and organizational transformations are perceived as more immediate growth catalysts.

The outlook toward the future of freelancing remains generally positive. A combined 52.7% of respondents express optimism, with 35.1% being somewhat optimistic and 17.6% very optimistic. A substantial 33.8% adopt a neutral stance, suggesting cautious realism. Meanwhile, 12.2% report being somewhat pessimistic, and only a very small fraction express strong pessimism. Taken together, the results indicate that although freelancers recognize uncertainty and structural risks, most maintain confidence in the long-term viability of freelancing as a professional path (Blaising et al., 2021; Batra, 2023).

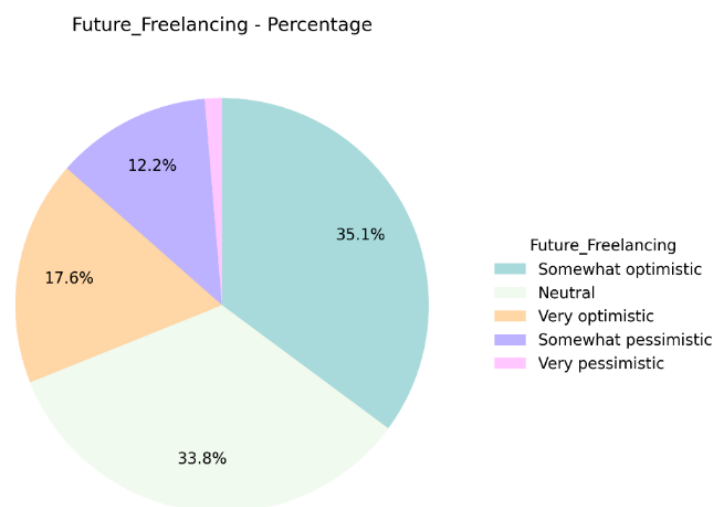


Figure 14. Freelancers’ thought of the future of freelancing.

The rapid diffusion of artificial intelligence tools has become an important element shaping the future of freelance work. In the Indonesian sample (Figure 15), the majority of freelancers indicate a high likelihood of integrating AI into their professional activities. Specifically, 35.1% report that they will often use AI tools in the future, while 32.4% state they will use them regularly. This means that more than two-

thirds of respondents anticipate consistent AI utilization in their workflow. An additional 20.3% expect to use AI occasionally, suggesting that only a minority perceive AI as peripheral to their work. Very few respondents indicate limited engagement, with 8.1% planning to use AI rarely and only 4.1% stating they will never use it. These results suggest that AI adoption is not viewed as optional but rather as an increasingly embedded component of freelance practice. The strong orientation toward AI integration reflects awareness that competitiveness in digital labour markets is closely linked to technological adaptability and productivity enhancement (Egala et al., 2025).

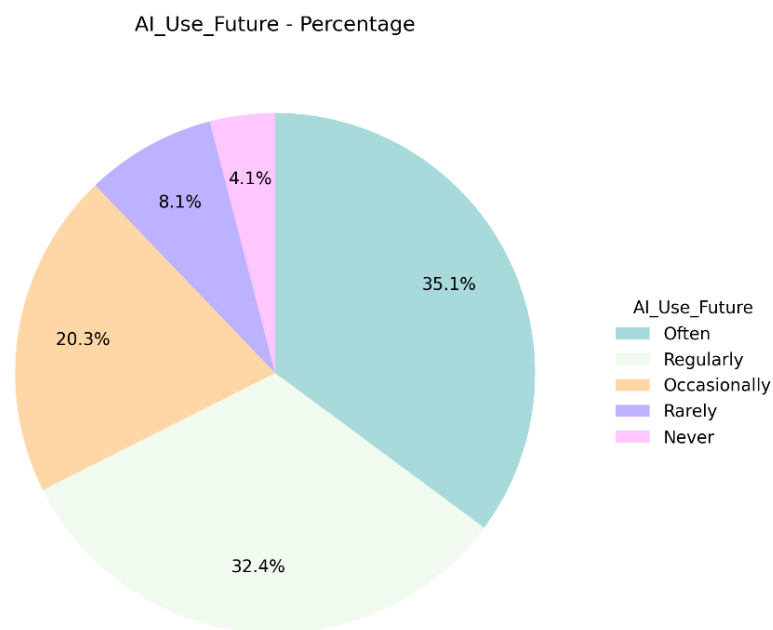


Figure 15. Opinion on the usage of AI in the future.

Concerning skill development practices (Figure 16), Indonesian freelancers demonstrate varied approaches to upskilling and reskilling. The largest share, 41.9%, report that they upgrade their skills occasionally, while 35.1% do so often. A further 12.2% engage in skill development regularly, indicating a smaller but committed group with structured learning habits. Meanwhile, 10.8% rarely invest in formal skill improvement activities. Overall, the data show that most freelancers recognize the necessity of continuous learning, although it is frequently conducted in flexible or informal ways rather than through systematic programs. The combination of high AI adoption expectations and ongoing skill development efforts suggests that Indonesian freelancers are aware of the dynamic nature of digital markets and acknowledge the

need to adjust their competencies in response to technological change and evolving client demands.

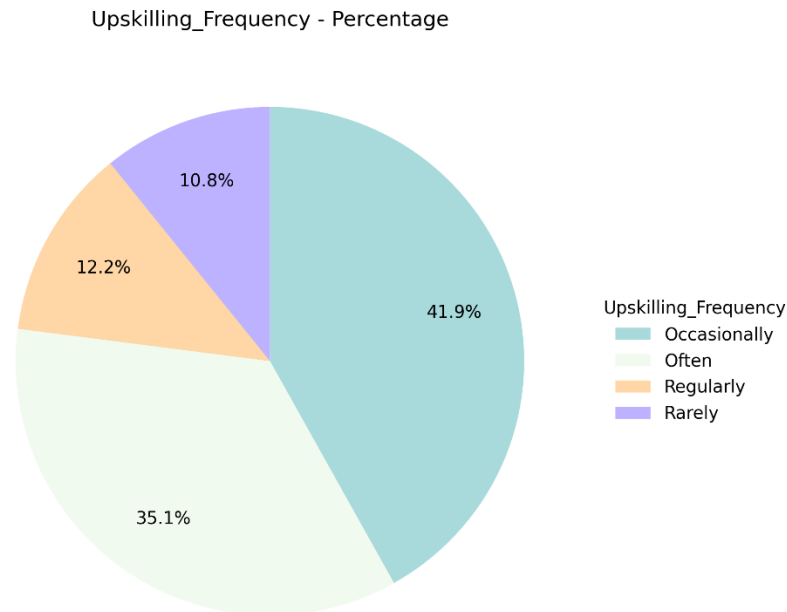


Figure 16. Opinion on how freelancers improve and or acquire new skills.

1.2 Companies

Indonesian companies have increasingly integrated freelancers into their workforce strategies, reflecting the rapid expansion of the gig economy and the broader digital transformation of business activities. The growing penetration of internet access and mobile technologies has enabled firms to connect more easily with independent professionals, creating a dynamic online gig ecosystem that supports flexible work arrangements. Digital platforms and specialized applications have further simplified the matching process between companies and freelancers, enhancing efficiency, visibility, and productivity on both sides. This shift is particularly evident in urban and service-oriented sectors, where businesses seek agile talent solutions to respond quickly to market changes and project-based demands (Taneja et al., 2016). As a result, the use of freelancers in Indonesia is no longer marginal but represents a structural adjustment toward more flexible, technology-driven employment models.

The distribution of the sample is as seen on Figure 17. In the Indonesian sample, the majority of surveyed companies operate in the ICT services sector, representing 62.5% of the total. This dominance reflects the digital orientation of freelance engagement, as ICT-related activities such as software development, digital marketing, system support, and content production are inherently project-based and easily modularized, making them suitable for outsourcing to independent professionals. The second largest group consists of companies engaged in wholesale and retail trade (25.0%), where freelancers are often involved in areas such as online marketing, e-commerce management, and creative services. The remaining 12.5% fall under other service activities, indicating that freelance utilization extends beyond purely technological fields but remains concentrated in digitally intensive sectors.

Main Area of Company Activity - Percentage

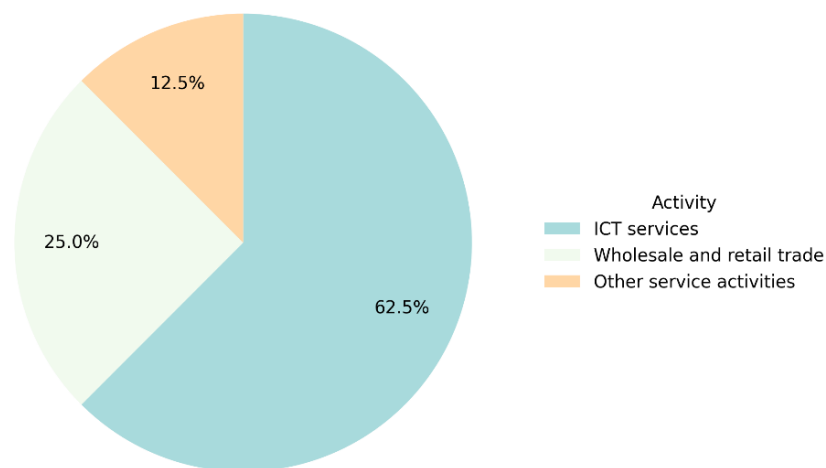


Figure 17. Main area of company activity.

Regarding business maturity, the distribution of years active in the market shows that most companies are relatively well established rather than newly created ventures. Several firms report operating for 8 to 10 years, while others indicate even longer experience, including 16 and 25 years in the market. A smaller number fall within the 7 to 9 year range. This pattern indicates that the use of freelancers in Indonesia is not limited to early-stage startups but is also adopted by more mature companies seeking flexibility and specialized expertise. The presence of long-

established firms among freelance users suggests that independent professionals are integrated into long-term business strategies (Lin, 2013).

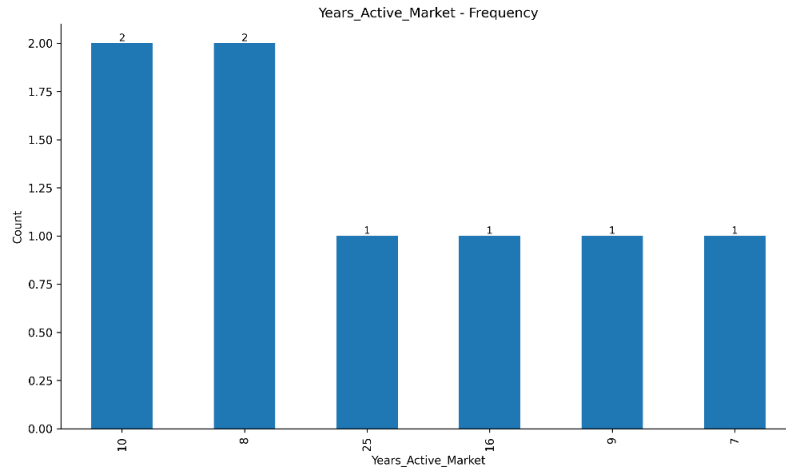


Figure 18. Distribution of the years active in the market.

The majority of Indonesian companies in the sample operate primarily on the local market, with 87.5% focusing on national-level activities (Figure 19). Only 12.5% report operating on a global scale. This distribution indicates that freelance engagement in Indonesia is largely driven by domestic business needs rather than international expansion strategies.

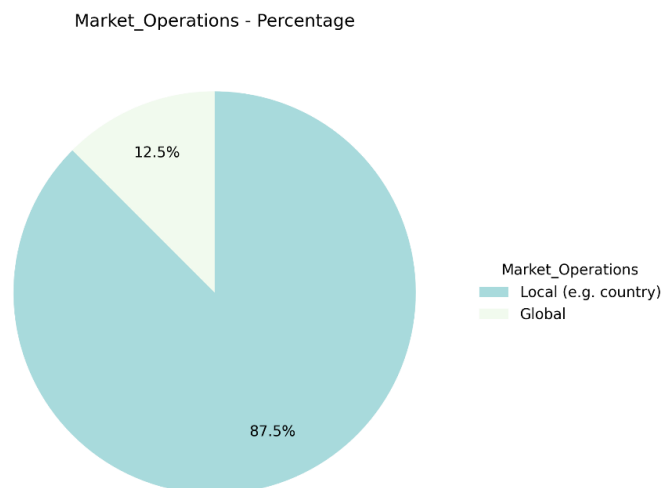


Figure 19. Distribution of market operations.

The strong local orientation suggests that companies rely on freelancers to strengthen competitiveness within the national market, enhance operational

flexibility, and access specialized expertise without expanding permanent staff (Putra & Rakhmawati, 2024). At the same time, the presence of firms operating globally, although limited, signals that freelancing also supports cross-border activities and digital service exports in certain cases (Santy et al., 2020; Yunus & Ananda, 2020; Siswoko & Kusumawati, 2024)

Figure 20 illustrates the duration for which companies have been hiring freelancers. The largest share (37.5%) have engaged freelancers for one year, indicating relatively recent adoption among a significant portion of firms. Meanwhile, 25.0% report three years of experience, and equal shares of 12.5% each indicate longer periods of engagement, including five, six, and nine years. This distribution shows that freelance utilization in Indonesia is not confined to newly experimenting firms but includes companies that have integrated freelancers into their operations over several years. The variation in hiring duration suggests a gradual diffusion of freelancing practices across the business sector. For instance, the media and technology sectors have seen significant integration of freelancers due to the need for specialized skills and flexible project-based work (Novianto, 2025). Additionally, the gig economy, including ride-hailing and delivery services, heavily relies on freelance labour (Hermawati et al., 2025).

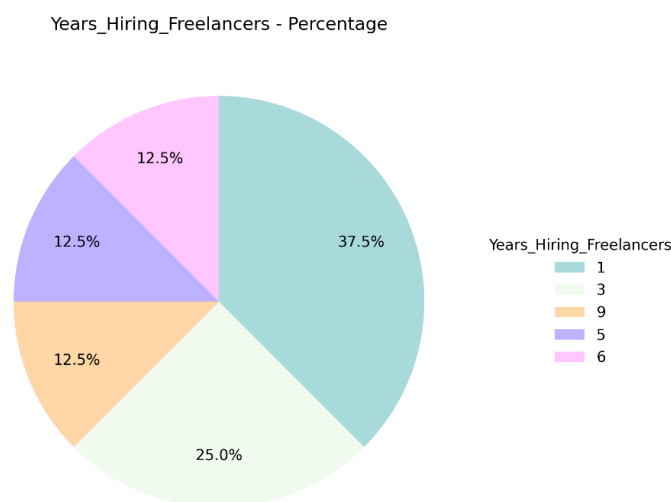


Figure 20. Years of active in the freelance market.

Figure 21 presents the types of freelance services most frequently used by Indonesian companies. Clerical and data entry services are the most commonly

requested (5 responses), followed by software and IT services (4 responses). Creative and media-related work ranks third (3 responses), while writing and translation services are mentioned by 2 companies. Professional services, sales and marketing, and technical engineering are each cited once. The distribution indicates that companies primarily rely on freelancers for operational and technical support tasks, particularly those that can be clearly defined and executed remotely. This suggests that freelancing is used both to handle routine administrative functions and to access digital or technology-oriented expertise when needed (Borovskikh & Kipervar, 2019).

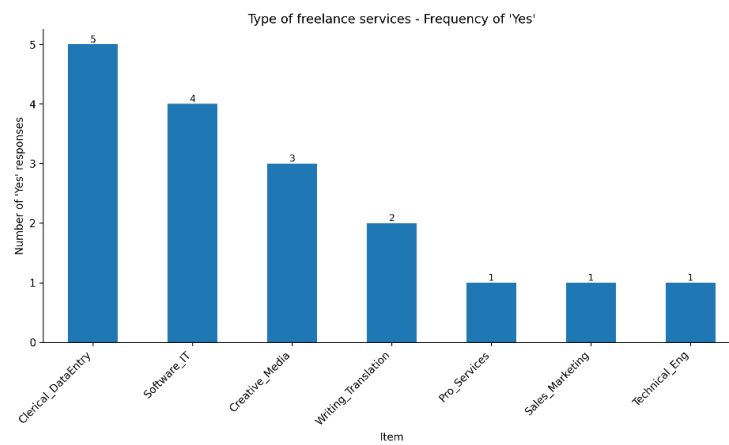


Figure 21. Type of freelancer services hired.

Cost efficiency emerges as the main motivation for hiring freelancers, accounting for 40.0% of responses (Figure 22). Flexibility follows closely at 35.0%, highlighting the importance of adaptable workforce arrangements in dynamic business environments. Access to specific skills and faster delivery are each reported by 10.0% of companies, indicating that while specialized expertise and speed are relevant, financial and operational considerations remain dominant drivers. Legal structure considerations represent the smallest share (5.0%).

Motivations for hiring freelancers - Percentage of 'Yes'

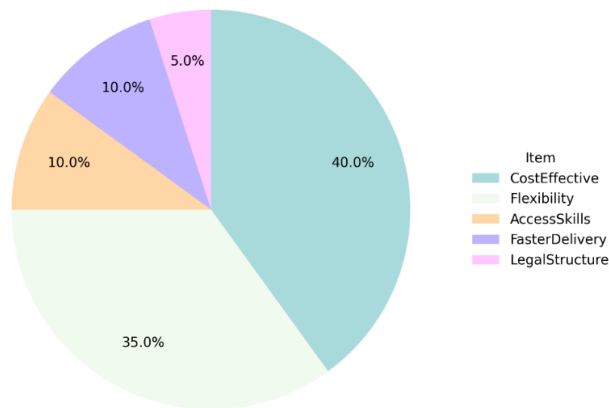


Figure 22. Motivation of companies for hiring freelancers.

However, reliance on freelancers is not without perceived risks, as illustrated in Figure 23. The most frequently cited concern is lack of control and transparency (22.7%). Several risks share similar weight (each 13.6%), including data leakage, project delays or unreliability, integration and communication challenges, quality issues requiring rework, and freelancer unavailability. Intellectual property concerns and payment disputes are mentioned less frequently (4.5% each). This pattern indicates that companies are particularly cautious about coordination and oversight when working with external professionals.

Risks of relying on freelancers - Percentage of 'Yes'

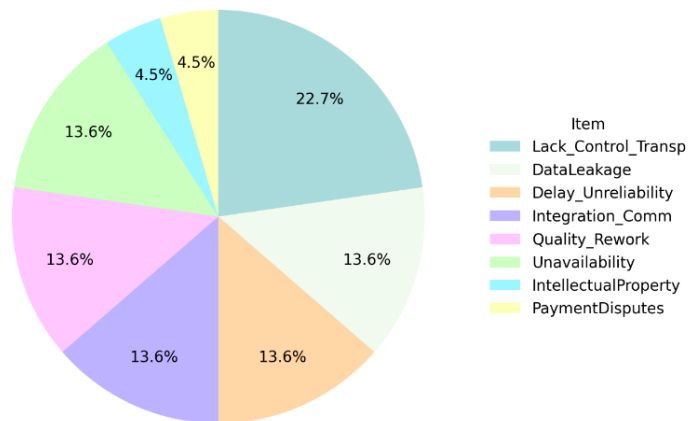


Figure 23. Major risks of relying on freelancers.

Looking ahead, the availability of skilled freelancers is identified as the most pressing issue (8 responses), followed by increased costs (6 responses) and changing freelancer expectations (5 responses), as seen on Figure 24. Concerns about new generation attitudes toward work-life balance are mentioned twice, while market changes and project complexity are each noted once. These results show that companies are more focused on operational continuity than on broader structural shifts. Short-term workforce availability appears to outweigh long-term systemic concerns. While long-term systemic concerns are critical for sustainable workforce planning, short-term workforce availability often outweighs these concerns due to immediate operational needs, economic pressures, and sector-specific challenges. This dynamic necessitates a balanced approach that addresses both short-term and long-term workforce requirements to ensure organizational resilience and efficiency (Li & Ni, 2009; Steenweg et al., 2021).

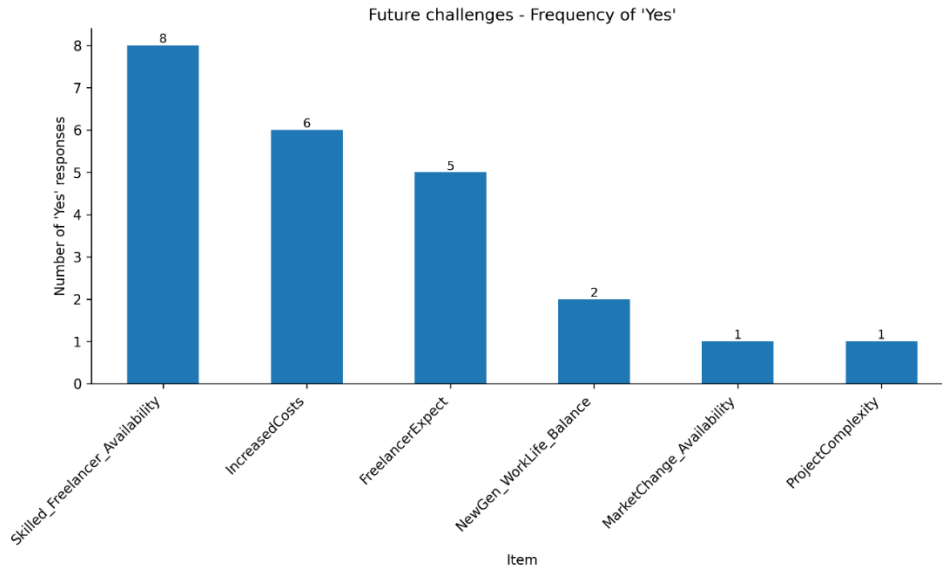


Figure 24. Most important challenges of hiring freelancers for the companies.

The potential influence of artificial intelligence on hiring practices is depicted in Figure 25. A majority of companies (62.5%) expect that AI will lead to hiring fewer freelancers. Meanwhile, 25.0% believe AI will have no significant effect, and 12.5% anticipate hiring more freelancers as a result of AI adoption. This distribution suggests that many firms view AI as a substitute for certain freelance tasks, particularly those that are repetitive or automation-friendly. At the same time, a smaller group perceives AI as complementary, potentially creating new opportunities that still require human expertise.

AI_Influence_Freelancer_Hiring - Percentage

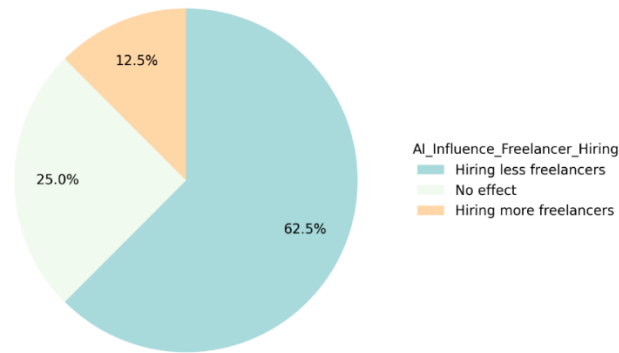


Figure 25. The influence of AI in hiring freelancers.

Furthermore, the broader perceptions of AI's impact on the freelancing market are shown on Figure 26. The most frequently mentioned effect is automation of routine tasks (3 responses). Neutral views, new service opportunities, and shrinking opportunities are each mentioned twice, reflecting mixed expectations regarding AI's long-term consequences. Increased demand for AI-related skills and faster delivery are each cited once. The overall picture reveals a balanced yet cautious outlook, while automation is recognized as inevitable, companies also acknowledge the possibility of new service areas emerging. The ultimate impact of AI appears uncertain and dependent on how both companies and freelancers adapt to technological change (Frank et al., 2019; Стребков, 2024).

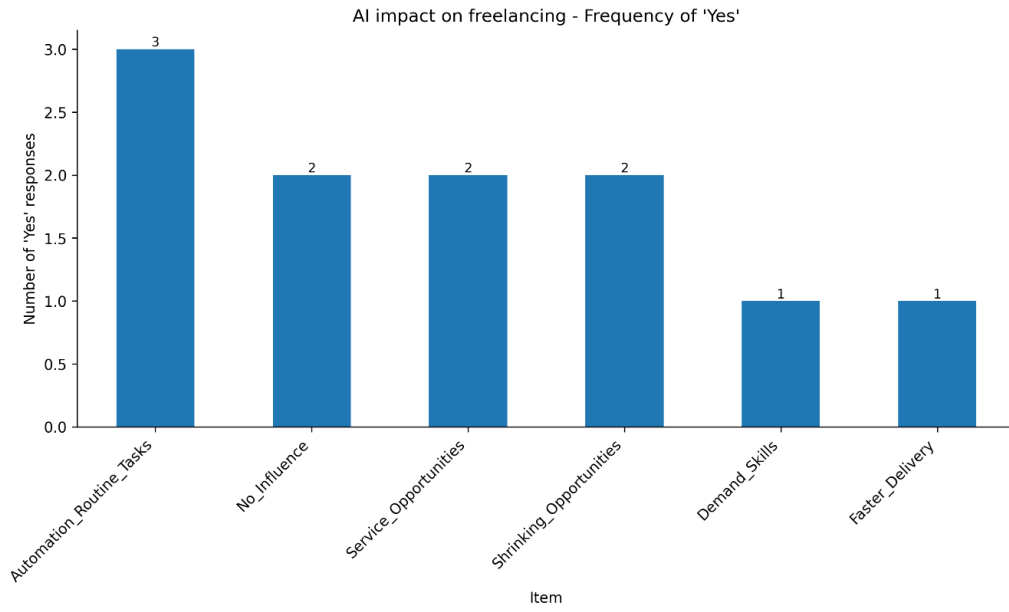


Figure 26. The use of AI technology and its influence on the freelancing market.

2 Competency Analysis:

Importance and Proficiency

2.1 Freelancers

This section explores how freelancers in Indonesia evaluate the significance of broad professional competences and how confident they feel about their own abilities in those areas. The emphasis is placed on cross-cutting skills that apply to various types of freelance work, rather than on technical or occupation-specific expertise. These competences influence how freelancers organize their work, communicate with clients, and adapt to changing market conditions. A total of 23 competences were identified and grouped into three categories: Personal Profile, Communication and Work in a Team, and Digital Literacy. The first includes self-organization, stress management, learning ability, problem solving, regulatory awareness, and personal financial management. The second covers communication clarity, assertiveness, teamwork, negotiation, prioritization, relationship management, and self-promotion. The third focuses on digital skills such as assessing online information, using cloud tools, operating on digital labour platforms, and applying AI tools.

In the Indonesian sample, freelancers evaluated each competence using a five-point scale for both perceived importance and self-assessed proficiency. Figure 27 presents the mean scores for importance and proficiency across all 23 competences, together with the calculated gap between them. Overall, all competences received relatively high importance ratings, generally above 4.0, indicating that freelancers consider this entire skill set relevant for career sustainability. The highest importance scores are observed for prioritization and task management, ability to identify and solve problems, clarity of expression, ability to learn quickly and expand knowledge, and ability to keep good business relationships.

When assessing their own proficiency, respondents rated themselves highest in cloud storage sharing, teamwork, business relationship management, use of search engines and social content platforms, and multicultural understanding. This indicates relatively strong confidence in collaborative and digital operational skills. However, the largest gaps between importance and proficiency appear in self-promotion and brand building, negotiation skills, personal finance management, knowledge of formal regulations, and dealing with uncertainty and stress. These areas show the greatest distance between what freelancers perceive as important and how competent they feel, making them priority domains for targeted training and professional development initiatives. In contrast, the smallest gaps are found in cloud storage use and teamwork, suggesting a closer alignment between expectations and self-confidence in these skills.

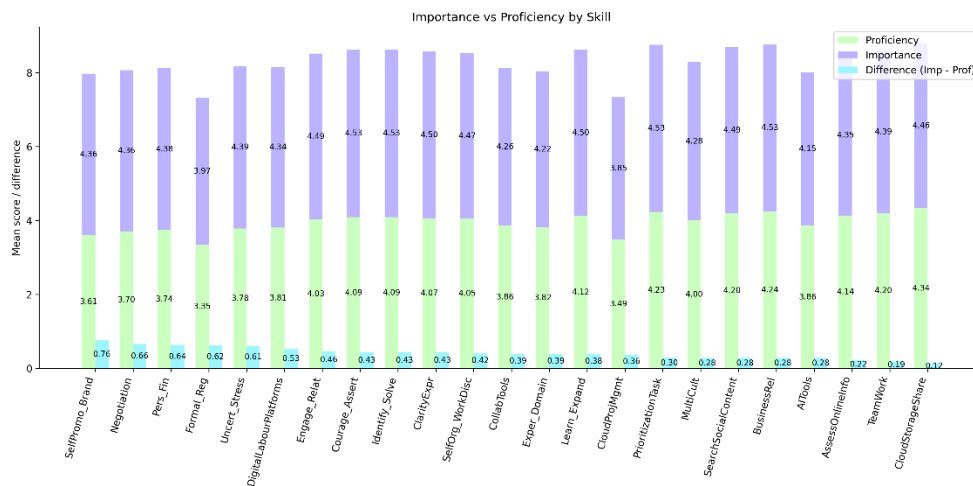


Figure 27. Importance vs Proficiency by skill.

Figure 28 further explores differences in perceived importance by gender. While the overall ranking of key competences remains broadly similar across male and female freelancers, some variations in intensity are observable. Female respondents tend to assign slightly higher importance to clarity of expression, ability to learn and expand knowledge, ability to identify and solve problems, and engagement in relationships. Male respondents show particularly high ratings for digital labour platform use, multicultural understanding, self-organization, and self-promotion. Despite these nuances, the general pattern indicates substantial overlap in the competence bundle considered essential for freelance success. The findings imply that

core professional and interpersonal skills are valued consistently across gender groups, with differences primarily reflecting the degree of confidence in specific skills rather than fundamentally different priorities. Both men and women recognize the importance of these skills for career success, and educational institutions play a crucial role in developing these competencies in students (Riggio, 2020; Papyrina et al., 2021).

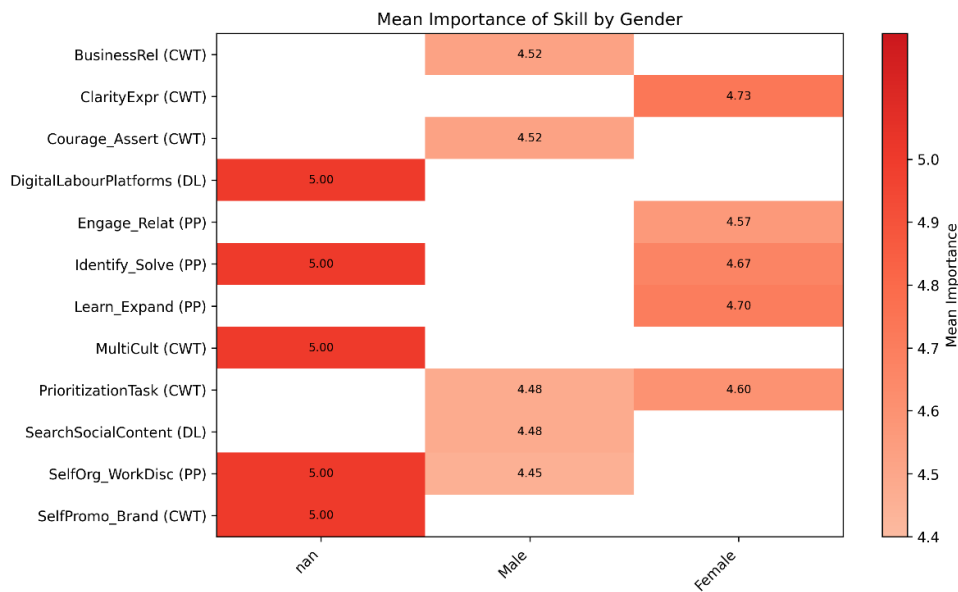


Figure 28. Important skills by gender.

Figure 29 provides a more nuanced view of how educational background shapes the perception of the five most important competences among Indonesian freelancers. Although there is substantial overlap across groups, the intensity and composition of priorities vary in meaningful ways.

For freelancers with a high school education or lower, the highest-rated competences concentrate on the use of search engines and social content platforms which receive particularly high mean scores (4.44). Bachelor level has particularly higher mean scores compared to high school education group. At the bachelor level, the emphasis shifts toward courage and assertiveness, ability to engage and maintain business relationships, and task management emerge among the most important competences. This indicates a stronger orientation toward proactive interaction with clients and collaborators. Bachelor-level freelancers seem to recognize that beyond technical execution, freelance success requires confident communication, structured

task management, and the ability to position oneself clearly in professional exchanges (DeMajistre, 2023; Luton, 2023).

For freelancers holding a master’s degree, the pattern becomes more analytical and reflective. This group appears to prioritize cognitive flexibility and critical evaluation skills (Gupta et al., 2020). The ability to filter information, adapt to new knowledge, and navigate complex or ambiguous situations becomes central, reflecting a more strategic approach to freelance work (Ismael, 2025). Furthermore, among those with doctoral or equivalent education, the highest possible ratings are assigned to business relationship management, problem solving, teamwork, and self-organization. The consistent maximum scores indicate a strong consensus within this group. Interestingly, even at the highest education level, core relational and organizational competences remain central. This suggests that advanced formal education does not reduce the perceived importance of foundational soft skills. Instead, it reinforces the idea that sustainable freelance careers depend on disciplined self-management combined with the ability to cultivate and maintain professional relationships.

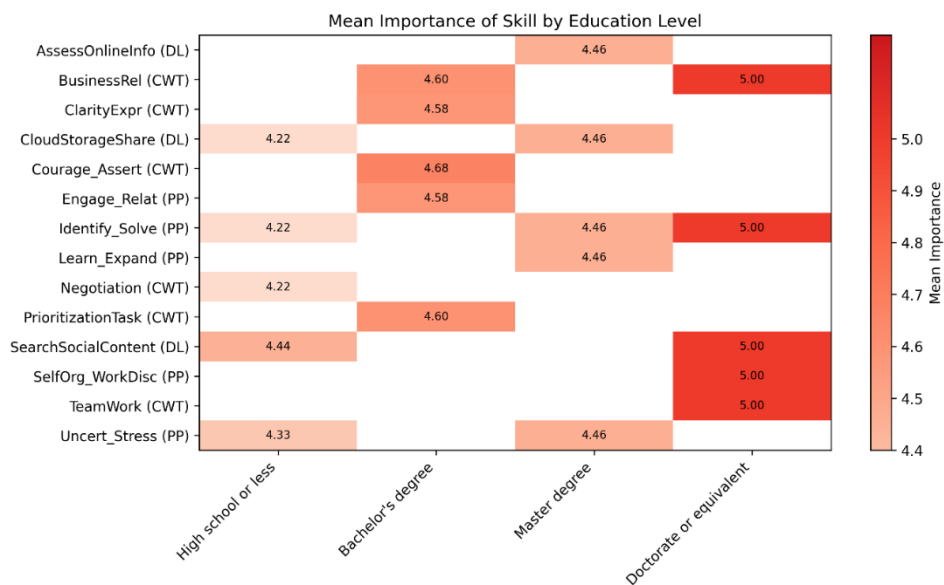


Figure 29. Important skills by education level.

Taken together, result shows that while all education groups value a similar core bundle of competences, differences emerge in emphasis. Interestingly, despite differences in formal education, all groups converge around a very similar core set of

competences. self-organization and work discipline, ability to identify and solve problems, business relationship management, teamwork, and the ability to learn and expand knowledge repeatedly appear among the top-rated skills across educational categories. This consistency suggests that, regardless of academic background, Indonesian freelancers recognize a common foundation for success that revolves around structured self-management, relational capability, and cognitive adaptability. In this sense, formal education does not fundamentally change which skills are valued, but it may influence how freelancers interpret their relative weight within the broader strategy of positioning and sustaining themselves in the freelance market. Freelancers with formal education may have a better understanding of how to strategically position themselves and leverage their skills to attract clients and secure contracts (Fu et al., 2022; Blyth et al., 2024).

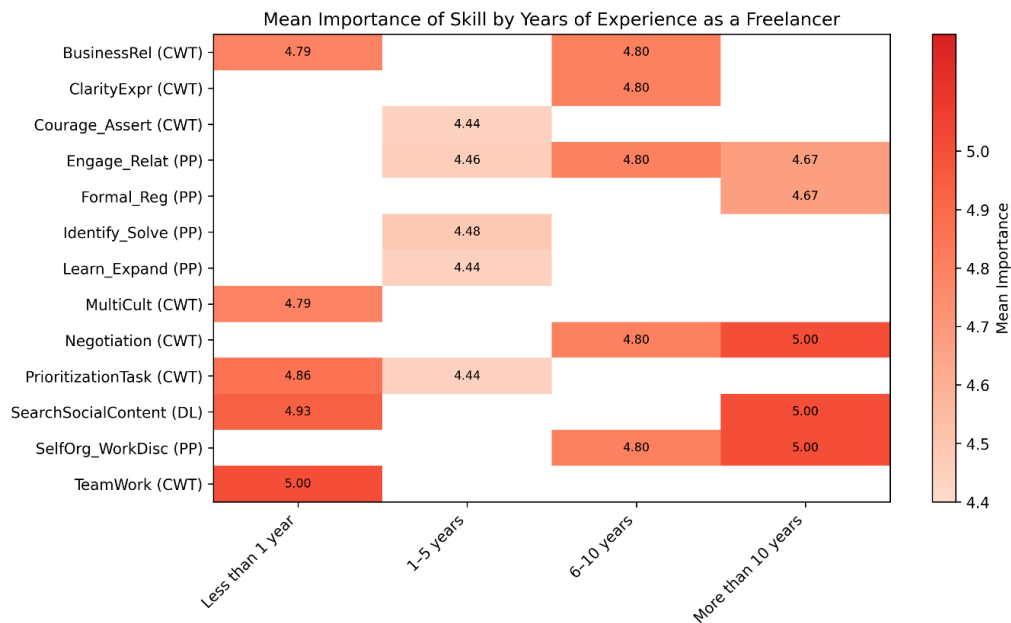


Figure 30. Important skills by years of experience.

Several similarities across experience groups can also be identified. Self-organization and work discipline and business relationship management consistently appear among the most important competences regardless of years spent in freelancing. This suggests that structured self-management and the ability to maintain professional relationships represent stable foundations of freelance work in Indonesia.

These skills are not dependent on career stage, but rather form a constant requirement throughout professional development. Differences, however, emerge in emphasis. As seen on Figure 30, freelancers with less than one year of experience assign very high importance to teamwork and use of search engines and social content platforms, indicating a strong orientation toward integration into digital ecosystems and collaborative environments at the entry stage. Those with one to five years of experience prioritize engagement in relationships, problem solving, and learning ability, reflecting a transition from operational adjustment toward strategic positioning. In the six to ten year group, negotiation skills, clarity of expression, and self-organization become particularly pronounced, pointing to the increasing relevance of strategic communication and client management. Among freelancers with more than ten years of experience, negotiation, search and social content usage, and self-organization reach the highest possible importance values. This pattern indicates that as freelance careers evolve, the strategic management of client relationships and market visibility becomes more critical than merely focusing on operational competences. Freelancers must adopt a multifaceted approach that includes personal branding, continuous learning, and strategic control mechanisms to thrive in the competitive gig economy (Ahmad et al., 2025; Anand, 2025)

Figure 31 presents the top five competences across different main freelancer activities. Considerable diversity can be observed, reflecting differences in market requirements across sectors. For example, sales and marketing support places maximum emphasis on negotiation and digital content and search skills, while software development and it highlights business relationship management, assertiveness, learning ability, and problem solving. Creative and multimedia freelancers strongly value clarity of expression and engagement in relationships, whereas clerical and data entry assigns high importance to cloud storage sharing, prioritization, and managing uncertainty. Despite this diversity, several competences demonstrate horizontal importance across domains. Self-organization and work discipline, problem solving, engagement in relationships, and digital engagement repeatedly appear among top-ranked skills in multiple sectors. This indicates that while technical requirements differ substantially across professions, the underlying

success factors in Indonesian freelancing remain largely generic, combining structured work habits, relational capacity, analytical thinking, and effective digital presence.

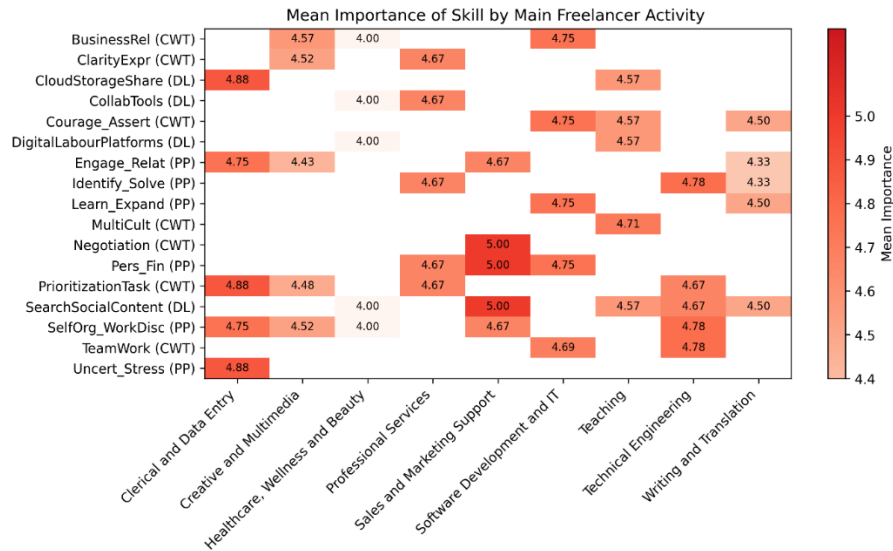


Figure 31. Important skills by main freelancer activity.

2.2 Companies

In addition to examining freelancers’ self-assessments, this study also explores how Indonesian hiring companies evaluate freelancer competences from the demand side perspective. Using the same 23 competences, company representatives were asked to rate both the importance of each skill for their business operations and the extent to which hired freelancers meet company expectations. This approach enables a direct comparison between what companies consider essential and how they perceive actual freelancer performance.

The evaluation was conducted using a five-point scale, where respondents assessed the importance of each competence ranging from 1 (not important) to 5 (extremely important), and the degree to which freelancers met company standards ranging from 1 (did not meet expectations at all) to 5 (fully met expectations). This analysis provides insight into potential mismatches between market expectations and delivered competences within the Indonesian freelance ecosystem.

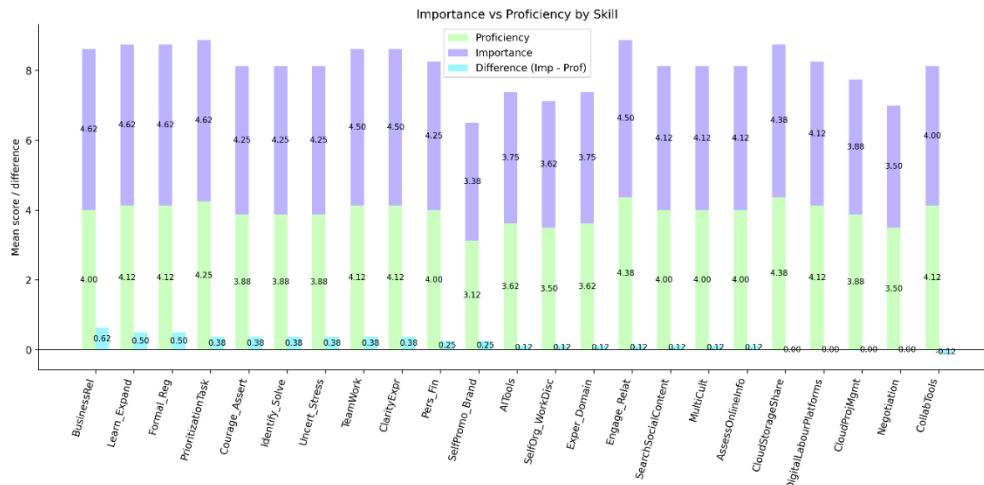


Figure 32. Importance vs Proficiency by Skill.

Based on the Indonesian company sample (Figure 32), hiring firms assign the highest importance to business relationship management, ability to learn and expand knowledge, knowledge of formal regulations, as well as prioritization and task management, all with mean values around 4.6. These are followed closely by teamwork, clarity of expression, and experience in the work domain. This pattern indicates that Indonesian companies place strong emphasis on relational reliability, continuous learning capacity, and structured work organization when selecting freelancers. Unlike the freelancers’ self-perspective, where communication and self-promotion gaps were more visible, companies appear to focus more on operational dependability and regulatory awareness. The highest variation in company responses is observed for personal finance management and self-promotion and brand building, suggesting that these competences are not uniformly perceived as strategically relevant from the demand side. In contrast, business relationship management and prioritization show relatively consistent ratings, reflecting broad agreement among firms about their importance.

When evaluating how well freelancers meet company standards, the highest proficiency scores are recorded for engagement in relationships and use of cloud storage systems, both reaching the top mean value of 4.38. They are followed by digital labour platform use, teamwork, and collaboration tools. This clearly indicates that companies perceive Indonesian freelancers as particularly strong in practical digital operations and collaborative interactions. In contrast, lower performance scores

appear for self-promotion, work discipline, and negotiation, suggesting that while freelancers are operationally competent, certain strategic and organizational aspects may require improvement. The largest gaps between importance and meeting standards are found in business relationship management, learning ability, knowledge of formal regulations, and prioritization and task management. These differences highlight areas where companies expect higher standards than currently delivered. On the other hand, the smallest or even negligible gaps are observed in digital labour platform use, cloud storage sharing, and negotiation, indicating closer alignment between expectations and actual performance in digital literacy-related competences.

Figure 33 further demonstrates that perceived importance varies across company sectors. ICT service firms attribute particularly high importance to business relationship management, learning ability, formal regulatory knowledge, and personal financial awareness. Companies in wholesale and retail trade emphasize engagement in relationships, cloud storage use, and learning ability as critical competences. In other service activities, communication clarity, prioritization, and teamwork receive relatively strong attention. Although sectoral differences exist, a common pattern emerges: relational competence, structured task management, and adaptive learning consistently appear as core requirements across industries.

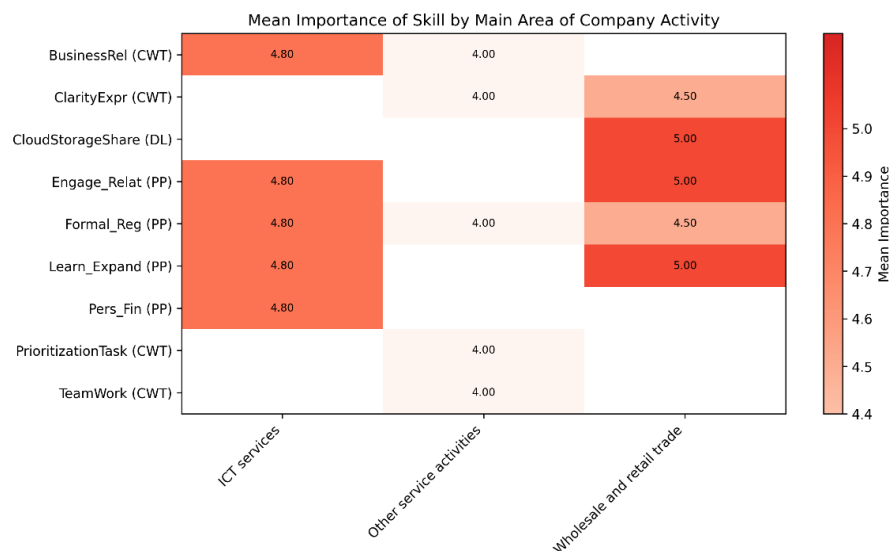


Figure 33. Importance of skill across different sectors of company activity.

This suggests that Indonesian companies, regardless of sector, expect freelancers to combine professional reliability with digital fluency and strong interpersonal capability. The core requirements ensure that freelancers can meet the demands of the modern labour market and remain competitive (Sjawie & Ardi, 2022; Ayuningtias, 2023; Siswoko & Kusumawati, 2024).

Figure 34 illustrates the most important competences across companies of different sizes in the Indonesian sample. A clear pattern emerges among micro enterprises (1–9 employees), where several competences reach the highest possible mean value. These include clarity of expression, multicultural understanding, prioritization and task management, use of search engines and social content platforms, and teamwork. This concentration of maximum scores suggests that micro firms, which typically operate with limited internal resources, rely heavily on freelancers who can communicate clearly, integrate smoothly into small teams, and actively contribute to digital visibility and market outreach. In such firms, freelancers are not merely task executors but functional extensions of the core team, which explains the emphasis on communication, adaptability, and digital engagement.

Small companies (10–49 employees) display a slightly different profile. The most critical competences for this group include learning and expanding knowledge (mean 5.00), cloud storage sharing, engagement in relationships, formal regulatory knowledge, and prioritization. Compared to micro firms, small enterprises appear to focus more on structured growth and compliance aspects. The strong emphasis on learning ability and regulatory awareness may reflect the increasing complexity of operations as firms scale. Freelancers are expected not only to deliver tasks but also to adapt quickly, align with formal procedures, and contribute to more organized workflows supported by digital tools.

Medium-sized companies (50–249 employees) show a narrower but still distinct set of priorities. Business relationship management, clarity of expression, formal regulatory knowledge, prioritization, and teamwork are rated highly, although with slightly lower mean values than in smaller firms. This pattern suggests that as organizational structures become more formalized, relational competence and integration into established systems gain importance. In medium firms, freelancers are

likely required to coordinate with multiple internal stakeholders, which increases the relevance of structured communication and teamwork.

Across all company sizes, certain competences demonstrate horizontal importance. Clarity of expression, prioritization and task management, and engagement in relationships appear repeatedly, indicating that these skills are universally valued regardless of organizational scale. At the same time, digital literacy competences such as cloud storage sharing and search and social content usage are more pronounced in micro and small firms, possibly reflecting their stronger reliance on digital channels for competitiveness. Overall, company size influences the intensity and configuration of required competences, but core relational and organizational skills remain central in the Indonesian freelance market.

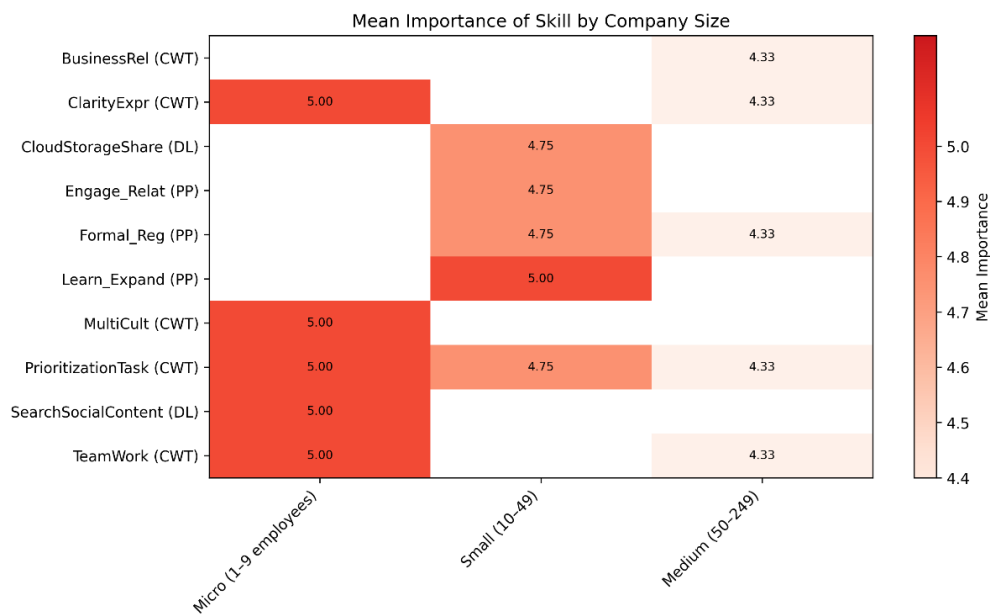


Figure 34. Importance of skills by the size of the company.

Figure 35 presents the most important competences according to the number of years companies have been active in the market. A clear pattern emerges among younger firms (7–9 years), where multiple competences receive the maximum importance score. For companies active for 7 years, Formal regulatory knowledge, Learning ability, Personal financial awareness, Prioritization, and Teamwork stand out as extremely important. Firms with 8 years of activity emphasize Assessing online

information, Cloud storage use, Multicultural understanding, Prioritization, and Teamwork. Companies with 9 years in the market assign top importance to Clarity of expression, Multicultural understanding, Prioritization, Search and social content usage, and Teamwork. This suggests that firms in their early and middle growth stages prioritize structured communication, regulatory compliance, digital fluency, and coordinated teamwork to stabilize and expand their operations.

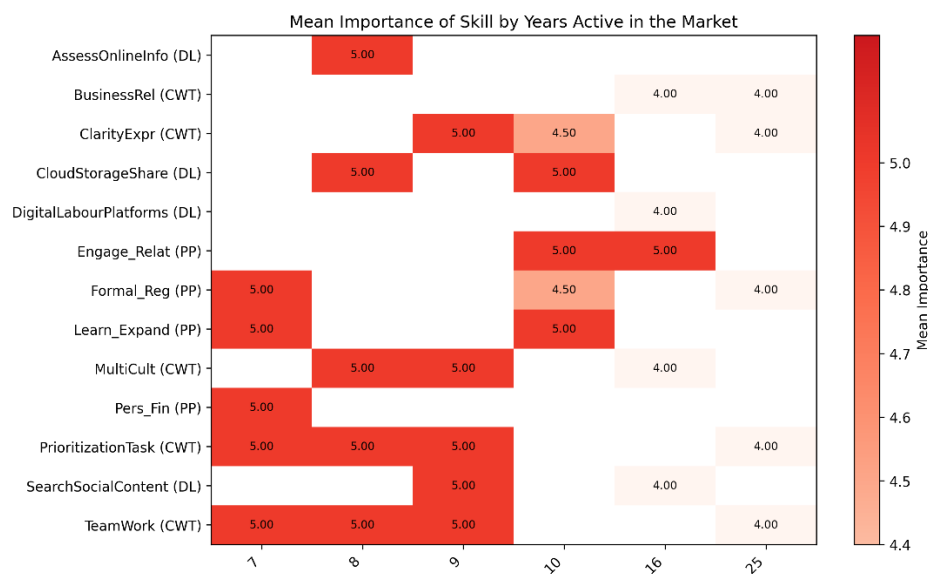


Figure 35. Importance of skill by years active of the company in the freelance market.

For companies with longer market presence (10, 16, and 25 years), the pattern becomes more selective and strategically oriented. At 10 years, Engagement in relationships and Learning ability reach maximum importance, indicating a stronger focus on relational sustainability and adaptive capacity. Firms active for 16 years highlight Engagement in relationships as particularly critical, while those with 25 years of market experience emphasize Clarity of expression, Multicultural competence, Prioritization, Search and social content usage, and Teamwork, though with slightly lower mean values compared to younger firms. Overall, companies with shorter market histories appear to attribute maximum importance to a broader range of competences, while more established firms demonstrate a more calibrated and focused assessment, concentrating on relationship management and structured communication as long-term strategic assets.

Figure 36 analyses competences based on the number of years companies have been hiring freelancers. Companies that have recently started hiring (1 year) place maximum importance on cloud storage use, engagement in relationships, and learning ability, reflecting the need for operational reliability and quick integration. Firms with three years of hiring experience emphasize engagement in relationships, formal regulatory knowledge, learning ability, personal financial awareness, and teamwork, suggesting growing expectations regarding professional responsibility and coordination.

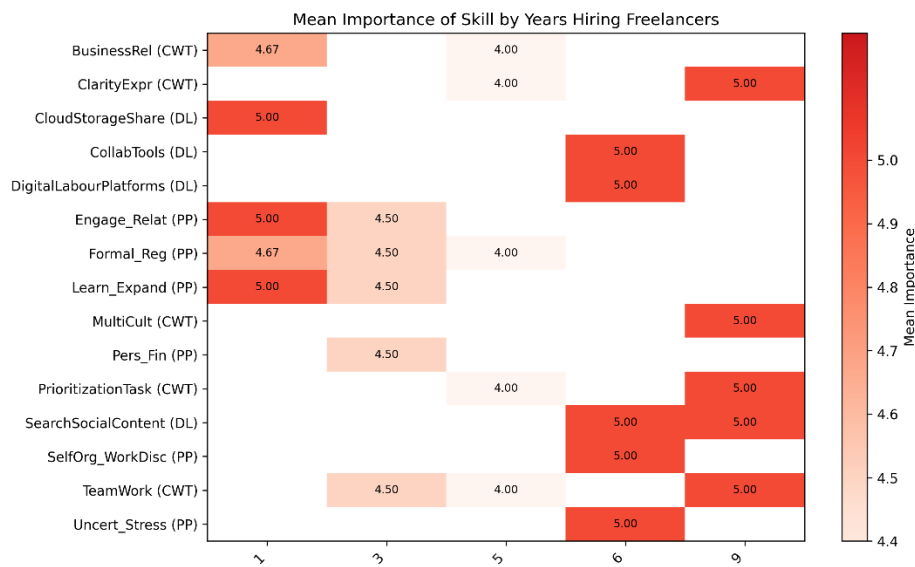


Figure 36. The importance of skill by years of hiring freelancers.

Companies with six years of hiring experience assign top importance to collaboration tools, digital labour platform use, search and social content usage, self-organization, and managing uncertainty. This indicates that firms with sustained experience in working with freelancers increasingly value digital coordination and resilience-related competences. Finally, companies with nine years of hiring experience emphasize clarity of expression, multicultural understanding, prioritization, search and social content usage, and teamwork, all receiving maximum importance. This group demonstrates a strong orientation toward structured communication and cross-context collaboration.

The findings from the Indonesian company sample are consistent with research showing that while digital literacy is a necessary foundation in freelance collaboration, it is not sufficient for long-term success. It is the transversal competences that play a more significant role in ensuring long-term success in freelance and flexible work arrangements (de Melo Bezerra et al., 2018; Graczyk-Kucharska et al., 2020). Companies place greater strategic value on communication clarity, relationship management, adaptability, and problem-solving, reflecting the growing importance of transversal competences in flexible and platform-mediated work arrangements (de Melo Bezerra et al., 2018; Graczyk-Kucharska et al., 2020; Phillips, 2023). Moreover, the identified gaps in self-organization, prioritization, and regulatory awareness resonate with studies emphasizing the managerial and self-regulatory demands of independent work (Nivet & Postaire, 2024; Van Fossen et al., 2025). This concludes that Indonesian evidence supports the broader argument that sustainable freelance performance depends on an integrated bundle of digital, cognitive, and relational competences rather than on technical expertise alone.

3 Cross-Tabulation Analysis of Competency Importance, Proficiency, and Gaps (χ^2 Tests)

3.1 Freelancers

This section presents the results of the Chi-square analyses conducted on the Indonesian freelancers' dataset, with the aim of identifying structurally meaningful associations between categorical determinants and competence gap profiles. The analysis is based on $N = 74$ valid responses, which permits inferential testing while requiring careful interpretation of effect magnitudes and distributional patterns.

Rather than reporting all statistically significant results, the analysis applies a dual filtering logic to distinguish substantively relevant relationships from marginal statistical effects. Specifically, only associations that satisfy both statistical and practical significance thresholds were retained. These include:

- statistically significant Chi-square test results ($p < 0.05$), and
- sufficiently strong associations between categorical variables, operationalized as Cramer's $V > 0.22$ for contingency tables with $df > 5$, in line with effect size benchmarks adjusted for degrees of freedom.

This approach ensures that the reported findings reflect not merely statistical detectability, but structurally meaningful differentiation within the Indonesian freelance ecosystem. The results meeting these criteria are summarized in Table 1, which presents the competence gap associations that demonstrate both statistical reliability and substantive strength.

| Categorical Variable | Competence Gap* Score Variable | χ^2 | df | p-value | Cramers' V | Effect Size |
|-----------------------------|--------------------------------|----------|----|---------|------------|-------------|
| Age | CWT_PrioritizationTask_gap | 78.58 | 10 | <0.001 | 0.69 | Strong |
| Age | CWT_SelfPromo_Brand_gap | 75.76 | 10 | <0.001 | 0.68 | Strong |
| Age | DL_DigitalLabourPlatforms_gap | 30.54 | 10 | <0.001 | 0.38 | Strong |
| Age | PP_Forma1_Reg_gap | 20.03 | 10 | 0.029 | 0.26 | Strong |
| Education_Level | CWT_SelfPromo_Brand_gap | 14.15 | 6 | 0.028 | 0.24 | Strong |
| Education_Level | PP_Engage_Relat_gap | 13.46 | 6 | 0.036 | 0.23 | Strong |
| Years_Experience_Freelancer | CWT_SelfPromo_Brand_gap | 25.69 | 6 | <0.001 | 0.37 | Strong |
| Years_Experience_Freelancer | CWT_PrioritizationTask_gap | 24.60 | 6 | <0.001 | 0.36 | Strong |
| Main_Freelancer_Activity | CWT_SelfPromo_Brand_gap | 35.85 | 16 | 0.003 | 0.37 | Strong |
| Main_Freelancer_Activity | CWT_PrioritizationTask_gap | 26.91 | 16 | 0.042 | 0.27 | Strong |
| Upskilling_Frequency | DL_CollabTools_gap | 16.25 | 6 | 0.012 | 0.27 | Strong |
| AI_Use_Future | CWT_SelfPromo_Brand_gap | 37.06 | 8 | <0.001 | 0.45 | Strong |
| AI_Use_Future | CWT_PrioritizationTask_gap | 31.75 | 8 | <0.001 | 0.41 | Strong |
| AI_Use_Future | PP_Forma1_Reg_gap | 16.42 | 8 | 0.037 | 0.24 | Strong |

*) Competence gap scores are computed for each competence C using the formula:
 Gap Score_c = (Importance Mean_c - Proficiency Mean_c) * Importance Mean_c

Table 1. Competence gaps (χ^2 statistics).

3.1.1 Age as a Structural Determinant of Competence Gaps among Indonesian Freelancers

Age emerges as the most structurally influential demographic variable in the Indonesian sample, demonstrating the strongest and most consistent associations with competence gap configurations. As shown in Table 1, Age exhibits the largest effect sizes across all categorical predictors, particularly in transversal competence domains.

Age × Task Prioritization Gap

The association between Age and the task prioritization competence gap is exceptionally strong ($\chi^2 = 78.58$, $df = 10$, $p < 0.001$, Cramer's $V = 0.69$). As illustrated in Figure 37, freelancers aged 53–60 are dramatically overrepresented in the Medium gap category (standardized residual = 8.49), indicating a highly concentrated deviation from expected frequencies.



Figure 37. Age × CWT_PrioritizationTask_gap – Standardized Residual Heatmap.

No other age group displays comparable residual magnitude. Younger cohorts (Under 24 and 24–28) show relatively balanced distributions across gap levels, while the 37–44 and 29–36 groups exhibit only minor deviations. This pattern suggests that late-career freelancers are structurally differentiated in the way importance–proficiency discrepancies manifest in task prioritization competencies.

Age × Self-Promotion and Branding Gap

A nearly identical structural configuration is observed for the self-promotion and branding competence gap ($\chi^2 = 75.76$, $df = 10$, $p < 0.001$, Cramer’s $V = 0.68$). Figure 38 again shows a pronounced overrepresentation of freelancers aged 53–60 in the Medium gap category (standardized residual = 8.49).

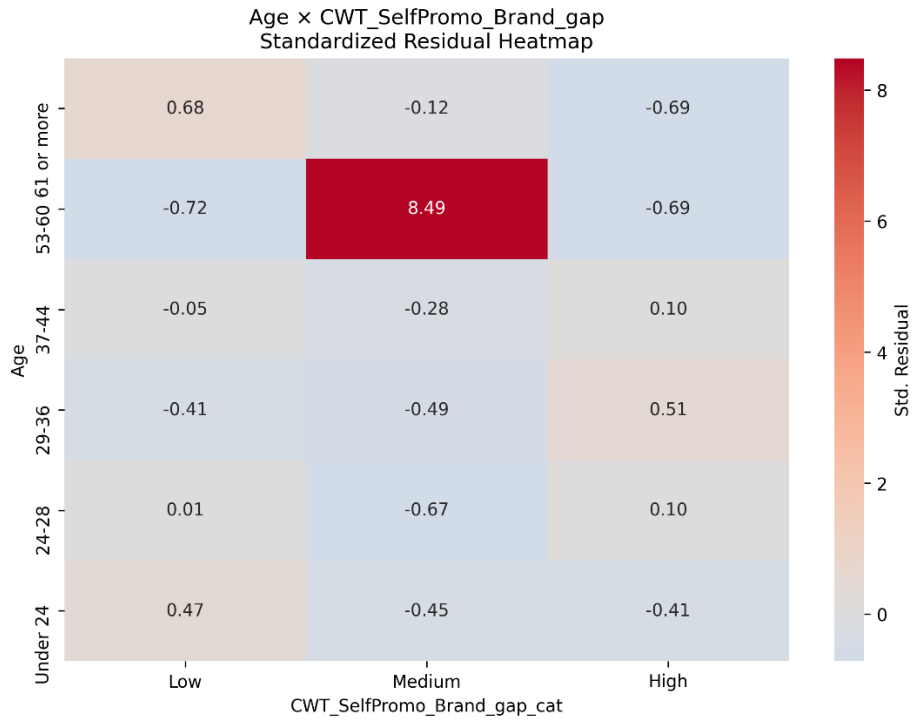


Figure 38. Age × DL_DigitalLabourPlatforms_gap – Standardized Residual Heatmap.

The replication of this pattern across two transversal competence domains indicates that age-related differentiation is not domain-specific but structurally embedded in cross-work competences. Other age groups show only moderate residual fluctuations, reinforcing the segmentation effect concentrated within the 53–60 cohort.

Age × Digital Labour Platforms Gap

Age is also significantly associated with the digital labour platforms competence gap ($\chi^2 = 30.54$, $df = 10$, $p < 0.001$, Cramer's $V = 0.38$), although with a more moderate effect size compared to transversal competences.

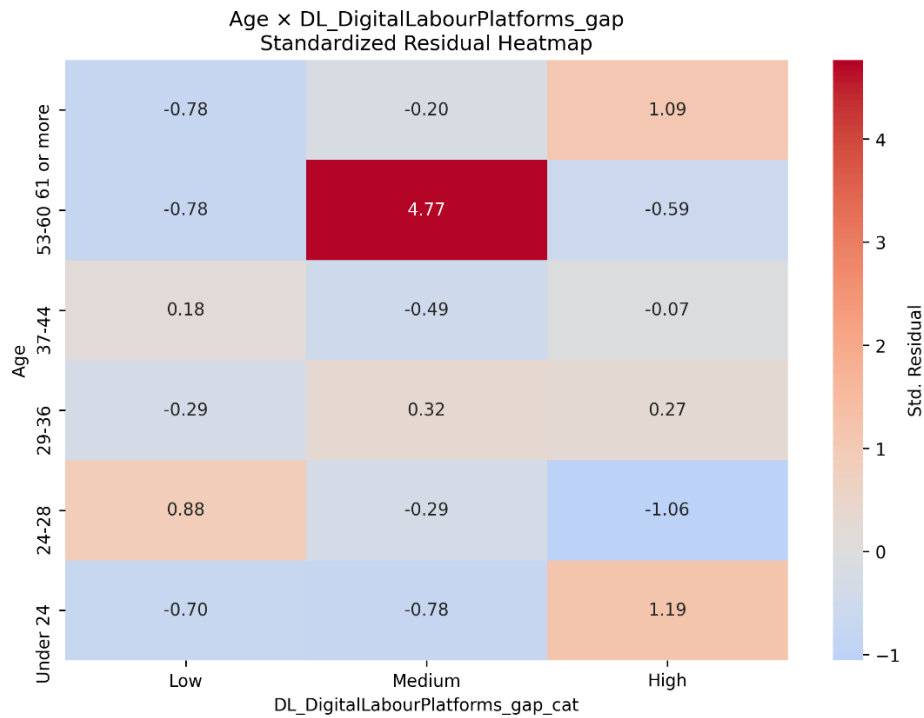


Figure 39. Age × DL_DigitalLabourPlatforms_gap – Standardized Residual Heatmap.

As depicted in Figure 39, freelancers aged 53–60 are again overrepresented in the Medium gap category (standardized residual = 4.77). In contrast, the Under 24 group shows a tendency toward High gaps (standardized residual = 1.19), suggesting generational differentiation in perceived discrepancies in digital platform competencies. Unlike the transversal domains, the residual magnitudes are smaller, indicating a weaker but still meaningful structural segmentation.

Age × Formal Regulation Gap

The association between Age and formal regulation competences is statistically significant but comparatively weaker ($\chi^2 = 20.03$, $df = 10$, $p = 0.029$, Cramer’s $V = 0.26$). As shown in Figure 40, freelancers aged 61 or more are overrepresented in the Medium gap category (standardized residual = 3.59), while the Under 24 group shows a tendency toward High gaps (standardized residual = 1.18).

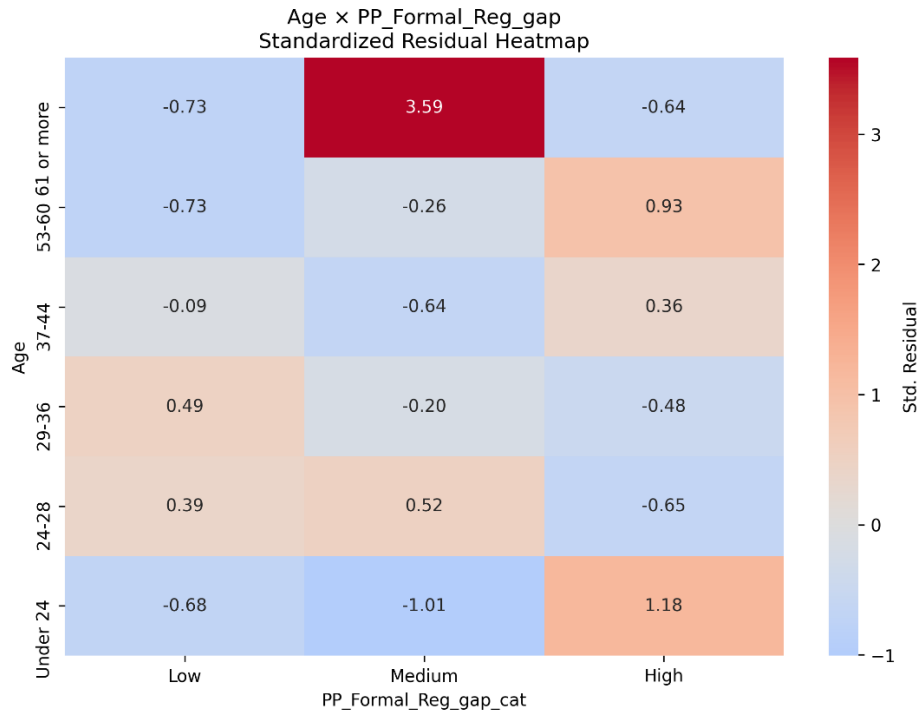


Figure 40. Age × PP_Formal_Reg_gap – Standardized Residual Heatmap.

The pattern suggests generational differences in regulatory competence perception, potentially reflecting both accumulated institutional experience among older freelancers and evolving regulatory awareness among younger cohorts.

Synthesis of Age Effects

Across all four domains, Age demonstrates systematic and non-random structuring of competence gap distributions. The strongest segmentation occurs in transversal competences (task prioritization and self-promotion), followed by digital labour platforms and formal regulation competences.

The magnitude of the observed Cramer’s V values (up to 0.69) indicates substantial differentiation across age cohorts. However, given the overall sample size (N = 74) and the concentration of large standardized residuals within specific cells (e.g., 8.49), these results should be interpreted with methodological caution, particularly regarding potential cell imbalance and sparse category effects.

Nonetheless, Age clearly functions as a structural differentiator within the Indonesian freelance ecosystem, shaping transversal and digital competence gap configurations more strongly than any other categorical variable examined.

3.1.2 Education Level as a Structural Determinant of Competence Gaps among Indonesian Freelancers

Education level functions as a structural differentiator of selected competence gap configurations within the Indonesian freelance sample, although with considerably weaker effect magnitudes compared to Age. As indicated in Table 2, statistically and practically significant associations are observed for transversal self-promotion competences and professional engagement competences.

Education Level × Self-Promotion and Branding Gap

The association between Education Level and the self-promotion and branding competence gap is statistically significant ($\chi^2 = 14.15$, $df = 6$, $p = 0.028$) and meets the practical significance threshold (Cramer’s $V = 0.24$), indicating a moderate structural effect.

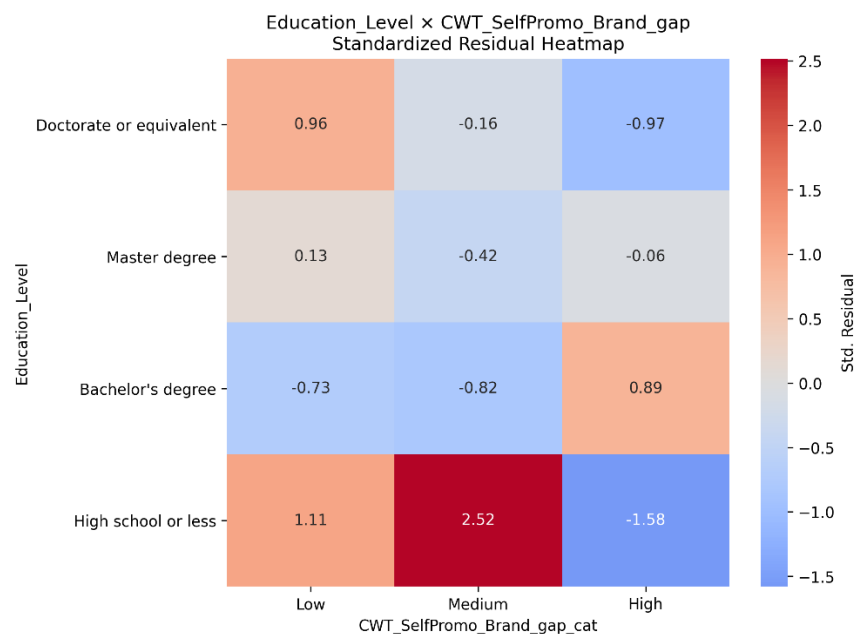


Figure 41. Education Level × CWT_SelfPromo_Brand_gap – Standardized Residual Heatmap.

As illustrated in Figure 41, freelancers with *High school or less* education are overrepresented in the Medium gap category (standardized residual = 2.52), while being underrepresented in the High gap category (standardized residual = -1.58). This suggests that this group predominantly experiences moderate discrepancies between

importance and proficiency in self-promotion competences, rather than extreme gaps. In contrast, freelancers holding a Bachelor's degree show a mild tendency toward High gaps (standardized residual = 0.89), while Doctorate-level respondents are slightly overrepresented in the Low gap category (standardized residual = 0.96). However, these deviations are comparatively modest and do not reach the magnitude observed in the High school or less category.

Overall, the pattern suggests that educational attainment shapes the distribution of perceived competence discrepancies in branding and self-promotion, but the differentiation is moderate rather than pronounced.

Education Level × Engagement and Relationship Management Gap

Education Level is also significantly associated with the competence gap in engagement and relationship management ($\chi^2 = 13.46$, $df = 6$, $p = 0.036$, Cramer's $V = 0.23$). Although the effect size is slightly lower than in the self-promotion domain, it still meets the predefined practical significance criterion.

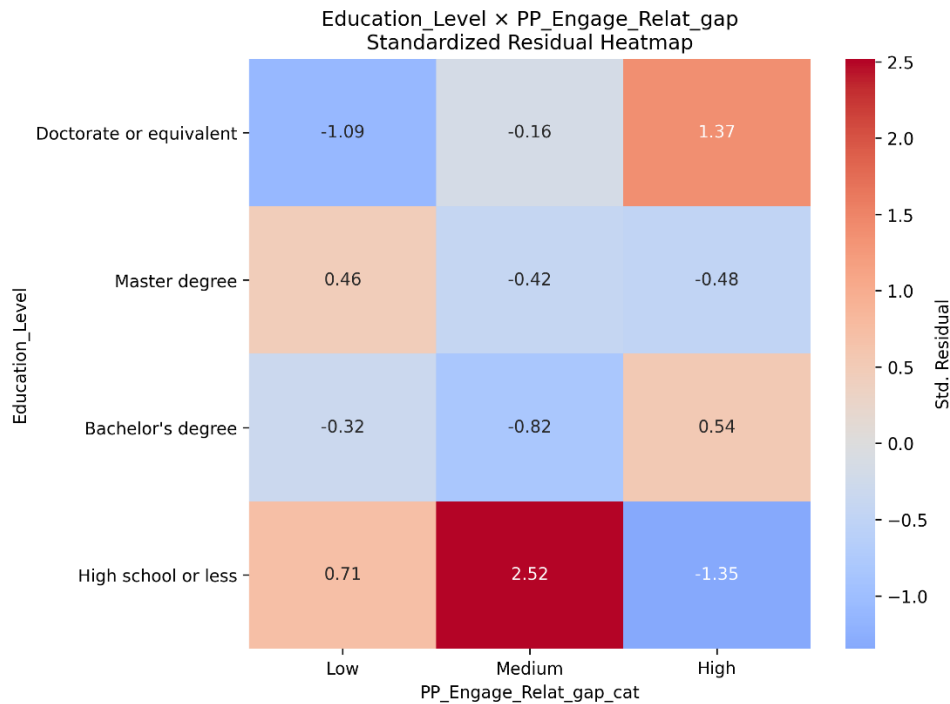


Figure 42. Education Level × PP_Engage_Relat_gap – Standardized Residual Heatmap.

As shown in Figure 42, freelancers with *High school or less* education are again overrepresented in the Medium gap category (standardized residual = 2.52) and underrepresented in the High gap category (standardized residual = -1.35). This mirrors the structural pattern observed in the transversal self-promotion competence.

Doctorate-level respondents display a mild overrepresentation in the High gap category (standardized residual = 1.37), suggesting a possible polarization effect at the highest education level; however, the residual magnitude remains moderate. Bachelor’s and Master’s degree holders exhibit relatively balanced distributions across gap categories, with no extreme deviations from expected frequencies.

Synthesis of Education Level Effects

Taken together, the findings indicate that Education Level contributes to differentiation in transversal and relational competences, but the magnitude of segmentation is considerably weaker than that observed for Age. The strongest deviations are concentrated among freelancers with lower formal education, who tend to cluster within Medium gap categories across both domains.

The moderate Cramer's V values (0.23–0.24) suggest that education influences competence gap perception, but does not fundamentally restructure the freelance competence landscape. Unlike Age, which demonstrates pronounced segmentation across multiple domains, Education Level produces more contained and domain-specific differentiation patterns.

Given the sample size ($N = 74$), these associations should be interpreted with appropriate caution; nevertheless, the consistent overrepresentation of lower-education freelancers in Medium gap categories indicates a structurally patterned, though moderate, educational effect within the Indonesian freelance ecosystem.

3.1.3 Years of freelance experience as a structural determinant of competence gaps among Indonesian freelancers

Years of freelance experience functions as a structural variable shaping transversal and digital competence gap configurations within the Indonesian freelance sample. While the magnitude of effects is lower than those observed for Age, experience demonstrates consistent differentiation patterns across transversal competences and digital collaboration domains, indicating a cumulative professional structuring effect.

Experience × Task Prioritization Gap

The association between freelance experience and the task prioritization competence gap is statistically significant and practically meaningful ($\chi^2 = 24.60$, $df = 6$, $p < 0.001$, Cramer's $V = 0.36$), indicating a moderate structural effect.

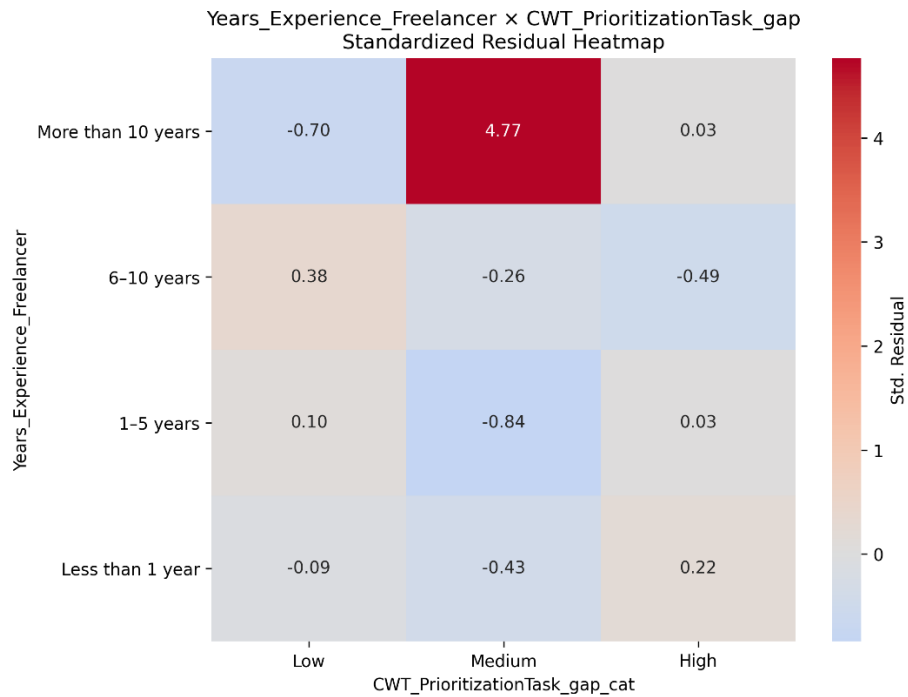


Figure 43. Years of Freelance Experience × CWT_PrioritizationTask_gap – Standardized Residual Heatmap.

As shown in Figure 43, freelancers with more than 10 years of experience are strongly overrepresented in the Medium gap category (standardized residual = 4.77). This concentration suggests that highly experienced freelancers tend to report moderate discrepancies between importance and proficiency in task prioritization competences rather than extreme gaps.

In contrast, freelancers with 1–5 years of experience show a tendency toward underrepresentation in the Medium gap category (standardized residual = -0.84), while those with less than one year display relatively balanced distributions across categories. The 6–10 year cohort does not exhibit pronounced deviations, indicating that the strongest differentiation emerges at the highest experience level.

Overall, the results suggest that extended freelance exposure consolidates competence perceptions into moderate gap profiles rather than polarized distributions.

Experience × Self-Promotion and Branding Gap

A similar structural pattern is observed for the self-promotion and branding competence gap ($\chi^2 = 25.69$, $df = 6$, $p < 0.001$, Cramer’s $V = 0.37$). Figure 44 indicates

that freelancers with more than 10 years of experience are again strongly overrepresented in the Medium gap category (standardized residual = 4.77).

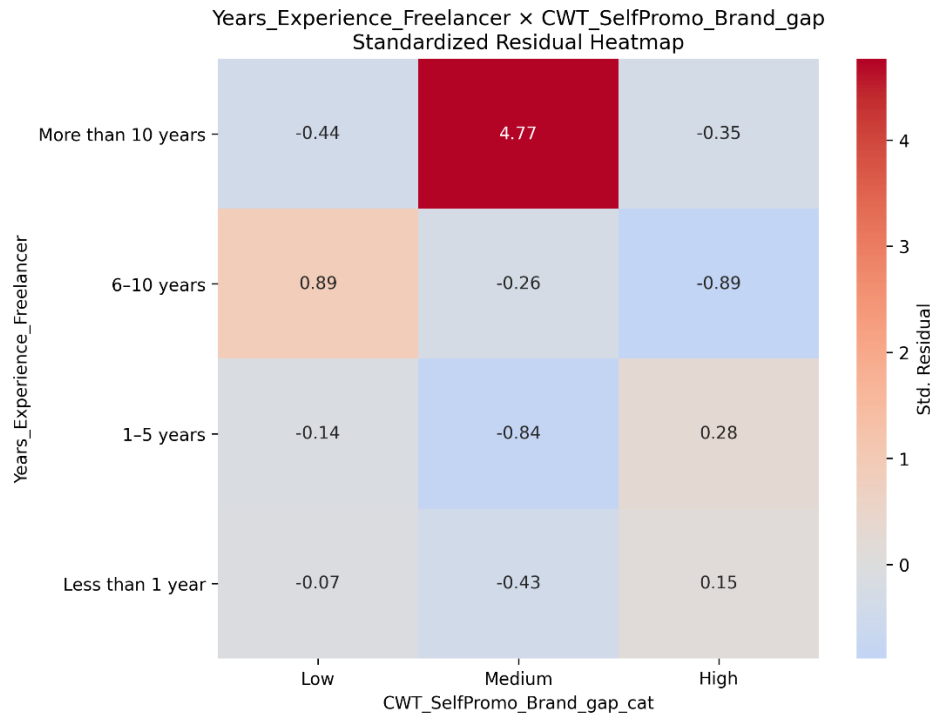


Figure 44. Years of Freelance Experience × CWT_SelfPromo_Brand_gap – Standardized Residual Heatmap.

Freelancers with 6–10 years of experience show a mild overrepresentation in the Low gap category (standardized residual = 0.89), while early-career freelancers (1–5 years and less than 1 year) do not exhibit extreme deviations.

The recurrence of the “Medium gap concentration” among the most experienced freelancers across two transversal domains suggests that accumulated professional exposure does not eliminate competence gaps but stabilizes them at moderate levels.

Experience × Cloud Storage and Sharing Gap

Experience is also significantly associated with the digital cloud storage and sharing competence gap ($\chi^2 = 16.25$, $df = 6$, $p = 0.012$, Cramer’s $V = 0.27$), indicating a moderate but weaker structural effect compared to transversal competences.

As illustrated in Figure 45, freelancers with more than 10 years of experience are overrepresented in the High gap category (standardized residual = 2.50), suggesting

that highly experienced freelancers may perceive stronger discrepancies in cloud-based collaboration competencies. Conversely, freelancers with 6–10 and 1–5 years of experience are underrepresented in the High gap category (standardized residuals = -0.82 and -0.76, respectively), indicating a relatively lower likelihood of reporting large discrepancies in this domain.

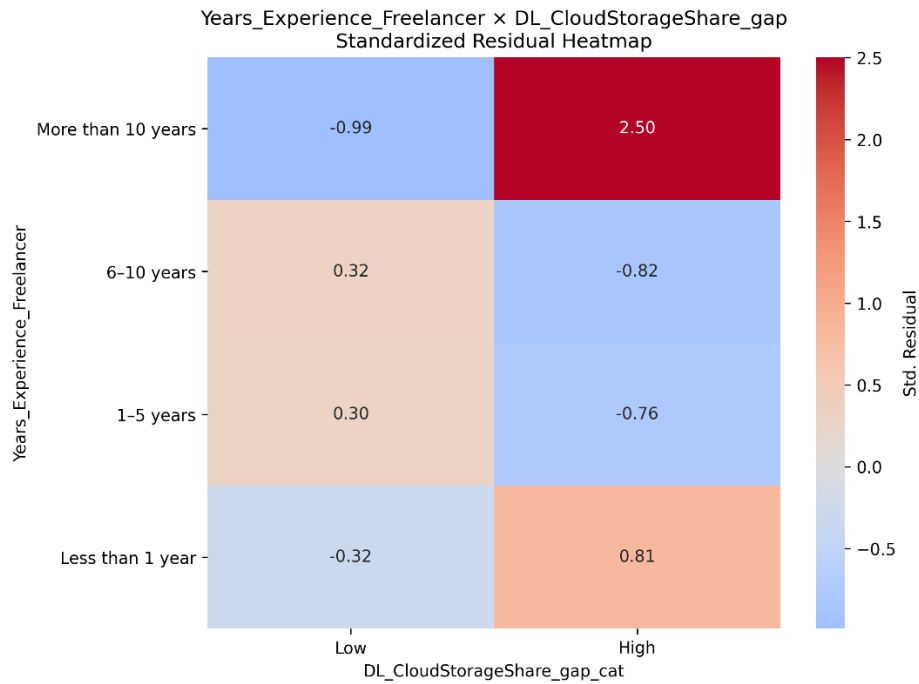


Figure 45. Years of Freelance Experience × DL_CloudStorageShare_gap – Standardized Residual Heatmap.

This pattern suggests that while transversal competences stabilize into moderate gaps with increasing experience, digital collaboration competences may present a different trajectory, where highly experienced freelancers experience stronger perceived discrepancies—possibly reflecting technological adaptation challenges.

Synthesis of Experience Effects

Taken together, Years of Freelance Experience demonstrates consistent structural differentiation across transversal and digital competence domains. The most pronounced pattern is the concentration of freelancers with more than 10 years of experience in the Medium gap category for transversal competences, combined with a tendency toward High gaps in specific digital collaboration competences.

Compared to Age, which produces strong segmentation across multiple domains, experience effects are more moderate (Cramer's V ranging from 0.27 to 0.37) and domain-specific. Nevertheless, the recurrence of overrepresentation among the most experienced freelancers indicates that competence gap perception is not linearly reduced through accumulated professional tenure. Instead, experience appears to restructure the distribution of gaps rather than eliminate them.

Given the sample size (N = 74), and the concentration of residual magnitudes within specific cells, these patterns should be interpreted with methodological caution. However, the consistency of the "more than 10 years" cohort across multiple domains supports the interpretation that long-term freelance engagement plays a structuring role in competence gap formation within the Indonesian freelance ecosystem.

3.1.4 Main Freelancer Activity as a Structural Determinant of Competence Gaps among Indonesian Freelancers

Main freelancer activity represents a structural professional variable capturing sectoral positioning within the freelance ecosystem. The analysis reveals statistically and practically significant associations between primary freelance activity and transversal competence gaps, particularly in task prioritization and self-promotion competences. While the magnitude of segmentation is moderate, distinct occupational clusters emerge within specific activity domains.

Main Freelancer Activity × Task Prioritization Gap

The association between main freelance activity and the task prioritization competence gap is statistically significant ($\chi^2 = 26.91$, $df = 16$, $p = 0.042$) and meets the predefined practical significance threshold (Cramer's V = 0.27), indicating moderate occupational differentiation.

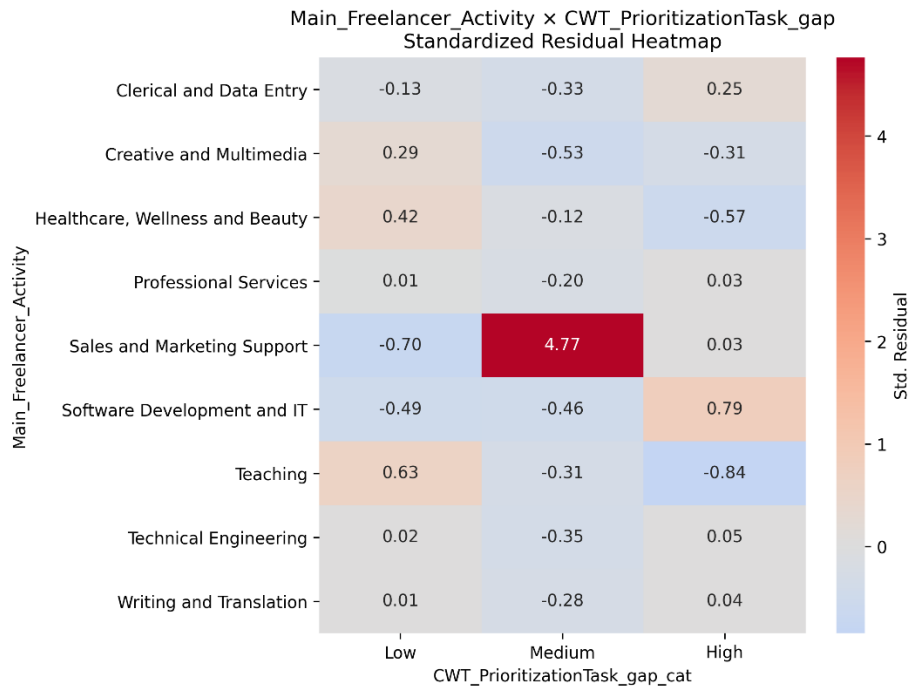


Figure 46. Main Freelancer Activity × CWT_PrioritizationTask_gap – Standardized Residual Heatmap.

As illustrated in Figure 46, freelancers engaged in *Sales and Marketing Support* are strongly overrepresented in the Medium gap category (standardized residual = 4.77), indicating a pronounced concentration of moderate importance–proficiency discrepancies in task prioritization within this sector.

By contrast, freelancers in *Software Development and IT* display a mild tendency toward the High gap category (standardized residual = 0.79), suggesting comparatively larger discrepancies in this domain, although the residual magnitude remains moderate. *Teaching* shows slight overrepresentation in the Low gap category (standardized residual = 0.63), indicating relatively smaller perceived discrepancies in task prioritization competencies. Other activity categories (e.g., Clerical and Data Entry, Technical Engineering, Writing and Translation) show relatively balanced distributions without substantial deviations from expected frequencies. Overall, the strongest structural differentiation is concentrated within the Sales and Marketing Support segment.

Main Freelancer Activity × Self-Promotion and Branding Gap

A similar segmentation pattern emerges in the self-promotion and branding competence gap ($\chi^2 = 35.85$, $df = 16$, $p = 0.003$, Cramer's $V = 0.37$), indicating a somewhat stronger occupational differentiation compared to task prioritization.

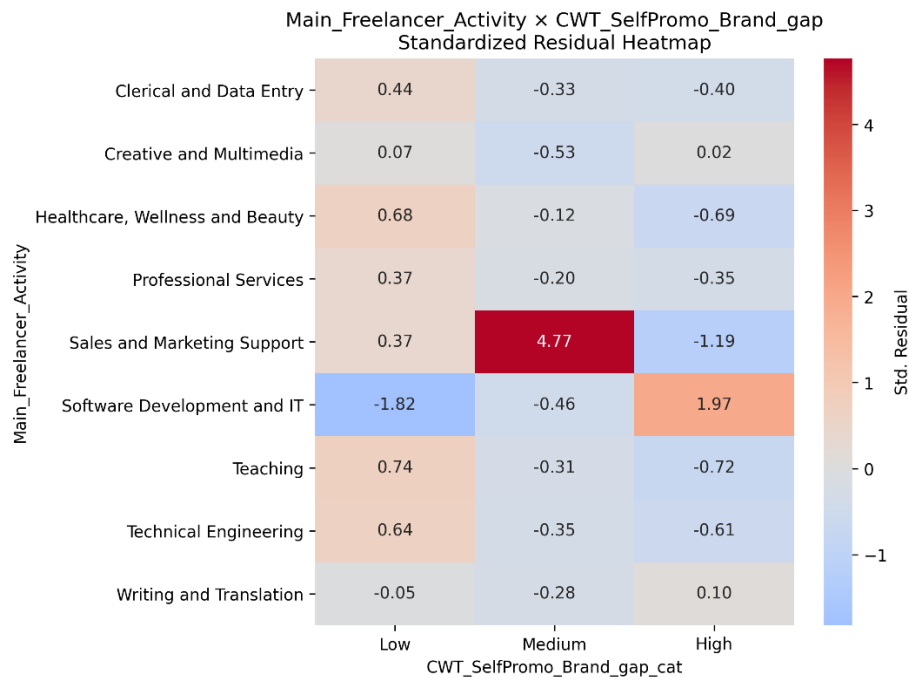


Figure 47. Main Freelancer Activity × CWT_SelfPromo_Brand_gap – Standardized Residual Heatmap.

Figure 47 shows that freelancers in *Sales and Marketing Support* are again strongly overrepresented in the Medium gap category (standardized residual = 4.77), reinforcing the transversal nature of this structural clustering. Notably, freelancers in *Software Development and IT* are overrepresented in the High gap category (standardized residual = 1.97) and underrepresented in the Low gap category (standardized residual = -1.82), suggesting a polarized gap configuration in branding competencies within technical sectors. Meanwhile, *Teaching* and *Technical Engineering* display mild overrepresentation in the Low gap category (standardized residuals = 0.74 and 0.64, respectively), indicating relatively smaller perceived discrepancies in self-promotion competencies. The recurrence of the Sales and Marketing Support concentration in the Medium gap category across both transversal domains indicates

that occupational positioning shapes competence gap perception in a consistent manner.

Synthesis of Main Freelancer Activity Effects

Taken together, Main Freelancer Activity demonstrates moderate but consistent segmentation effects across transversal competences. The strongest structural differentiation occurs within Sales and Marketing Support, which exhibits concentrated Medium gaps across both task prioritization and self-promotion domains. In contrast, Software Development and IT shows a tendency toward higher branding gaps, indicating potential challenges in self-promotion competences within technical fields.

Compared to Age (Cramer's V up to 0.69) and Experience (up to 0.37), the effect of Main Freelancer Activity remains moderate (Cramer's $V = 0.27-0.37$) but reveals meaningful occupational clustering.

These findings suggest that competence gap configurations among Indonesian freelancers are not uniform across professional domains. Instead, sectoral positioning shapes transversal competence discrepancies in structured and replicable ways. However, given the overall sample size ($N = 74$) and the distribution across multiple activity categories, these patterns should be interpreted with methodological caution, particularly regarding cell dispersion and expected frequency distributions.

3.1.5 Upskilling frequency as a behavioural determinant of digital competence gaps among Indonesian freelancers

Upskilling frequency represents a behavioural variable capturing the extent to which freelancers actively invest in skill development. Unlike demographic or structural variables, upskilling reflects agency and learning engagement. The analysis reveals statistically and practically significant associations between upskilling frequency and selected digital competence gaps, particularly in information assessment and collaboration tools.

Upskilling Frequency × Online Information Assessment Gap

The association between upskilling frequency and the digital competence gap in assessing online information is statistically significant and practically meaningful (χ^2 significant, Cramer's V above threshold). The residual structure indicates differentiated distributions across learning engagement levels.

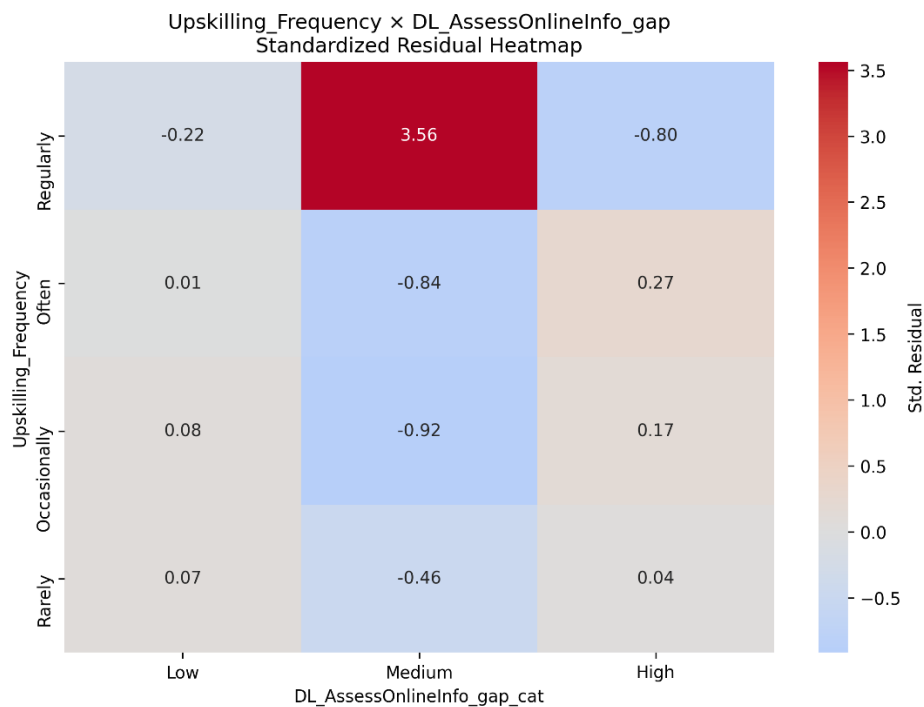


Figure 48. Upskilling Frequency × DL_AssessOnlineInfo_gap – Standardized Residual Heatmap.

As illustrated in Figure 48, freelancers who upskill regularly are strongly overrepresented in the Medium gap category (standardized residual = 3.56). This suggests that frequent learners tend to report moderate discrepancies between perceived importance and proficiency in online information assessment competences, rather than extreme gaps. Freelancers who upskill rarely or occasionally do not exhibit extreme deviations, although slight underrepresentation in the Medium gap category is visible (standardized residuals = -0.46 to -0.92). Those who upskill often show relatively balanced distributions across categories. The pattern indicates that continuous learning engagement does not eliminate competence gaps but tends to concentrate perceptions in moderate discrepancy levels.

Upskilling Frequency × Collaboration Tools Gap

A more pronounced structural differentiation is observed in the digital collaboration tools competence gap ($\chi^2 = 16.25$, $df = 6$, $p = 0.012$, Cramer's $V = 0.27$), indicating moderate behavioural segmentation.

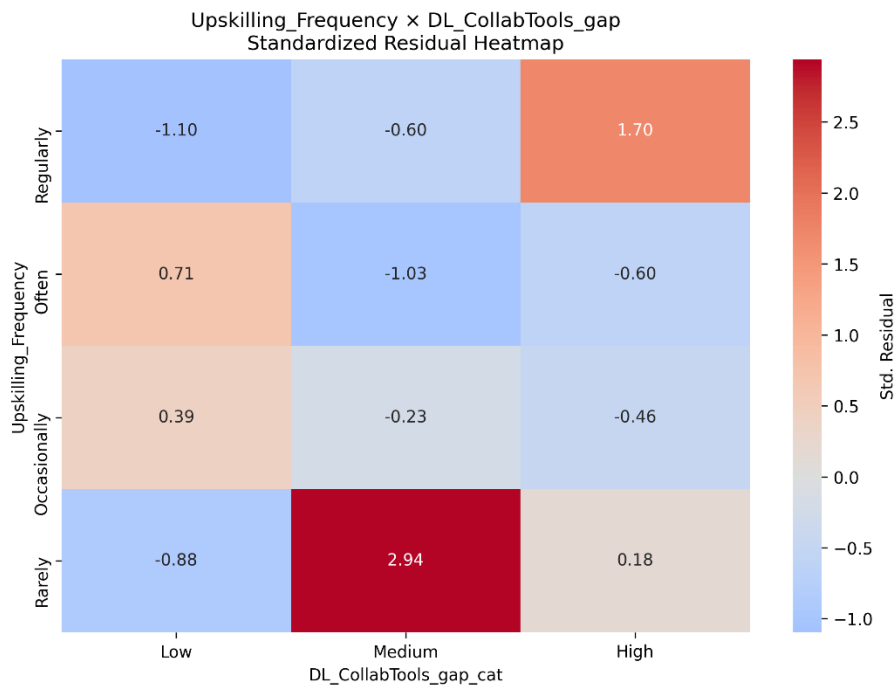


Figure 49. Upskilling Frequency × DL_CollabTools_gap – Standardized Residual Heatmap.

Figure 49 shows that freelancers who upskill rarely are strongly overrepresented in the Medium gap category (standardized residual = 2.94), suggesting concentrated moderate discrepancies in collaboration competences among low-learning-frequency freelancers. Conversely, freelancers who upskill regularly are overrepresented in the High gap category (standardized residual = 1.70) and underrepresented in the Low gap category (standardized residual = -1.10). This pattern may reflect heightened awareness among frequent learners of competence shortcomings in collaborative digital environments. Freelancers who upskill often display mild overrepresentation in the Low gap category (standardized residual = 0.71), indicating relatively smaller perceived discrepancies.

The residual configuration suggests a non-linear relationship between upskilling frequency and collaboration competence gaps. Rather than a simple reduction of discrepancies with more frequent learning, higher engagement appears associated with increased sensitivity to competence mismatches.

3.1.5.1 Synthesis of Upskilling Effects

Taken together, Upskilling Frequency exerts moderate but meaningful influence on digital competence gap configurations. The strongest differentiation occurs in digital collaboration tools, where behavioural learning engagement shapes gap perception in distinct ways. Unlike Age or Experience, which demonstrate structural segmentation rooted in demographic or tenure accumulation, upskilling reflects behavioural differentiation. The findings suggest that frequent learners may develop heightened competence awareness, leading to greater recognition of importance–proficiency discrepancies.

The moderate Cramer’s V values indicate that upskilling frequency contributes to competence gap structuring, though its effect magnitude remains lower than demographic segmentation. Given the overall sample size (N = 74), and the distribution across learning frequency categories, these patterns should be interpreted cautiously; nevertheless, the residual concentration among Regular and Rarely upskilling groups indicates meaningful behavioural stratification within the Indonesian freelance ecosystem.

3.1.6 AI Use (Future) and competence gaps

The AI Use (Future) variable reveals a structured and non-linear pattern of competence differentiation across communication, intercultural, negotiation, prioritization, branding, and personal/professional domains. Rather than a simple linear trend (more AI → fewer gaps), the residual patterns indicate segmentation effects.

Clarity of Expression

In Figure 50 freelancers who report occasional AI use are strongly overrepresented in the low gap category (Std. Residual = 1.62) and markedly underrepresented in the

high-gap category (-2.01). This suggests that moderate AI engagement coincides with relatively strong confidence in articulating ideas clearly.

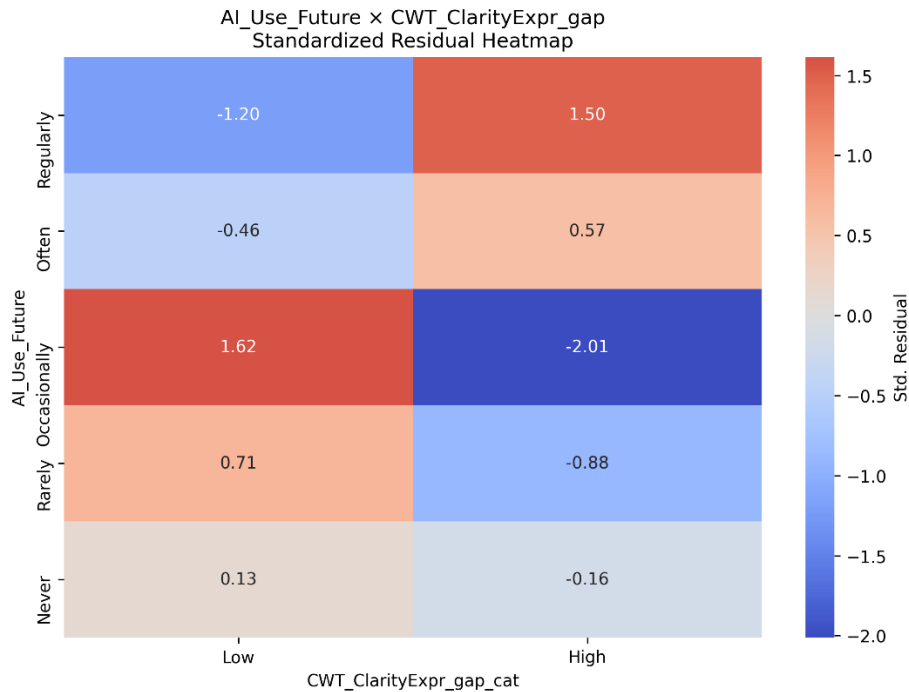


Figure 50. AI_Use_Future × CWT_ClarityExpr_gap.

By contrast, regular AI users are overrepresented in the high gap category (1.50), indicating that sustained AI integration may heighten awareness of communicative shortcomings rather than eliminate them. This is analytically important: deeper AI engagement may expose the complexity of communication tasks (e.g., prompt engineering, contextual nuance, audience adaptation), thereby increasing perceived gaps.

Freelancers who *never* intend to use AI show near-neutral residuals, implying neither a strong communicative advantage nor disadvantage. Thus, the pattern is not one of simple substitution (AI replacing skill), but one of differentiated self-assessment.

Multicultural Collaboration

A similar structural configuration appears in Figure 51, Occasional users cluster within the low multicultural competence gap category (1.30), while being significantly

underrepresented in the high-gap group (-2.06). This again positions moderate AI adopters as relatively confident in cross-cultural collaboration.

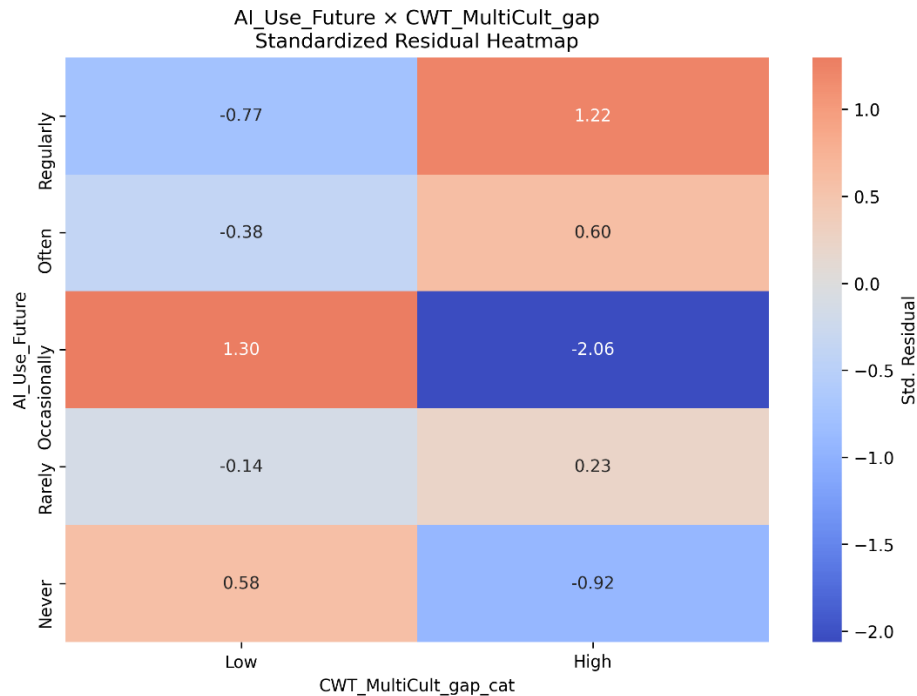


Figure 51. AI_Use_Future × CWT_MultiCult_gap.

In contrast, regular AI users show overrepresentation in the high gap category (1.22). This may reflect increasing exposure to global clients and culturally diverse projects through AI-enabled workflows. In other words, AI adoption may expand market reach but simultaneously reveal previously unnoticed complexities in intercultural negotiation.

The analytical implication is that AI does not automatically reduce cross-cultural competence gaps; rather, it may increase sensitivity to them.

Negotiation Skills

The differentiation becomes more pronounced in Figure 52. Occasional AI users show a strong concentration in the low negotiation gap category (2.01), with a symmetrical underrepresentation in the high-gap group (-2.01). This is one of the strongest residual patterns across all CWT dimensions.

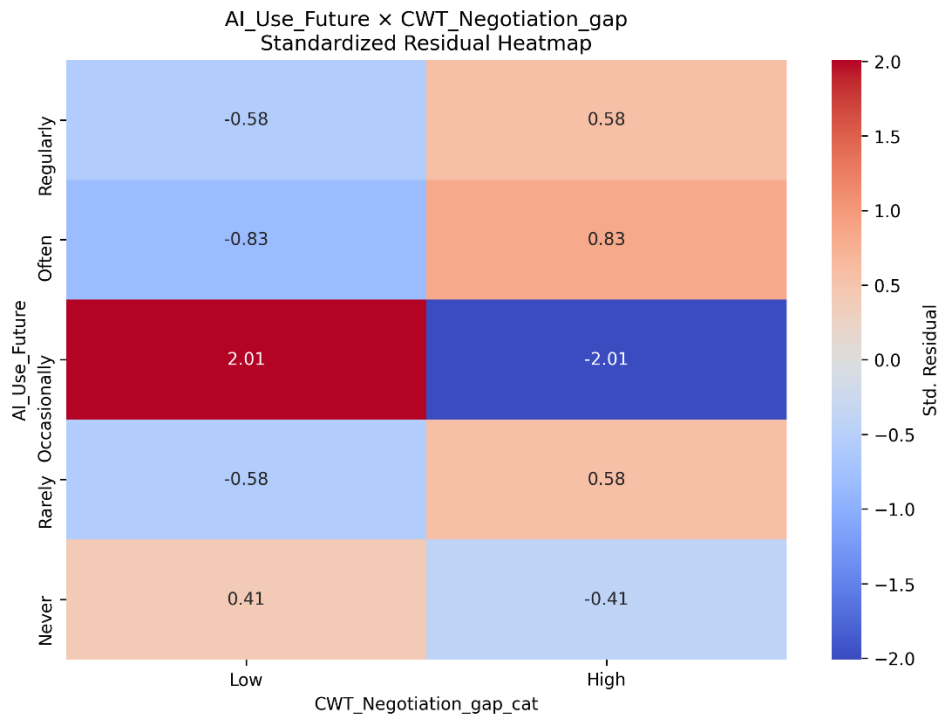


Figure 52. AI_Use_Future × CWT_Negotiation_gap.

Meanwhile, frequent users (“often”) are moderately overrepresented in the high gap category (0.83), and regular users show a similar though weaker pattern (0.58). This suggests that more systematic AI integration may increase perceived complexity in pricing, client bargaining, or strategic positioning.

Thus, moderate AI engagement appears associated with negotiation confidence, whereas more intensive adoption may coincide with heightened strategic awareness—and consequently, perceived deficits.

Task Prioritization

The most structurally striking pattern emerges in Figure 53. Freelancers who *never* intend to use AI are heavily concentrated in the medium gap category (4.77), indicating a strong structural imbalance. This suggests persistent but not extreme prioritization challenges among non-adopters.

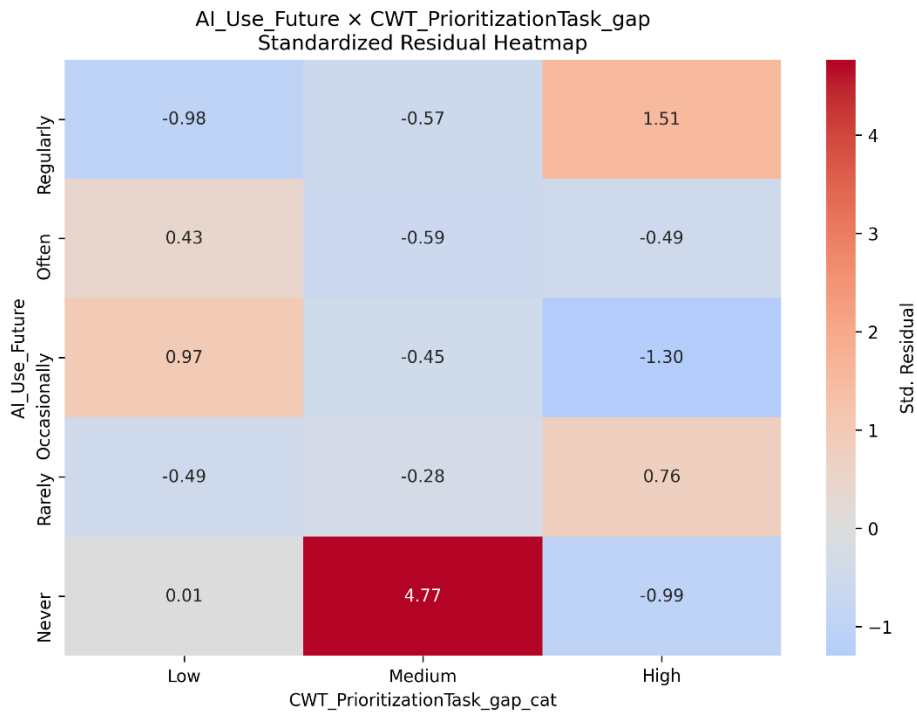


Figure 53. AI_Use_Future × CWT_PrioritizationTask_gap.

Regular AI users, on the other hand, are overrepresented in the high gap category (1.51), while occasional users cluster in the low-gap category (0.97). This suggests a bifurcation: moderate AI use may assist with task organization, but deeper integration introduces complexity (multi-tool coordination, automation workflows, parallel task streams), which may amplify perceived prioritization strain.

In this sense, AI adoption appears to shift freelancers from moderate, stable gaps toward more polarized configurations.

Self-Promotion and Branding

The branding dimension (Figure 54) reveals another polarized structure. Freelancers who *never* intend to use AI are strongly overrepresented in the medium gap category (4.77). This indicates stagnation rather than acute deficiency; branding challenges exist but remain unaddressed.

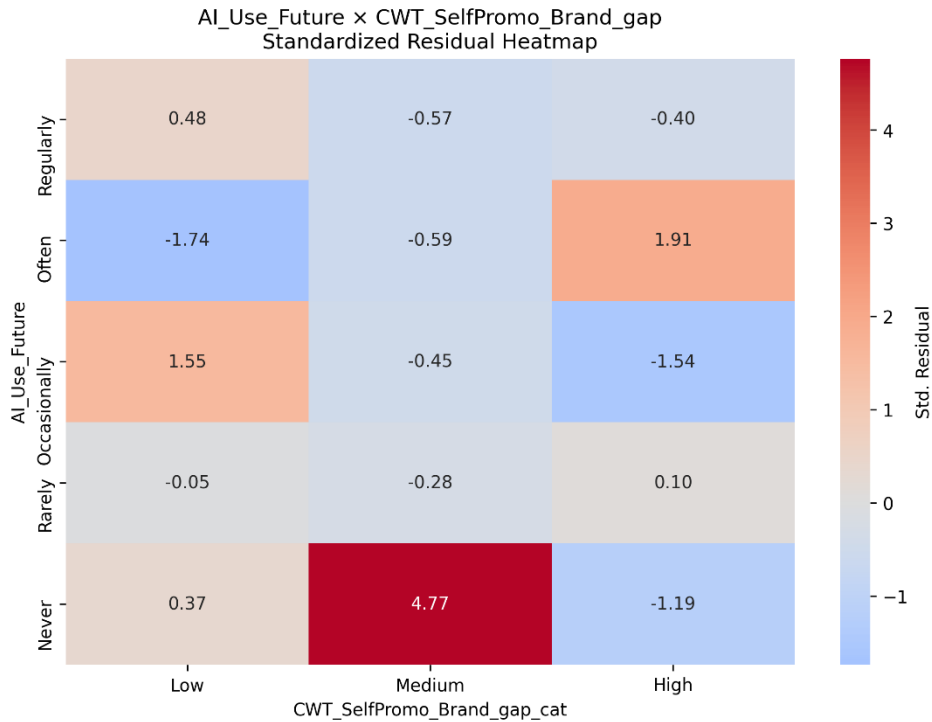


Figure 54. AI_Use_Future × CWT_SelfPromo_Brand_gap.

Freelancers who use AI are often overrepresented in the high-gap category (1.91) and underrepresented in the low-gap group (-1.74). This suggests that intensive AI engagement may expose competitive pressures in digital visibility and personal branding. Conversely, occasional users cluster in the low-gap category (1.55), again reflecting a pattern in which moderate AI adoption correlates with relatively balanced perceptions of competence.

Formal Regulatory Competence

In Figure 55, occasional AI users are concentrated in the medium gap category (1.97) and underrepresented in the high-gap category (-2.06). This may indicate transitional awareness, recognition of regulatory issues without perceiving severe vulnerability.

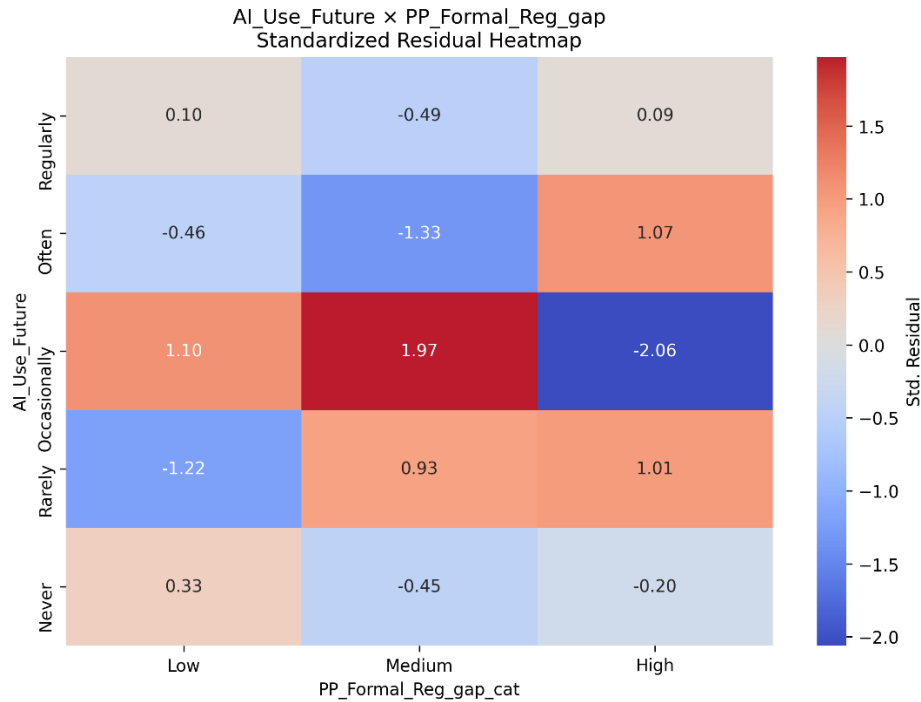


Figure 55. AI_Use_Future × PP_FormaI_Reg_gap.

Frequent AI users (“often”) are overrepresented in the high gap category (1.07). This suggests that as freelancers integrate AI more intensively, they become more conscious of compliance risks (e.g., data protection, intellectual property, contractual liability). Thus, advanced AI engagement may increase perceived regulatory exposure. Non-users show relatively neutral residuals, suggesting that avoidance of AI limits regulatory complexity, but may also limit strategic growth.

Uncertainty and Stress Management

The uncertainty dimension (Figure 56) reveals a distinct psychological configuration. Freelancers who use AI occasionally are overrepresented in the low gap category (1.19), indicating relatively strong stress management capacity.

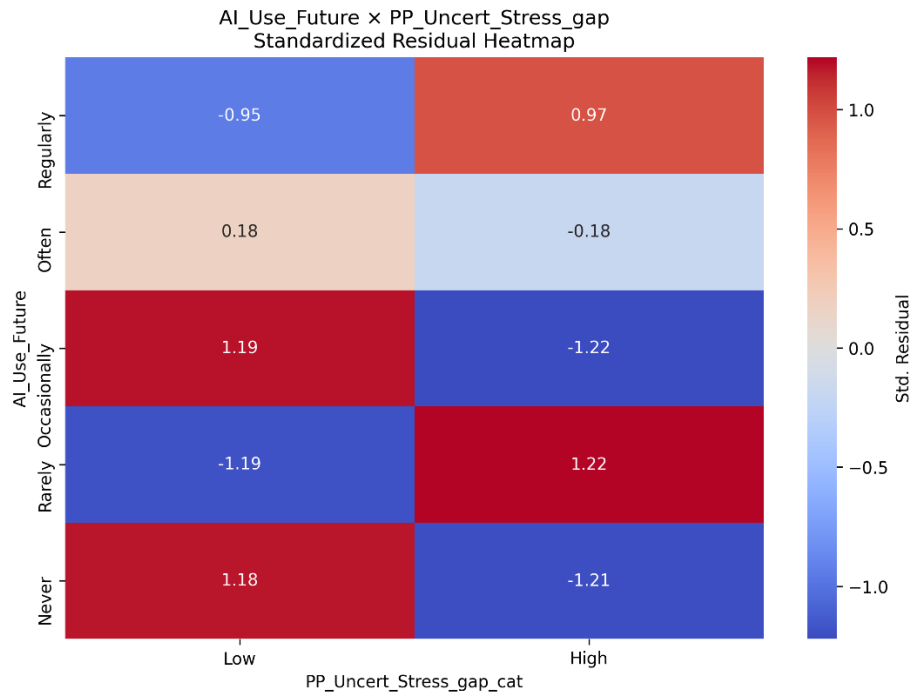


Figure 56. AI_Use_Future × PP_Uncert_Stress_gap.

In contrast, freelancers who use AI are rarely overrepresented in the high gap category (1.22) and underrepresented in the low-gap group (−1.19). This suggests that partial or hesitant engagement may generate stress without corresponding competence gains. Interestingly, those who *never* intend to use AI are also overrepresented in the low-gap category (1.18), implying perceived stability, possibly because technological complexity is avoided altogether.

Structural Interpretation

Across all dimensions, a consistent pattern emerges:

1. Occasional AI users repeatedly cluster in low-gap categories across communicative, negotiation, and stress-related competences. This suggests a balanced adoption strategy that supports competence reinforcement without triggering overload or heightened vulnerability.
2. Frequent or regular AI users are often overrepresented in high-gap categories (branding, prioritization, regulatory competence). This indicates that deeper integration increases awareness of complexity, strategic exposure, and skill insufficiency.

3. Non-users tend to cluster in medium-gap categories (particularly prioritization and branding), reflecting structural stagnation rather than acute deficit. Avoidance reduces exposure but may limit developmental momentum.

The relationship between AI intention and competence gaps is therefore non-linear and asymmetric. AI adoption does not uniformly reduce gaps; instead, it reconfigures how freelancers perceive and experience their competence landscape. Moderate adoption appears associated with stabilization, intensive adoption with heightened reflexivity and complexity awareness, and non-adoption with relative structural inertia.

In the Indonesian freelance context, AI thus functions less as a straightforward competence equalizer and more as a mechanism that reshapes both opportunity structures and self-perceived capability boundaries.

3.2 Companies

This section presents the results of the Chi-square analyses performed in line with the previously defined methodological framework. The inferential testing was conducted on the freelancers' dataset, which provided an adequate empirical basis for robust statistical examination. To maintain analytical clarity and relevance, only those findings that reflect meaningful discrepancies between perceived market expectations and freelancers' self-evaluated competences are reported. Specifically, the discussion includes results that meet two criteria: statistical significance at the conventional threshold ($p < 0.05$) and substantive association strength, operationalized through Cramér's V values exceeding 0.22 for models with degrees of freedom greater than five, in accordance with df-adjusted effect size benchmarks. The comprehensive statistical outputs are summarized in Table 2.

| Categorical Variable | Competence Variable | Chi2 | df | p_value | Cramers_V | Effect Size |
|-----------------------------|--------------------------------|-------------|-----------|----------------|------------------|--------------------|
| Main Activity | PP_Uncert_Stress_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | PP_Engage_Relat_prof | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | PP_Engage_Relat_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | PP_Learn_Expand_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | PP_Exper_Domain_prof | 10.4 | 4 | 0.034 | 0.71 | Strong |
| Main Activity | PP_Identify_Solve_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | CWT_Courage_Assert_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_AssessOnlineInfo_prof | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_AssessOnlineInfo_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_CloudProjMgmt_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_CloudStorageShare_prof | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_CloudStorageShare_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_CollabTools_prof | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_CollabTools_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_DigitalLabourPlatforms_prof | 8 | 2 | 0.018 | 0.91 | Strong |
| Main Activity | DL_DigitalLabourPlatforms_imp | 8 | 2 | 0.018 | 0.91 | Strong |
| Company Size | PP_Uncert_Stress_prof | 8 | 2 | 0.018 | 0.91 | Strong |
| Company Size | CWT_BusinessRel_prof | 8 | 2 | 0.018 | 0.91 | Strong |
| Company Size | CWT_TeamWork_prof | 8 | 2 | 0.018 | 0.91 | Strong |
| Years Hiring Freelancers | PP_Exper_Domain_imp | 16 | 8 | 0.042 | 0.77 | Strong |
| Years Hiring Freelancers | CWT_SelfPromo_Brand_prof | 16 | 8 | 0.042 | 0.77 | Strong |
| Years Hiring Freelancers | CWT_SelfPromo_Brand_imp | 16 | 8 | 0.042 | 0.77 | Strong |

Table 2. Significant Chi-square associations between company characteristics.

In contrast to the freelancer dataset, no explicit gap variable was constructed for companies; therefore, the analysis focuses exclusively on importance and proficiency as separate evaluative dimensions. Only statistically significant associations ($p < 0.05$) accompanied by strong effect sizes, as indicated by Cramér's V , are reported.

The results show that the main company activity is strongly associated with a wide spectrum of competencies, both in terms of importance and proficiency. Significant relationships were identified for personal profile competencies, including dealing with uncertainty and stress, engaging and maintaining relationships, continuous learning, and problem identification and solving. Additionally, several digital literacy skills such as assessing online information, using cloud-based project management tools, cloud storage systems, collaboration tools, and digital labour platforms, demonstrate strong sectoral differentiation. The consistently high Cramér's V values indicate that industry

context plays a decisive role in shaping both expectations and performance evaluations of freelancers.

Company size is significantly related to perceived proficiency in uncertainty management, business relationship maintenance, and teamwork. This suggests that organizational scale influences how companies evaluate the relational and adaptive capabilities of freelancers. Meanwhile, years of hiring freelancers show strong associations with the perceived importance of domain experience, as well as both the importance and proficiency of self-promotion and brand-building skills. This pattern implies that companies with longer experience in engaging freelancers develop more nuanced expectations regarding professional maturity, domain expertise, and market positioning abilities.

The findings demonstrate that competency evaluations among Indonesian companies are not homogeneous but systematically conditioned by structural characteristics of firms. Rather than reflecting universal standards, importance and proficiency assessments appear embedded in sectoral logic, organizational scale, and accumulated experience with freelance collaboration.

3.2.1 Main Activity × PP_Uncert_Stress_imp

A strong and statistically significant association is observed between company main activity and the perceived importance of Dealing with uncertainty and stress (PP_Uncert_Stress_imp) ($\chi^2 = 8$, $df = 2$, $p = 0.018$; Cramér's $V = 0.91$). The very high effect size indicates that sectoral context substantially shapes how firms evaluate resilience-related competences. This suggests that companies operating in different industries experience varying exposure to volatility and therefore assign different weights to freelancers' ability to manage stress and uncertainty. Sectors characterized by dynamic client demands and rapid technological shifts are likely to rate this competence as critically important, while more routine-based industries may perceive it as moderately relevant.

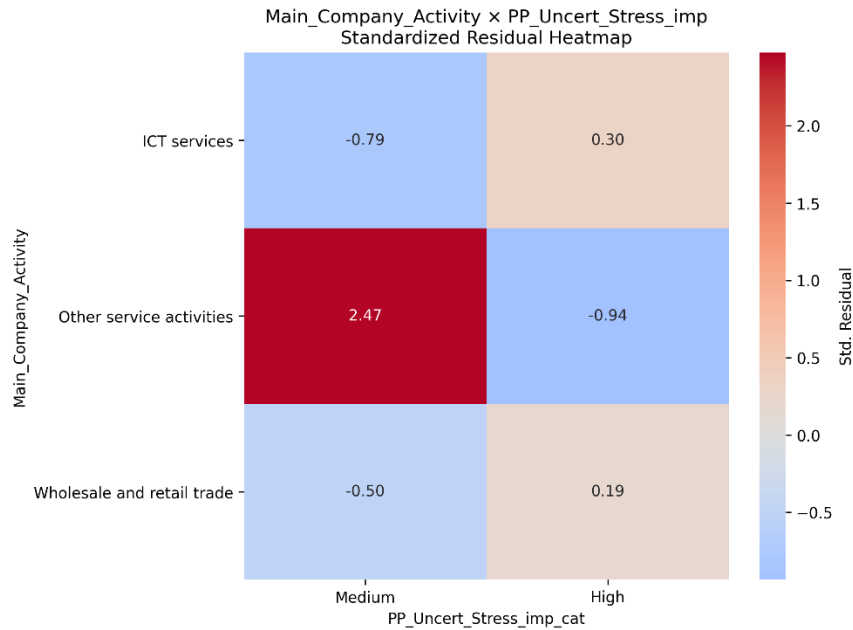


Figure 57. Main Activity × PP_Uncert_Stress_imp.

The standardized residual heatmap clarifies the statistically significant relationship between main company activity and the perceived importance of freelancers' ability to deal with uncertainty and stress. The only cell exceeding the critical threshold of ± 2 is observed for companies in other service activities within the "Medium importance" category, with a standardized residual of 2.47. This indicates that these firms are significantly over-represented in assigning a moderate rather than high level of importance to stress management competence. In contrast, ICT services and wholesale and retail trade do not display residual values large enough to suggest meaningful deviations from expected distributions, implying a more balanced evaluation between medium and high importance. Substantively, this pattern suggests that companies outside the ICT and trade sectors may perceive uncertainty as a routine operational condition and therefore do not consistently elevate stress tolerance to the highest priority, whereas the other sectors demonstrate no distinct tendency beyond what would occur by chance.

3.2.2 Main Activity × PP_Engage_Relat_prof and PP_Engage_Relat_imp

Significant and very strong associations are found between main activity and both the importance ($\chi^2 = 8, p = 0.018; V = 0.91$) and perceived proficiency ($\chi^2 = 8, p =$

0.018; $V = 0.91$) of Engagement in relationships. This dual significance indicates that sector not only influences how much relational competence is valued but also how well freelancers are perceived to meet expectations. Industries that rely heavily on sustained client interaction and long-term collaboration appear to assign higher importance and possibly show stricter evaluation standards. This reinforces the idea that relational competence is not universally interpreted but shaped by business model characteristics.

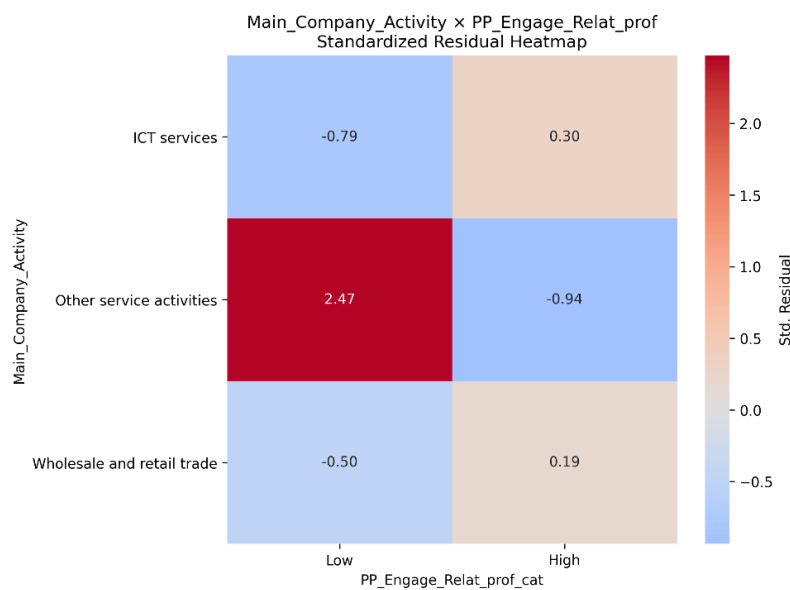


Figure 58. Main Company Activity x PP_Engage_Relat_prof.

The cross-tabulation between main company activity and the perceived proficiency of freelancers in engaging and maintaining professional relationships (PP_Engage_Relat_prof) shows a statistically significant association, which is further clarified by the standardized residual heatmap. The most notable deviation appears within companies classified under “Other service activities,” where there is a clear over-representation in the low proficiency category (standardized residual = 2.47). At the same time, this group is under-represented in the high proficiency category (-0.94). This pattern indicates that firms operating in other service sectors are more likely than expected to evaluate freelancers’ relational capabilities as insufficient. In contrast, ICT services and wholesale and retail trade show only minor deviations from

expected frequencies, suggesting a more balanced distribution between low and high proficiency assessments in these sectors.

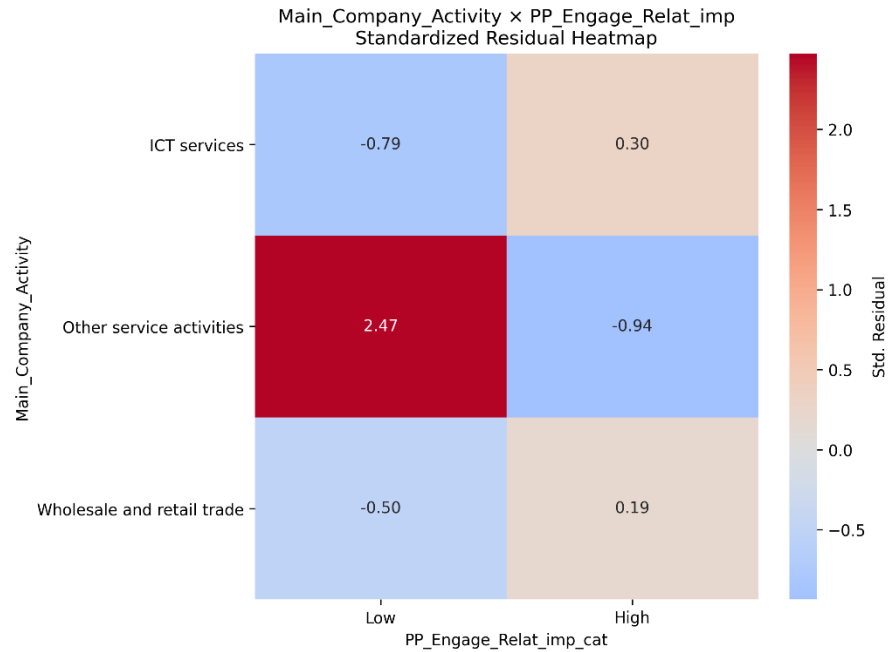


Figure 59. Main Company Activity x PP_Engage_Relat_imp.

The cross-tabulation between main company activity and the perceived proficiency of freelancers in engaging and maintaining professional relationships (PP_Engage_Relat_prof) shows a statistically significant association, which is further clarified by the standardized residual heatmap. The most notable deviation appears within companies classified under “Other service activities,” where there is a clear over-representation in the low proficiency category (standardized residual = 2.47). At the same time, this group is under-represented in the high proficiency category (-0.94). This pattern indicates that firms operating in other service sectors are more likely than expected to evaluate freelancers’ relational capabilities as insufficient. In contrast, ICT services and wholesale and retail trade show only minor deviations from expected frequencies, suggesting a more balanced distribution between low and high proficiency assessments in these sectors.

3.2.3 Main Activity × PP_Learn_Expand_imp

The importance assigned to Learning and expanding knowledge varies significantly across sectors ($\chi^2 = 8, p = 0.018; V = 0.91$). This suggests that industries with stronger innovation cycles or technological intensity may emphasize adaptive learning more strongly. In contrast, sectors with stable operational structures may place relatively less strategic emphasis on continuous knowledge expansion.

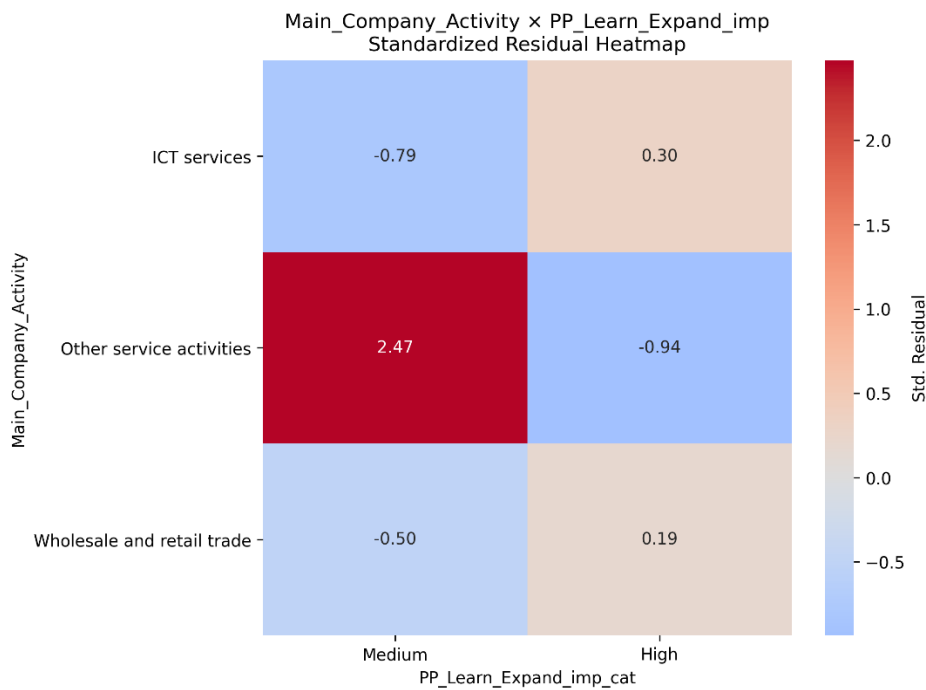


Figure 60. Main Company Activity x PP_Learn_Expand_imp.

The association between main company activity and the perceived importance of the ability to learn quickly and expand knowledge (PP_Learn_Expand_imp) reveals a differentiated sectoral pattern. The standardized residual heatmap indicates that companies operating in “Other service activities” are strongly over-represented in the medium importance category (standardized residual = 2.47) and under-represented in the high category (-0.94). This suggests that firms in this sector are less likely than expected to classify continuous learning as a top-priority competence. Instead, they tend to position it at a moderate level of importance, possibly reflecting more routine-oriented or standardized service processes where rapid skill expansion is not perceived as a decisive competitive factor. By contrast, ICT services and wholesale and

retail trade display only minor deviations from expected distributions, with small positive residuals in the high importance category and negative ones in the medium category. Although these deviations do not exceed the conventional threshold of ± 2 , the pattern suggests a slight tendency among ICT firms, in particular, to value learning agility more strongly.

3.2.4 Main Activity × PP_Exper_Domain_prof

The perceived proficiency in Experience in the work domain is significantly associated with company activity ($\chi^2 = 10.4$, $df = 4$, $p = 0.034$; $V = 0.71$). Although slightly lower than other coefficients, the effect remains very strong. This indicates that sectoral specialization shapes how companies evaluate domain expertise. Firms in technical or specialized industries likely assess prior experience more critically than firms relying on generalist tasks.

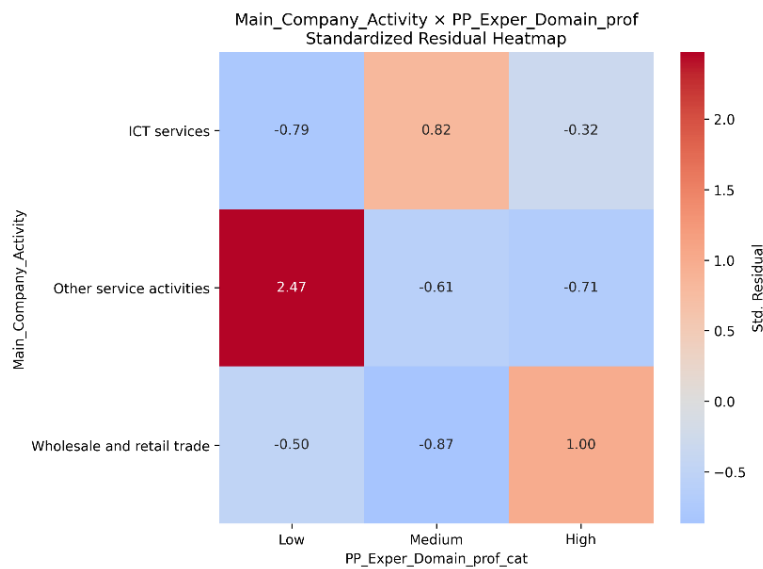


Figure 61. Main Company Activity x PP_Exper_Domain_prof.

The relationship between main company activity and perceived freelancer proficiency in domain-specific experience (PP_Exper_Domain_prof) demonstrates a sector-driven differentiation. The heatmap indicates that companies categorized under “Other service activities” are strongly over-represented in the low proficiency category (standardized residual = 2.47), suggesting that these firms more frequently perceive

freelancers as lacking sufficient domain experience compared to what would be statistically expected. In contrast, wholesale and retail trade shows a relative over-representation in the high proficiency category (1.00), indicating a more favourable assessment of freelancers' domain expertise, although this deviation does not exceed the conventional ± 2 threshold for strong contribution. ICT services tend to cluster around the medium proficiency category (0.82), reflecting a more balanced or moderate evaluation of freelancers' domain knowledge. Overall, the pattern suggests that expectations and evaluations of domain-specific expertise vary across sectors, with "Other service activities" appearing more critical, while trade-oriented firms report comparatively higher satisfaction with freelancers' professional experience.

3.2.5 Main Activity \times PP_Identify_Solve_imp

The importance of Problem identification and solving differs significantly by sector ($\chi^2 = 8$, $p = 0.018$; $V = 0.91$). This implies that problem-solving capacity is interpreted in relation to industry-specific complexity. High-intensity sectors may see analytical competence as fundamental, while in more standardized environments it may be viewed as supportive rather than decisive.

The association between main company activity and the perceived importance of problem identification and solving (PP_Identify_Solve_imp) reveals a sector-specific pattern in how this competence is valued. The heatmap shows that companies in "Other service activities" are significantly over-represented in the medium importance category (standardized residual = 2.47), while being under-represented in the high importance category (-0.94). This suggests that, compared to other sectors, these firms tend to rate problem-solving as important but not at the highest possible level. ICT services and wholesale and retail trade display relatively small residual values, indicating distributions closer to what would be expected by chance. Overall, the findings imply that although problem-solving is broadly recognized as relevant across sectors, firms in other service domains adopt a more moderate evaluation, whereas ICT and trade-related companies demonstrate a more balanced or slightly stronger inclination toward assigning high importance to this competence.

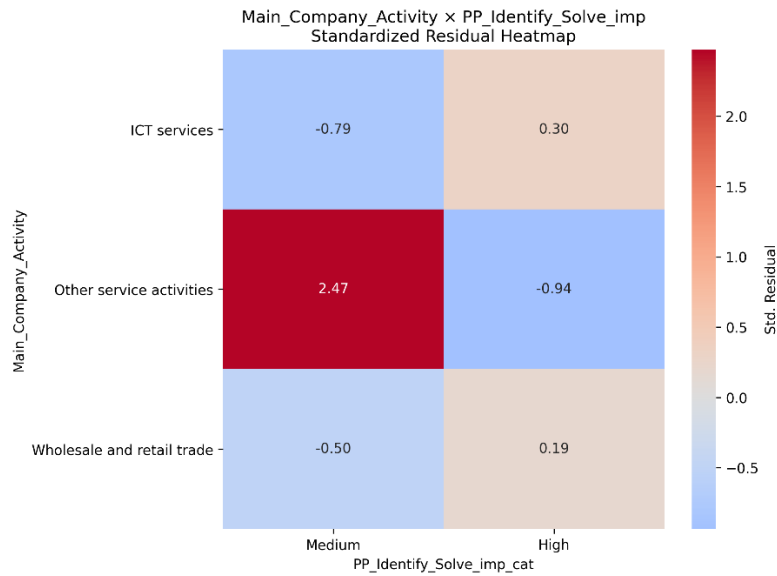


Figure 62. Main Company Activity x PP_Identity_Solve_imp.

3.2.6 Main Activity × CWT_Courage_Assert_imp

Courage and assertiveness in communication also varies strongly by sector ($\chi^2 = 8, p = 0.018; V = 0.91$). This suggests that in industries where negotiation, persuasion, or proactive engagement are critical, assertiveness becomes a core requirement. In more structured or hierarchical sectors, it may be less central.

The relationship between main company activity and the perceived importance of courage and assertiveness in communication (CWT_Courage_Assert_imp) follows a pattern similar to other personal and interpersonal competences. Companies categorized under “Other service activities” are significantly over-represented in the medium importance category (standardized residual = 2.47) and under-represented in the high category (-0.94), indicating that while assertiveness is considered relevant, it is not consistently rated at the highest level within this sector. In contrast, ICT services and wholesale and retail trade display residual values close to zero, suggesting no substantial deviation from expected distributions. This implies that although assertiveness is broadly acknowledged as valuable across sectors, its perceived criticality varies, with other service-oriented firms tending to adopt a more moderate stance compared to ICT and trade-related companies.

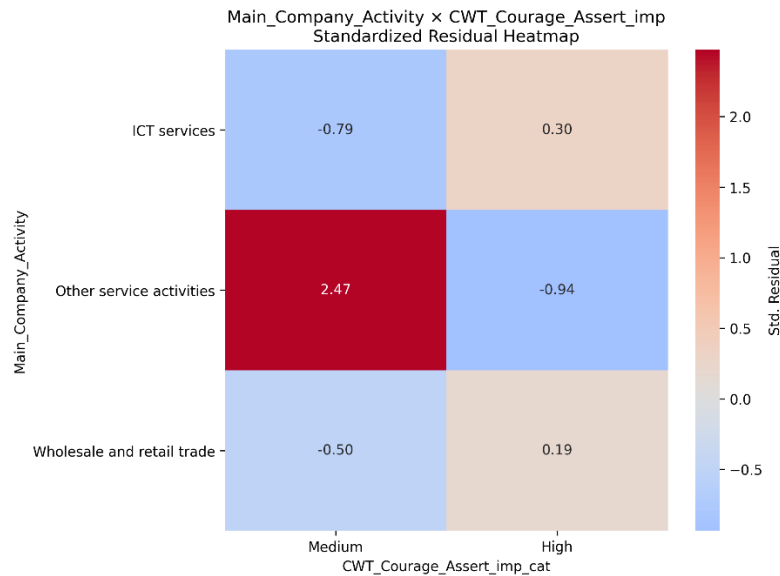


Figure 63. Main Company Activity x CWT_Courage_Assert_imp.

3.2.7 Main Activity × Digital Literacy Variables

A series of very strong associations are identified between main activity and digital literacy competences, both for importance and proficiency, including Assessing online information, Cloud-based project management, Cloud storage sharing, Collaboration tools, and Digital labour platform use (all $\chi^2 = 8$, $p = 0.018$; $V = 0.91$). These consistent findings demonstrate that digital expectations are highly sector dependent. Technology-driven industries likely demand and recognize higher digital performance standards, while other sectors may evaluate these competences differently. The parallel significance for both importance and proficiency suggest that sector shapes not only expectations but also perceived delivery quality.

3.2.8 Company Size × PP_Uncert_Stress_prof

Company size shows a strong association with perceived proficiency in managing uncertainty and stress ($\chi^2 = 8$, $p = 0.018$; $V = 0.91$). This indicates that larger and smaller firms evaluate freelancer resilience differently. Smaller firms, often operating with limited buffers, may perceive stress-management capability as more directly linked to performance reliability.

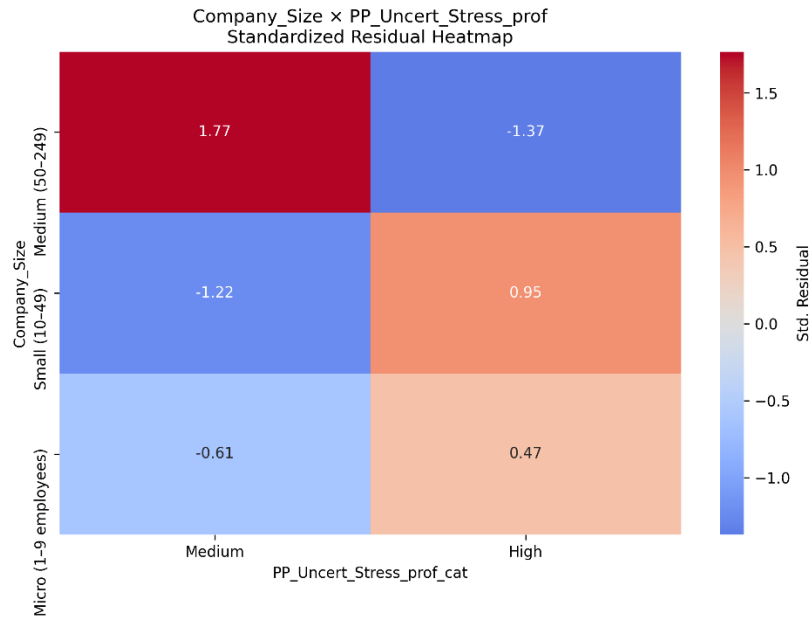


Figure 64. Company Size x PP_Uncert_Stress_prof.

The association between company size and perceived freelancer proficiency in dealing with uncertainty and stress (PP_Uncert_Stress_prof) reveals a differentiated pattern across firm categories. Medium-sized companies (50–249 employees) are over-represented in the medium proficiency category (Std. residual = 1.77) and under-represented in the high category (–1.37), suggesting that these firms tend to evaluate freelancers’ ability to manage uncertainty as adequate but not outstanding. In contrast, small companies (10–49 employees) show a relative concentration in the high proficiency category (0.95) and a lower presence in the medium category (–1.22), indicating a more favourable assessment of freelancers’ stress management capabilities. Micro firms (1–9 employees) display only mild deviations from expected frequencies, with a slight inclination toward high proficiency (0.47). The pattern implies that smaller organizations may perceive freelancers as more resilient and adaptable, whereas medium-sized firms apply more moderate evaluations, possibly reflecting higher performance expectations or more complex organizational environments.

3.2.9 Company Size × CWT_BusinessRel_prof and CWT_TeamWork_prof

Very strong associations are found between company size and perceived proficiency in Business relationship management and Teamwork ($\chi^2 = 8$, $p = 0.018$; $V = 0.91$). This suggests that organizational scale influences expectations regarding integration and coordination. As companies grow, internal communication structures become more complex, potentially raising standards for collaborative competence.

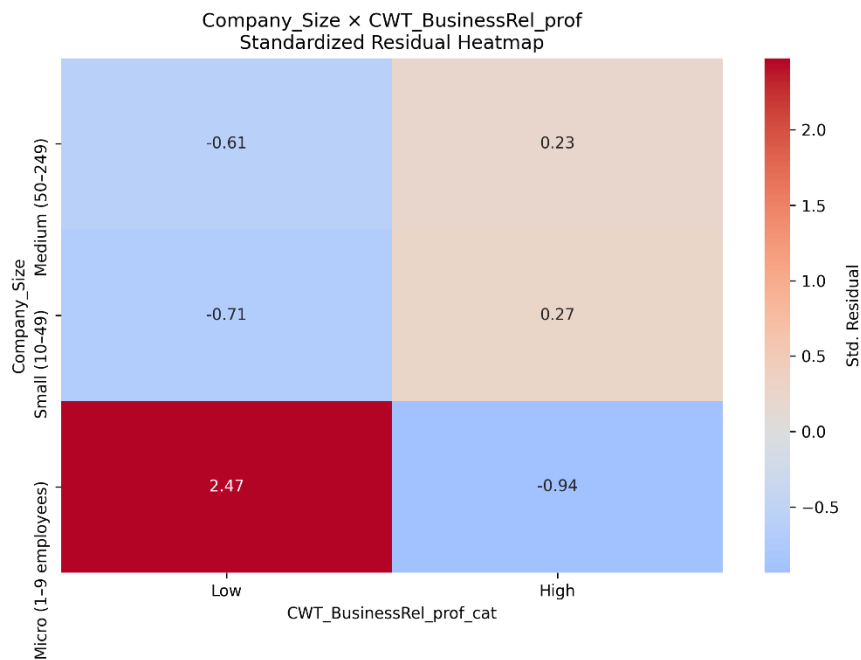


Figure 65. Company Size x CWT_BusinessRel_prof.

The standardized residual patterns for Company Size × CWT_BusinessRel_prof and Company Size × CWT_TeamWork_prof reveal a consistent structural tendency across firm categories. Micro companies (1–9 employees) are significantly over-represented in the Low proficiency category (Std. residual = 2.47) and under-represented in the High proficiency category (–0.94) for both business relationship management and teamwork competences. This indicates that the smallest firms are more likely to perceive that hired freelancers do not sufficiently meet their expectations in relational collaboration and team integration skills. In contrast, small and medium-sized companies display a more balanced distribution, with slight over-representation in the High proficiency category (0.23–0.27) and no meaningful

deviations in the Low category. Although only the micro segment exceeds the conventional ± 2 threshold for strong contribution, the mirrored pattern across both competences suggests that relational and teamwork capabilities are particularly sensitive areas for very small firms. This may reflect the higher dependence of micro companies on close coordination and direct interpersonal collaboration, where deficiencies in communication or integration become more visible and impactful compared to larger organizational structures.

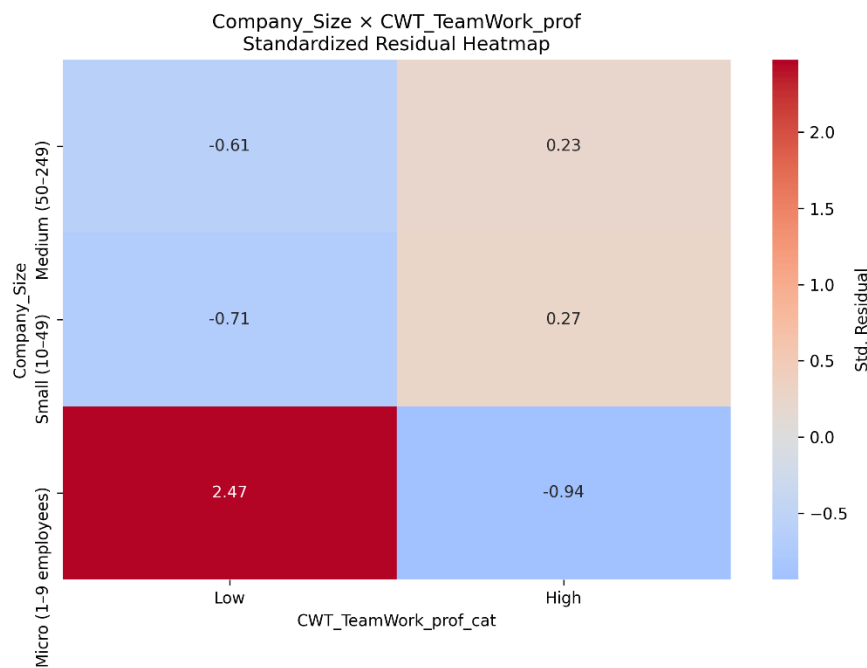


Figure 66. Company Size x CWT_Teamwork_prof.

3.2.10 Years Hiring Freelancers × PP_Exper_Domain_imp

The importance assigned to Experience in the work domain varies significantly according to years of hiring freelancers ($\chi^2 = 16$, $df = 8$, $p = 0.042$; $V = 0.77$). This indicates that firms with longer outsourcing experience develop more refined expectations regarding domain expertise. Repeated engagement likely increases awareness of the strategic value of specialized knowledge.



Figure 67. Years Hiring Freelancers x PP_Exper_Domain_imp.

The association between Years Hiring Freelancers × PP_Exper_Domain_imp shows differentiated patterns in how companies with varying hiring experience evaluate the importance of domain expertise. The most notable deviations appear among companies that have been hiring freelancers for five years, which are strongly over-represented in the Low importance category (Std. residual = 2.47). This suggests that firms with mid-level hiring experience may place comparatively less emphasis on formal domain expertise, possibly because they have developed internal screening mechanisms or rely more on adaptability and collaboration rather than strictly specialized background. In contrast, companies with three years of hiring experience are over-represented in the Medium importance category (2.12), indicating a transitional perspective where domain experience is valued but not necessarily seen as the single dominant criterion. Firms with only one year, as well as those with longer hiring histories of six and nine years, tend to lean toward the High importance category, although without exceeding the conventional ± 2 threshold. This pattern may imply that both relatively new and highly experienced hirers recognize domain expertise as strategically important, whereas companies in the intermediate stage experiment with broader competency mixes before consolidating stricter expertise requirements.

3.2.11 Years Hiring Freelancers × CWT_SelfPromo_Brand_prof and CWT_SelfPromo_Brand_imp

Both the importance and perceived proficiency of Self-promotion and brand building are strongly associated with hiring experience ($\chi^2 = 16, p = 0.042; V = 0.77$). This suggests that firms with extended freelance engagement may increasingly recognize the relevance of freelancers' positioning and professional visibility. More experienced hiring firms may interpret self-branding as a signal of professionalism, credibility, and market differentiation.

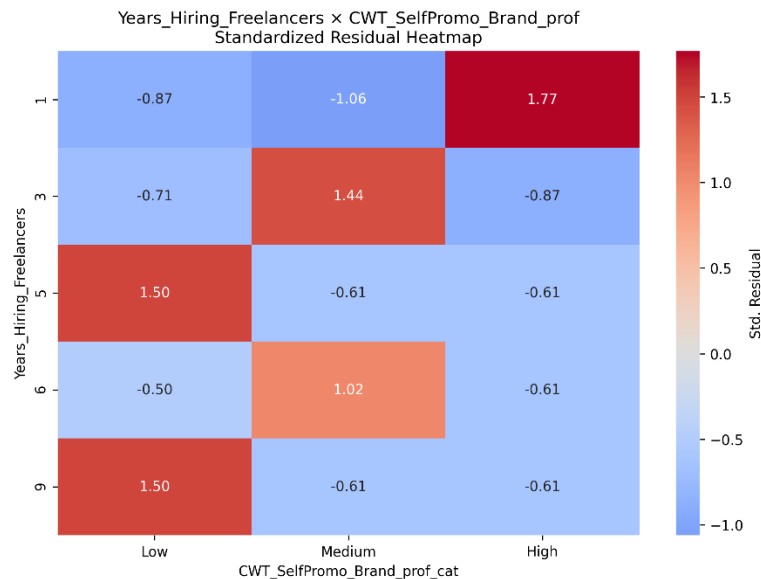


Figure 68. Years Hiring Freelancers x CWT_SelfPromo_Brand_prof.

The cross-tabulation between years of hiring freelancers and self-promotion and brand-building competencies reveals differentiated patterns across experience groups. For proficiency, companies that have hired freelancers for only one year show a relative concentration in the high proficiency category (Std. residual = 1.77), suggesting that newcomers to outsourcing relationships may perceive freelancers as particularly strong in personal branding capabilities. Firms with three and six years of hiring experience tend to cluster around the medium proficiency level (Std. residuals = 1.44 and 1.02), indicating a more moderated assessment, possibly reflecting more

calibrated expectations developed through repeated collaborations. In contrast, companies with five and nine years of hiring experience are over-represented in the low proficiency category (Std. residuals = 1.50), which may suggest growing critical standards or more selective evaluation criteria as firms accumulate outsourcing experience.

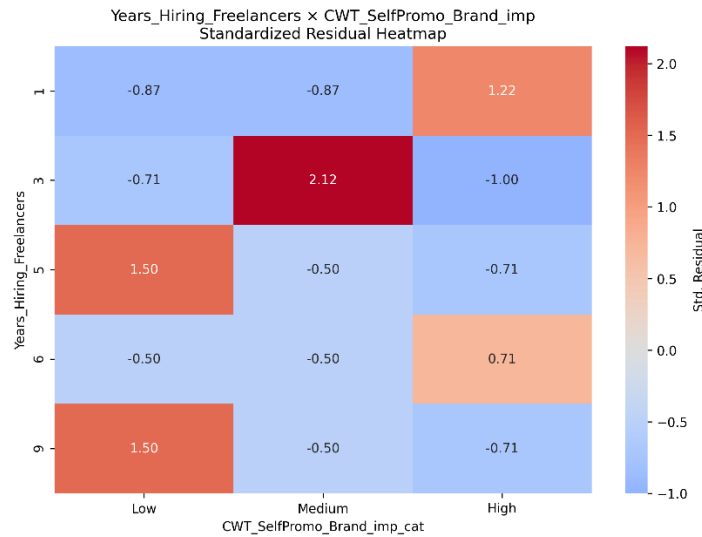


Figure 69. Years Hiring Freelancers x CWT_SelfPromo_Brand_imp.

A similar pattern appears for importance. Companies with one year of hiring experience lean toward rating self-promotion as highly important (Std. residual = 1.22), while those with three years concentrate in the medium importance category (Std. residual = 2.12). Firms with five and nine years of hiring experience are again over-represented in the low importance category (Std. residuals = 1.50), implying that more experienced companies may prioritize other competencies over individual branding skills. Interestingly, firms with six years of experience show some inclination toward the high importance category (Std. residual = 0.71), suggesting a non-linear pattern in how strategic value is assigned to self-promotion capabilities. Overall, the findings indicate that perceptions of both the importance and proficiency of branding skills evolve with accumulated experience in engaging freelancers, reflecting shifting expectations and strategic learning over time.

Across all tested relationships, the consistently very strong effect sizes indicate that company structural characteristics such as sector, size, and hiring experience,

substantially shape competence expectations and evaluations. The demand side in Indonesia does not apply a uniform competence standard, instead, expectations are context-dependent and embedded in industry logic, organizational complexity, and outsourcing maturity.

4 Group Mean Differences in Competency Importance, Proficiency, and Gaps (ANOVA)

This section explores whether different groups of freelancers in Indonesia show differences in how they rate the importance of competencies, their own proficiency levels, and the gaps between importance and proficiency. To examine these differences, one-way ANOVA was used. When the assumption of equal variances was not met, Welch's ANOVA was applied as a more suitable alternative.

To ensure that the findings are both statistically sound and practically meaningful, results are reported only when two conditions are met. First, the statistical test must show a significant difference between groups ($p < 0.05$). Second, the effect size must be large (Partial $\eta^2 \geq 0.14$). This approach helps focus the discussion on differences that are not only statistically significant but also important in real terms. For each competency that meets these criteria, we describe how importance ratings, proficiency levels, and competency gaps differ across key group variables. These variables include age group, level of education, frequency of upskilling activities, and expected use of AI in future work.

When overall group differences were found, further comparisons between specific groups were conducted using the Games-Howell post hoc test. This method was chosen because it works well when group sizes are unequal or when variances differ across groups. A summary of the statistical results is presented in Table 3.

| Grouping Variable | Competency Gap | Test Used | F Value | p Value | Partial η^2 | Effect Size Interpretation |
|-----------------------------|----------------------------|-----------|---------|---------|------------------|----------------------------|
| Gender | PP_Learn_Expand_gap | Welch | 15.67 | <0.001 | 0.409 | Large |
| Age | DL_CloudStorageShare_gap | ANOVA | 15.51 | <0.001 | 0.533 | Large |
| Age | DL_SearchSocialContent_gap | ANOVA | 7.95 | <0.001 | 0.369 | Large |
| Education_Level | PP_SelfOrg_WorkDisc_gap | Welch | 14.25 | 0.00002 | 0.662 | Large |
| AI_Use_Future | CWT_Negotiation_gap | Welch | 6.22 | 0.00698 | 0.690 | Large |
| AI_Use_Future | CWT_ClarityExpression_gap | Welch | 5.64 | 0.00945 | 0.664 | Large |
| AI_Use_Future | CWT_SelfPromo_Brand_gap | Welch | 5.50 | 0.00870 | 0.636 | Large |
| AI_Use_Future | CWT_TeamWork_gap | Welch | 7.40 | 0.00058 | 0.568 | Large |
| Years_Experience_Freelancer | PP_Uncert_Stress_gap | Welch | 16.05 | 0.00079 | 0.852 | Large |
| Years_Experience_Freelancer | CWT_TeamWork_gap | ANOVA | 8.17 | <0.001 | 0.259 | Large |

Table 3. Group mean differences in competency gap scores among Indonesian freelancers based on one-way ANOVA and Welch's ANOVA tests (N = 74).

4.1 Group mean differences in competence gaps by gender

Competence: PP_Learn_Expand_gap

Differences in the competence gap related to continuous learning and professional expansion (PP_Learn_Expand_gap) were examined across gender groups among

Indonesian freelancers. This competence gap reflects the difference between how important freelancers consider ongoing learning and skill expansion to be, and how proficient they perceive themselves in this area. Because the assumption of equal variances was not met, Welch’s ANOVA was applied. Based on Table 4.1., the analysis reveals a statistically significant effect of gender on the learning and expansion gap ($F = 15.67, p < 0.001$). This indicates that the average size of the mismatch between perceived importance and self-assessed proficiency differs across gender groups. The effect size is large (partial $\eta^2 = 0.409$), meaning that gender accounts for a substantial proportion of the variance in this competence gap. Therefore, the observed differences are not only statistically significant but also practically meaningful within the Indonesian freelance population.

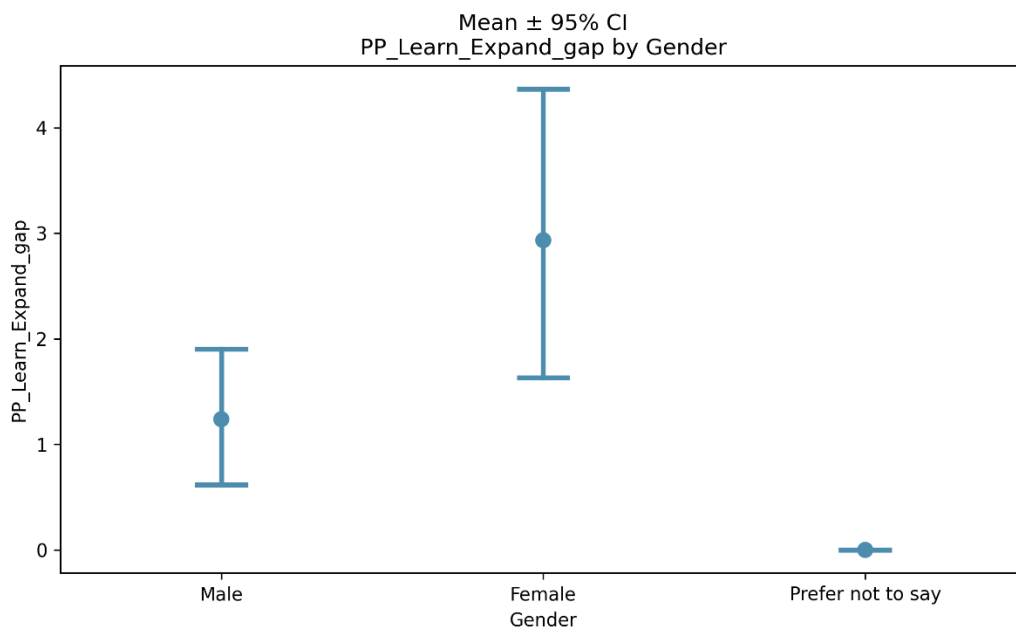


Figure 70. Mean \pm 95% PP_Learn_Expand_gap by gender.

Interpretation

An examination of the mean values and 95% confidence intervals shows a clear difference between male and female freelancers. Female freelancers report a noticeably larger learning and expansion gap compared to male freelancers. The

confidence intervals suggest that this difference is stable and not driven by random variation. Male freelancers display a smaller average gap, indicating a closer alignment between the importance they assign to continuous learning and their perceived level of proficiency. The “prefer not to say” category shows a near-zero value, however, this group is likely very small and should be interpreted cautiously, as limited sample sizes can distort mean estimates.

These findings suggest that gender is an important structuring factor in perceived development gaps among Indonesian freelancers. The larger gap reported by female freelancers may reflect higher developmental expectations, greater awareness of evolving skill demands, or potential structural barriers in accessing training and professional growth opportunities. In contrast, male freelancers appear to perceive a smaller mismatch between importance and proficiency, possibly indicating greater confidence in their skill levels or different perceptions of development needs.

Conclusion

The descriptive results show that female freelancers report a substantially larger learning and professional expansion gap than male freelancers. Numerically, the mean gap score for women is more than twice that of men, indicating a markedly stronger perceived mismatch between the importance of continuous learning and their current level of proficiency. In contrast, male freelancers report a considerably smaller gap, suggesting a closer alignment between how important they consider ongoing skill development and how capable they feel in meeting those expectations. This directional pattern implies that women in the Indonesian freelance market may experience greater perceived barriers in translating learning needs into actual skill acquisition. From a policy perspective, this highlights the need for more inclusive and accessible upskilling initiatives, mentoring systems, and structured professional development pathways that specifically address women’s learning constraints. Interventions such as subsidised training, peer learning networks, flexible digital learning formats, and targeted confidence-building programmes may help reduce this development mismatch and strengthen long-term career sustainability among female freelancers.

4.2 Group mean differences in competence gaps by age

4.2.1 Competence: DL_CloudStorageShare_gap

Differences in the competence gap related to cloud storage and file-sharing skills (DL_CloudStorageShare_gap) were examined across age groups using one-way ANOVA. The assumption of equal variances was satisfied; therefore, standard ANOVA results are reported. The analysis reveals a statistically significant effect of age on the cloud storage and sharing competence gap ($F = 15.51, p < 0.001$). The associated effect size is large (partial $\eta^2 = 0.533$), indicating that age explains more than half of the variance in this competence gap. This represents a substantively strong group difference within the Indonesian freelance population.

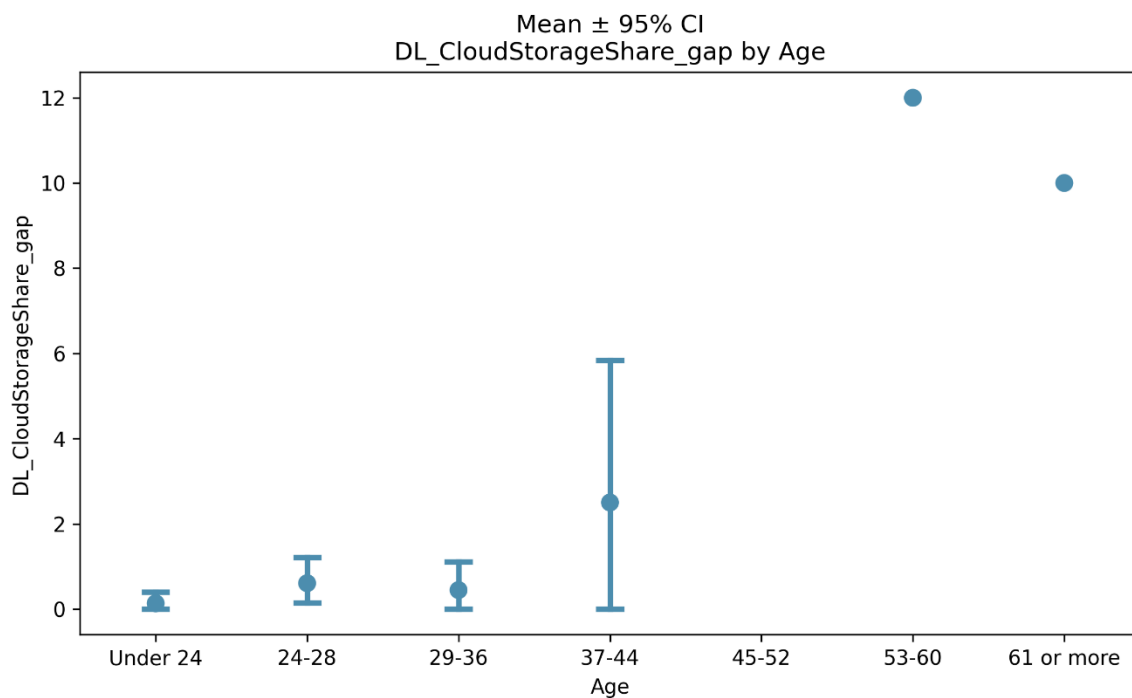


Figure 71. Mean ±95% CloudStorageShare_gap by Age.

Inspection of mean values and 95% confidence intervals reveals a clear age gradient. Younger freelancers (Under 24, 24–28, and 29–36) report very small competence gaps, with mean values close to zero. This suggests that for these groups, perceived importance and proficiency in cloud storage and file sharing are relatively aligned. The gap increases for freelancers aged 37–44, where both the mean and

variability become higher. However, the most pronounced differences appear in the older cohorts:

- Freelancers aged 53–60 show the highest mean gap.
- Freelancers aged 61 or more also report very large gaps.

The older age groups show markedly higher gap scores than younger freelancers, indicating a substantial mismatch between the importance of cloud-based tools and their perceived proficiency with them.

Interpretation

These findings suggest that digital infrastructure-related skills, such as cloud storage and file sharing, represent a structural generational divide among Indonesian freelancers. Younger freelancers appear to have developed these skills early in their careers, likely due to greater exposure to digital technologies during education and early professional stages. Their low gap scores indicate strong alignment between digital demands and personal capability. In contrast, older freelancers report significantly larger gaps. This may reflect later adoption of digital tools, lower familiarity with cloud-based collaboration platforms, or fewer structured training opportunities in digital workflow systems. Given the large effect size ($\eta^2 = 0.533$), this is not a marginal difference but a major structural pattern within the Indonesian freelance ecosystem.

Conclusion

The analysis demonstrates that age is a major determinant of competence gaps in cloud storage and file-sharing skills among Indonesian freelancers. The very large effect size confirms that these differences are not incidental but structurally embedded within the freelance population. While younger freelancers show strong alignment between the importance and proficiency of cloud-based tools, older freelancers experience substantial mismatches. This pattern highlights a clear generational digital divide, suggesting that targeted digital infrastructure training for senior freelancers is essential to ensure inclusive participation in increasingly cloud-dependent freelance markets.

4.2.2 Competence: DL_SearchSocialContent_gap

Age-related differences in the competence gap for searching and using social or online content (DL_SearchSocialContent_gap) were analysed using one-way ANOVA. The assumption of equal variances was met, allowing the use of standard ANOVA results. The analysis indicates a statistically significant effect of age ($F = 7.95$, $p < 0.001$). The effect size is large (partial $\eta^2 = 0.369$), meaning that age explains a considerable proportion of variance in this digital competence gap. Although the effect size is smaller than that observed for cloud storage skills, it still represents a practically meaningful group difference.

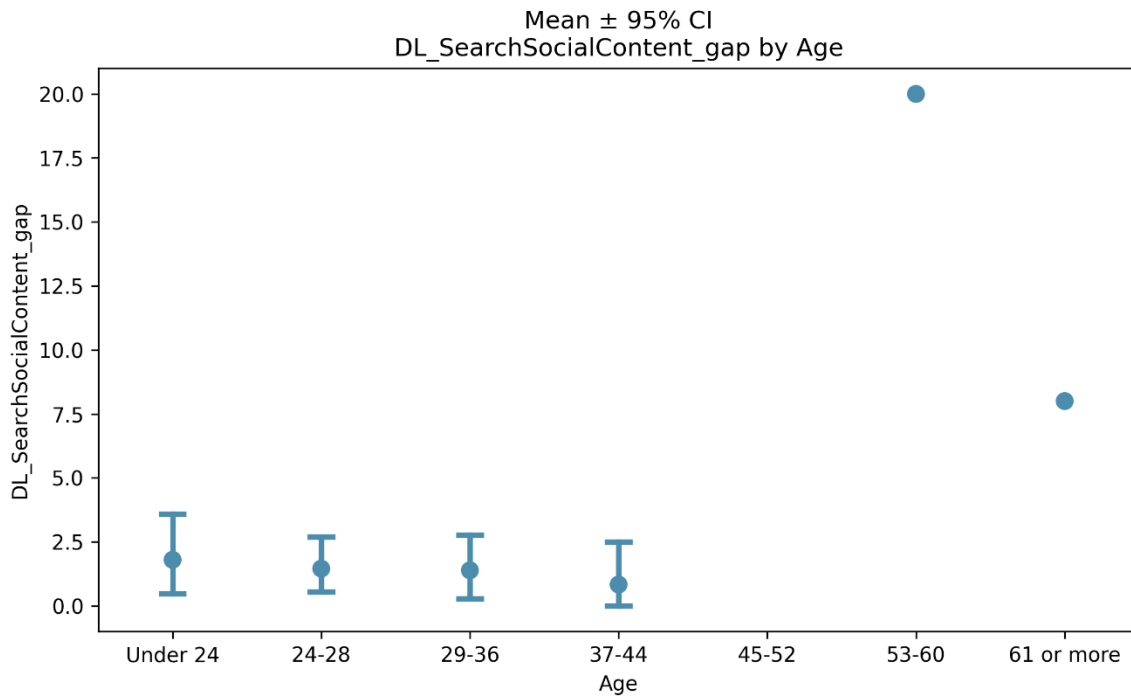


Figure 72. Mean \pm 95% DL_SearchSocialContent_gap by Age.

Figure 72 shows that among younger age groups (Under 24, 24–28, and 29–36), the competence gap is moderate but relatively stable. Interestingly, freelancers aged 37–44 report slightly lower gap values, suggesting stronger alignment between perceived importance and proficiency in this group.

However, the oldest age groups again stand out:

- Freelancers aged 53–60 show a very large gap.

- Freelancers aged 61 or more also report a high gap.

The magnitude of the gap increases sharply in later career stages, indicating that older freelancers experience greater difficulty in keeping pace with digital content search and online information use demands.

Interpretation

The pattern suggests that while younger and mid-career freelancers in Indonesia generally maintain reasonable alignment between digital search demands and skill levels, a substantial digital gap emerges in later career stages.

The pronounced increase in gap scores among freelancers aged 53 and above may reflect:

- Lower familiarity with evolving digital content ecosystems
- Reduced engagement with rapidly changing social media and online search platforms
- Limited exposure to digital literacy training

The large effect size confirms that age functions as a significant structuring factor in digital content-related competence gaps.

Conclusion

Age significantly influences competence gaps related to searching and using online and social content among Indonesian freelancers. Although the gap remains relatively moderate and stable among younger and mid-career freelancers, it increases sharply in later age groups. The large effect size indicates that this is a meaningful structural difference rather than a minor variation. These findings suggest that older freelancers may require additional support in navigating rapidly evolving digital content ecosystems. Strengthening digital content literacy for senior freelancers could therefore enhance adaptability, competitiveness, and long-term sustainability in the freelance labour market.

4.3 Group mean differences in competence gaps by education level

Competence: PP_SelfOrg_WorkDisc_gap

Differences in the competence gap related to self-organisation and work discipline (PP_SelfOrg_WorkDisc_gap) were analysed across education levels. This competence gap reflects the mismatch between how important freelancers consider self-management and discipline to be, and how proficient they perceive themselves in performing these behaviours consistently. Because the assumption of equal variances was not satisfied, Welch’s ANOVA was applied. The results indicate a statistically significant effect of education level on the self-organisation and work discipline gap ($F = 14.25, p = 0.00002$). The associated effect size is very large (partial $\eta^2 = 0.662$), meaning that education level explains a substantial proportion of the variance in this competence gap. This is one of the strongest effects observed in the Indonesian freelancer dataset, indicating a highly meaningful group difference.

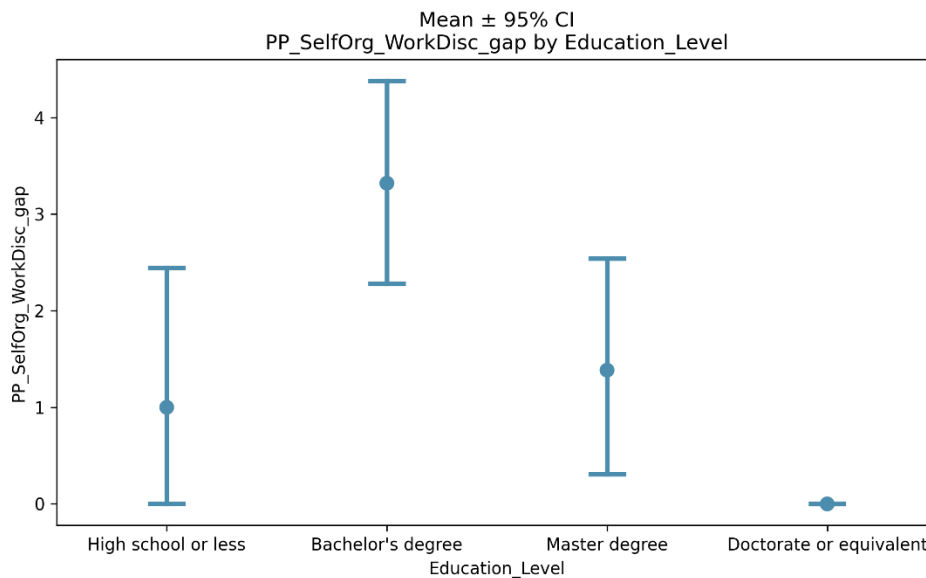


Figure 73. Mean \pm 95% PP_SelfOrg_WorkDisc_gap by Education_Level.

The inspection of mean values and 95% confidence intervals reveals a distinct educational gradient. Freelancers with a Bachelor’s degree report the largest competence gap in self-organisation and work discipline. Their mean gap score is

notably higher than all other groups, indicating a substantial mismatch between perceived importance and self-assessed proficiency. Freelancers with a Master's degree show a moderate gap, smaller than those with a Bachelor's degree but still clearly present. Those with high school education or less report a relatively smaller gap compared to Bachelor's degree holders, although some variability is observed. Interestingly, freelancers with a Doctorate or equivalent qualification report almost no gap, indicating strong alignment between importance and proficiency in self-organisation and discipline.

Interpretation

These findings suggest that education level plays a major structuring role in self-organisation and work discipline gaps among Indonesian freelancers. The large gap observed among Bachelor's degree holders may reflect heightened professional expectations combined with transitional career stages. Many freelancers with undergraduate degrees may be navigating early or mid-career uncertainty, managing multiple clients, and adjusting to autonomous work structures, which can amplify perceived mismatches in discipline and self-management. In contrast, freelancers with Doctoral qualifications may benefit from extensive academic training that emphasises independent work, long-term project management, and structured self-discipline, resulting in better alignment between expectations and capability.

Conclusion

Education level significantly shapes competence gaps in self-organisation and work discipline among Indonesian freelancers. The differences are substantial in magnitude, with Bachelor's degree holders experiencing the largest mismatch, while Doctoral-level freelancers show near alignment between importance and proficiency. These findings suggest that professional development initiatives should not assume that higher formal education automatically translates into strong self-management capacity. Instead, targeted training in project planning, time management, and structured work discipline—particularly for freelancers with undergraduate degrees—may help reduce this gap and improve long-term career sustainability.

4.4 Group mean differences in competence gaps by future use of AI

4.4.1 Competence: CWT_Negotiation_gap

Welch's ANOVA indicates a statistically significant effect of anticipated AI use on negotiation competence gaps ($F = 6.22$, $p = 0.00698$). The effect size is very large (partial $\eta^2 = 0.690$), indicating that differences across AI-use groups explain a substantial proportion of variance in negotiation-related competence gaps.

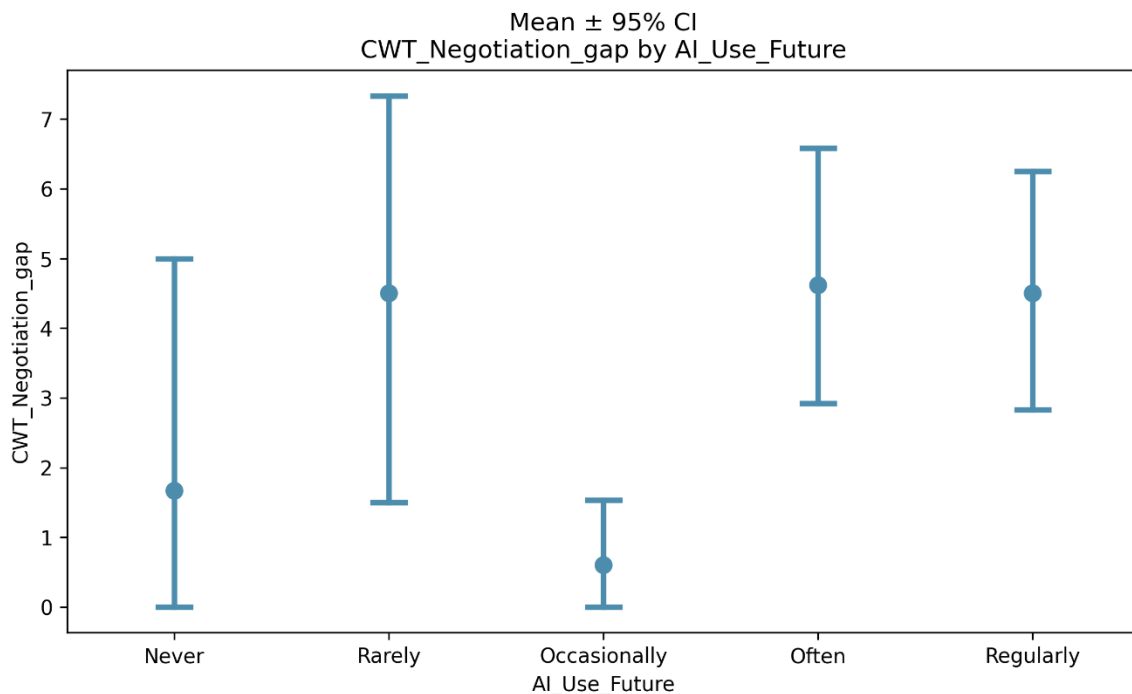


Figure 74. Mean \pm 95% CWT_Negotiation_gap by AI_Use_Future.

Figure 74 reveals a clear non-linear pattern:

- Freelancers who report they will never and rarely use AI show the largest negotiation gap.
- Those who plan to use AI often or regularly also report relatively large gaps.
- Freelancers who will use AI occasionally show the smallest gap.

This suggests that negotiation gaps are particularly pronounced among freelancers at both the low and high ends of AI engagement.

Interpretation

The findings suggest that anticipated AI use is closely linked to perceived mismatches in negotiation skills. Freelancers who never or rarely plan to use AI may struggle to adapt to increasingly technology-mediated client interactions. Meanwhile, those who frequently plan to use AI may face new expectations regarding complex negotiation dynamics in AI-supported markets. The relatively small gap among “occasional” users may indicate balanced adaptation, engaging with AI tools without experiencing excessive performance pressure.

Conclusion

Anticipated AI use significantly structures negotiation competence gaps among Indonesian freelancers. The very large effect size confirms that digital orientation is a critical factor influencing perceived negotiation mismatches in the freelance economy.

4.4.2 Competence: CWT_ClarityExpr_gap

Welch’s ANOVA shows a statistically significant effect of AI-use intention on clarity-of-expression gaps ($F = 5.64, p = 0.00945$). The effect size is very large (partial $\eta^2 = 0.664$), indicating substantial group differences.

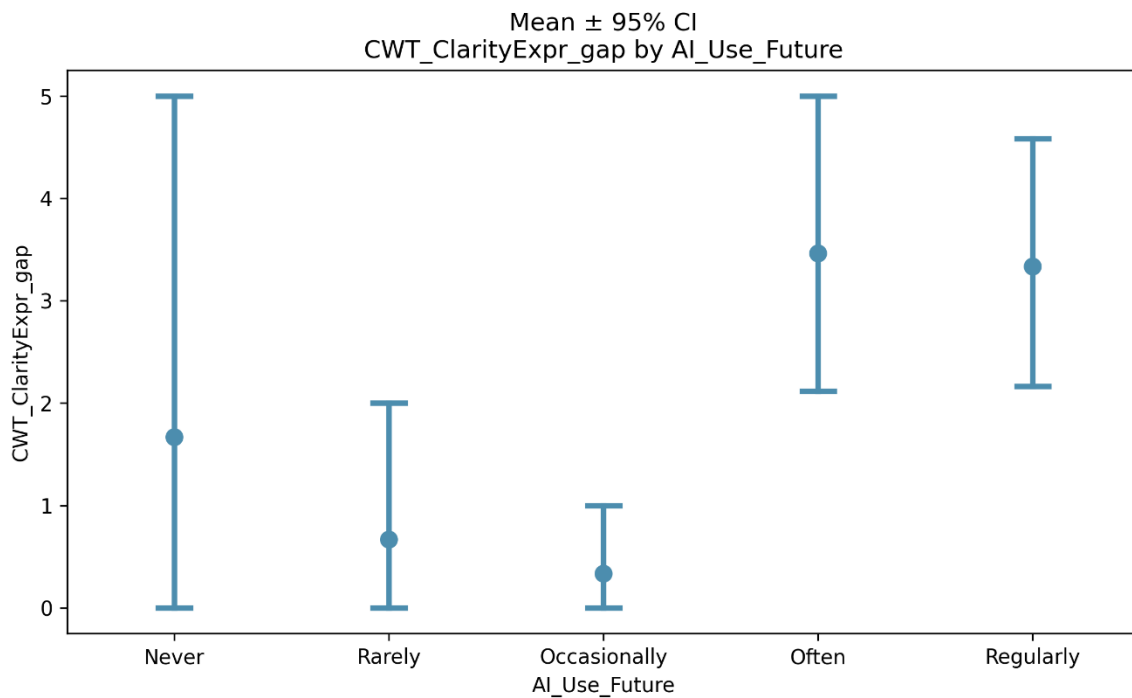


Figure 75. Mean \pm 95% CWT_ClarityExpr_gap by AI_Use_Future.

The results indicate an increasing trend in the mean CWT_ClarityExpr_gap as the intention to use AI in the future becomes more frequent. Participants who reported using AI occasionally and rarely show relatively low mean scores, whereas those who intend to use AI often and regularly demonstrate noticeably higher average values. This pattern suggests a potential association between stronger future AI usage intentions and higher levels of clarity expression gap.

The width of the confidence intervals also provides important information regarding data variability. The Never category exhibits a particularly wide confidence interval, indicating substantial variability within the group or a relatively small sample size, which reduces the stability of the estimated mean. In contrast, the Often and Regularly groups display narrower confidence intervals, suggesting more consistent responses among participants with higher anticipated AI usage. Although the higher-use groups tend to show greater mean values, several confidence intervals overlap across categories, implying that the observed differences may not necessarily be statistically significant. The “never” group shows moderately high importance but relatively contained gaps. The pattern suggests that frequent AI engagement may coincide with greater awareness and adjustment in communication skills.

Interpretation

When interpreted together with the statistical results, the graphical trend showing higher mean CWT_ClarityExpr_gap among participants who intend to use AI more frequently is consistent with the Welch test result reported in the table. The significant effect ($F = 5.64$, $p = 0.00945$, partial $\eta^2 = 0.664$) demonstrates that anticipated AI adoption meaningfully differentiates individuals' clarity expression competency gap. This implies that freelancers with stronger intentions toward future AI use exhibit systematically different competency gap profiles compared to those with lower or no intention of AI use. Considering the large effect size, the relationship can be interpreted as practically meaningful, not merely statistically detectable.

Clarity of expression is a critical competence in AI-assisted work environments. AI tools require precise instructions, structured prompts, and clearly articulated communication to produce high-quality outputs. Freelancers who anticipate using AI often or regularly may recognise higher communication standards in AI-mediated workflows. This heightened awareness may amplify their perception of mismatch between the importance of clarity and their current proficiency, resulting in larger competence gaps. In contrast, freelancers who expect to use AI only occasionally may experience balanced exposure to digital tools without facing strong pressure to continuously optimise structured communication. This may explain their relatively smaller gap. Those who do not intend to use AI at all show moderate gaps, potentially reflecting traditional communication practices that are less shaped by AI-driven demands.

Conclusion

The analysis demonstrates that clarity-of-expression competence gaps differ significantly across future AI-use categories among Indonesian freelancers. With a very large effect size ($\eta^2 = 0.664$), anticipated AI engagement emerges as a powerful explanatory factor. Freelancers who plan to use AI frequently report the largest mismatches, suggesting that increasing digital integration raises perceived communication standards. These findings indicate that AI readiness strategies should incorporate structured communication training, particularly for freelancers

anticipating high AI adoption, to reduce clarity-related competence gaps and enhance digital competitiveness.

4.4.3 Competence: CWT_SelfPromo_Brand_gap

The statistic result indicates a statistically significant difference in CWT_SelfPromo_Brand_gap across levels of intended future AI use (Welch's $F = 5.50$, $p = 0.00870$). The p -value below 0.01 confirms that the variation in self-promotion and branding competence gaps is unlikely to be due to random sampling fluctuation. Moreover, the effect size is large (partial $\eta^2 = 0.636$), suggesting that future AI use intensity explains a substantial proportion of variance in branding-related competence misalignment. This indicates that AI adoption intention is not merely associated with minor differences but represents a structurally meaningful differentiator in freelancers' self-promotion competence gaps.

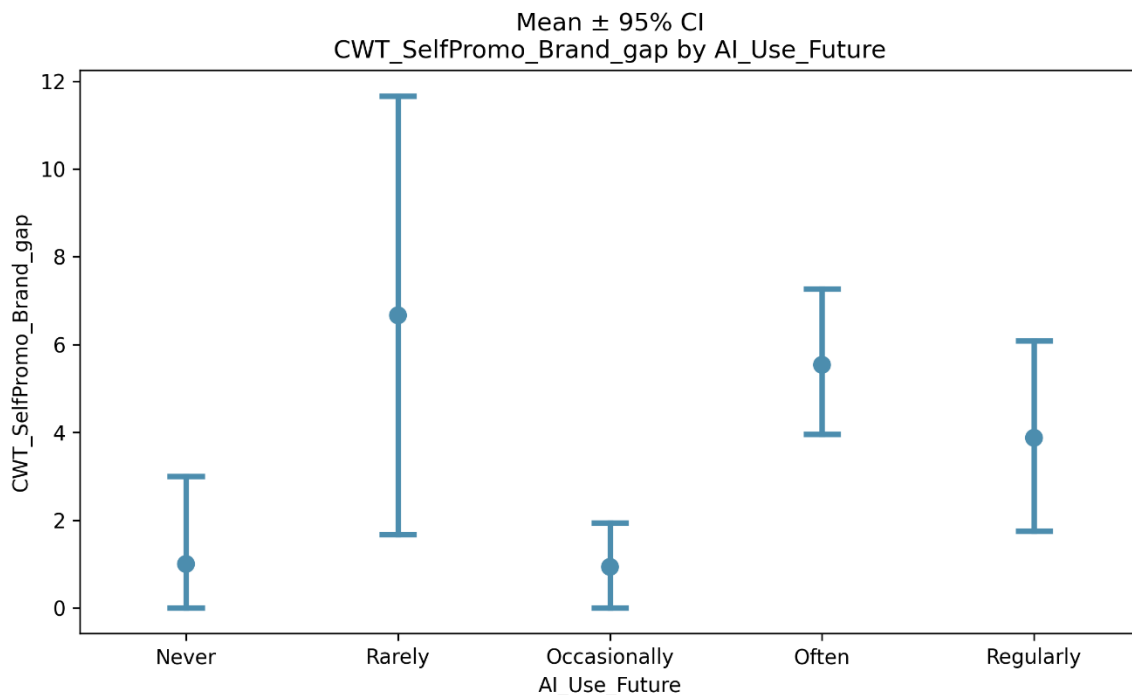


Figure 76. Mean ±95% CWT_SelfPromo_Brand_gap by AI-Use_Future.

The graphical analysis indicates clear differentiation in self-promotion and personal branding competence gaps across intended future AI use intensity. The mean ±95% confidence interval plot reveals that freelancers who report “rarely” and “often”

using AI in the future exhibit the highest mean gaps, followed by the “regularly” group. In contrast, the “Never” and “Occasionally” groups show substantially lower average gaps. At the mean level, the highest misalignment appears among those who intend to use AI “rarely”, followed by those intending to use AI “often” and “regularly”. The “never” and “occasionally” groups report relatively low gaps. Importantly, the confidence intervals for the “rarely” and “often” groups are relatively wide, suggesting substantial variability within these categories.

Interpretation

This pattern suggests a non-linear AI adaptation dynamic. Freelancers who do not intend to use AI at all report low branding gaps, possibly because they do not perceive AI-integrated branding demands as relevant to their work model. Similarly, those who plan to use AI only occasionally may integrate AI as a supportive tool without fundamentally restructuring their branding strategies. However, freelancers intending to use AI frequently appear to recognize heightened branding demands but may lack sufficient competence to fully capitalize on AI-enabled visibility and positioning strategies. Interestingly, the “regularly” group does not show the highest gap. Rather, their gap declines relative to the “rarely” and “often” groups. This may indicate partial adaptation where once AI integration becomes systematic and embedded in workflow practices, competence alignment improves. Thus, the largest misalignment appears during the transitional AI adoption stage rather than at either extreme of non-use or full integration.

Conclusion

Future AI use intensity significantly differentiates self-promotion and branding competence gaps. The largest misalignment is observed among freelancers in transitional AI adoption stages (“rarely” and “often” users), while both non-users and fully regular users report lower gaps. This suggests that competence strain peaks during AI integration phases, highlighting transitional adopters as a critical target group for AI-enabled branding capacity development.

4.4.4 Competence: CWT_TeamWork_gap

Welch ANOVA shows a statistically significant difference in CWT_TeamWork_gap across levels of intended future AI use ($F = 7.40, p = 0.00058$). The p-value below 0.001 indicates strong statistical evidence that teamwork competence gaps vary meaningfully according to freelancers' planned intensity of AI adoption. Furthermore, the effect size is large (partial $\eta^2 = 0.568$), demonstrating that future AI use explains a substantial proportion of variance in teamwork-related competence misalignment. This suggests that intended AI integration is not a marginal factor but a structurally important determinant of perceived teamwork competence gaps among freelancers.

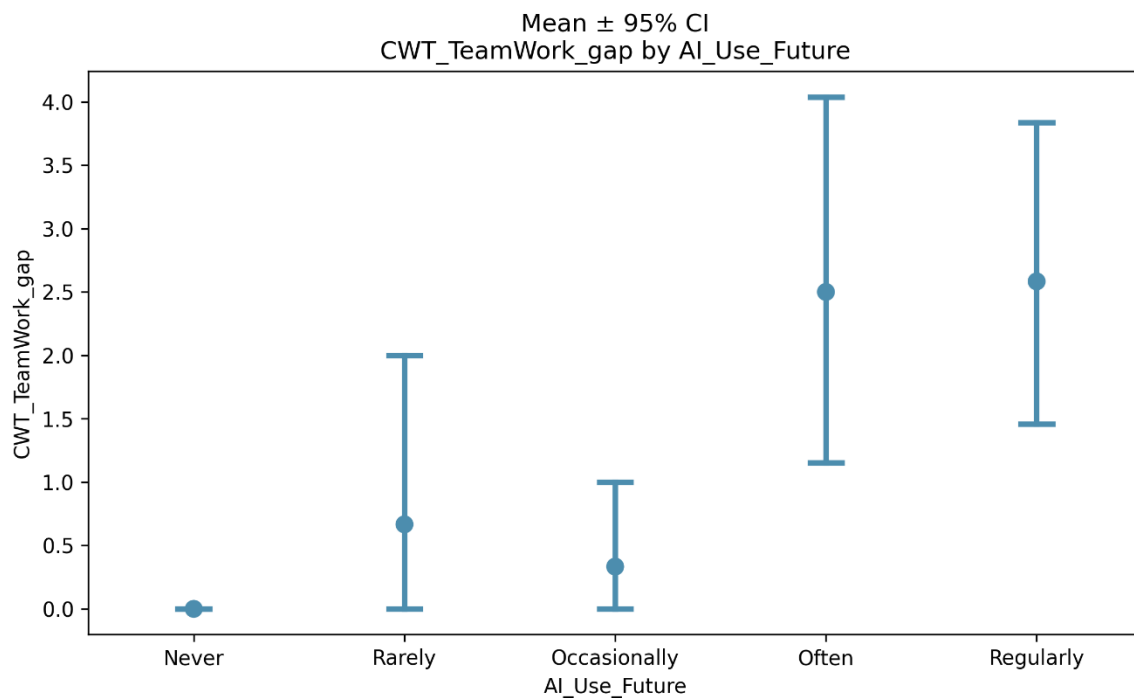


Figure 77. Mean \pm 95% CWT_TeamWork_gap by AI_Use_Future.

The teamwork competence gap shows a distinct pattern across AI future-use categories. Unlike self-promotion, where mid-adopters exhibit the largest gaps, teamwork gaps increase progressively with higher AI use intensity. The mean \pm 95% confidence interval plot shows near-zero gaps for the “never”, “rarely”, and “occasionally” groups. In contrast, freelancers intending to use AI “often” and “regularly” report noticeably higher average teamwork gaps (around 2.5–2.6). The

separation between low-use and high-use groups is visually evident, with minimal overlap in central tendency.

Interpretation

This graph implies that increased AI integration may alter collaborative structures. Freelancers who anticipate frequent AI use may transition toward hybrid human–AI workflows that require new coordination norms, communication protocols, and digital collaboration strategies. As AI tools mediate project management, content generation, or client interaction, teamwork dynamics may become more complex, generating perceived gaps in collaborative competence. Unlike self-promotion gaps which peak at transitional stages and decline at full adoption, teamwork gaps appear to rise with higher AI integration. This suggests that AI may replace or supplement certain individual productivity functions while simultaneously increasing coordination complexity in team-based settings.

Conclusion

Future AI use intensity is associated with progressively higher teamwork competence gaps, particularly among freelancers intending to use AI Often or Regularly. While low AI users show strong alignment, high-intensity AI adopters experience greater collaborative misalignment. This indicates that AI integration may reshape teamwork demands, necessitating new coordination competencies within digitally augmented freelance ecosystems.

4.5 Group mean differences in competence gaps by years of freelancers' experience

4.5.1 Competence: PP_Uncert_Stress_gap

The statistical result reveals a statistically significant difference in uncertainty–stress competence gaps across years of freelancing experience (Welch's $F = 16.05$, $p = 0.00079$). The effect size is exceptionally large (partial $\eta^2 = 0.852$), indicating that years of experience account for a substantial proportion of the variance in stress-related

competence misalignment. Among all grouping variables examined in this study, this represents one of the strongest structural differentiations.

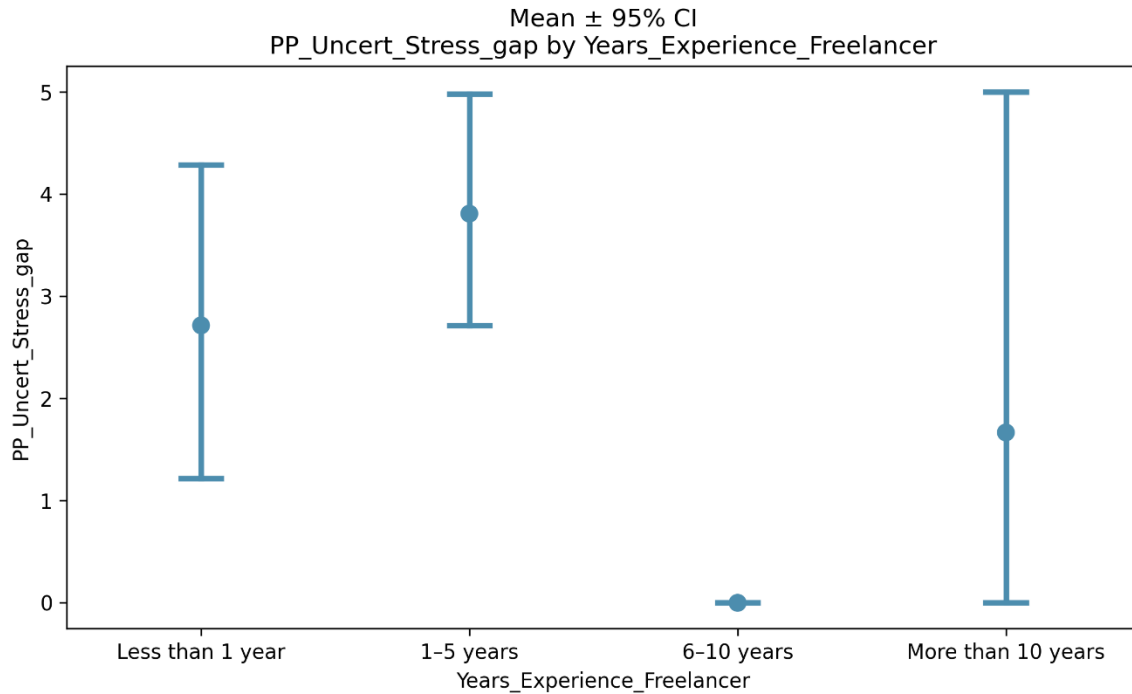


Figure 78. Mean \pm 95% PP_Uncert_Stress_gap by Years_Experience_Freelancer.

At the mean level, the highest uncertainty–stress gap is observed among freelancers with 1–5 years of experience (approximately 3.8), followed by those with less than one year of experience (approximately 2.7). In contrast, freelancers with 6–10 years of experience exhibit near-zero gaps, while those with more than 10 years report moderate gaps (approximately 1.6). This pattern is clearly non-linear and suggests that stress-related competence misalignment peaks during the early professional phase rather than at entry or senior levels.

The distributional analysis reinforces this interpretation. Freelancers with 1–5 years of experience display both the highest median and the widest spread, with upper values extending beyond 10, indicating that a substantial proportion of individuals in this group experience pronounced misalignment between the importance of managing uncertainty and their perceived proficiency. Those with less than one year of experience also show considerable variability, suggesting heterogeneous adaptation to

freelance stress conditions. In contrast, the 6–10 year group presents an extremely tight distribution centered around zero, indicating strong alignment between perceived importance and competence. Freelancers with more than 10 years of experience demonstrate moderate variability, suggesting partial re-emergence of stress pressures, possibly linked to expanded responsibilities, higher client expectations, or complex project portfolios.

Conclusion

Years of freelancing experience significantly shape uncertainty–stress competence gaps, with the largest misalignment occurring during the 1–5 year phase. The near-zero gaps among 6–10 year freelancers suggest successful adaptation to uncertainty, while moderate gaps among senior freelancers may reflect evolving professional pressures. These results highlight early-to-mid career freelancers as a critical group for targeted stress-management capacity development interventions.

4.5.2 Competence: CWT_TeamWork_gap

Significant group differences are also observed for teamwork competence gaps across years of experience (ANOVA $F = 8.17$, $p < 0.001$), with a large effect size (partial $\eta^2 = 0.259$). Although the effect is smaller than that observed for stress competence, it remains substantively meaningful.

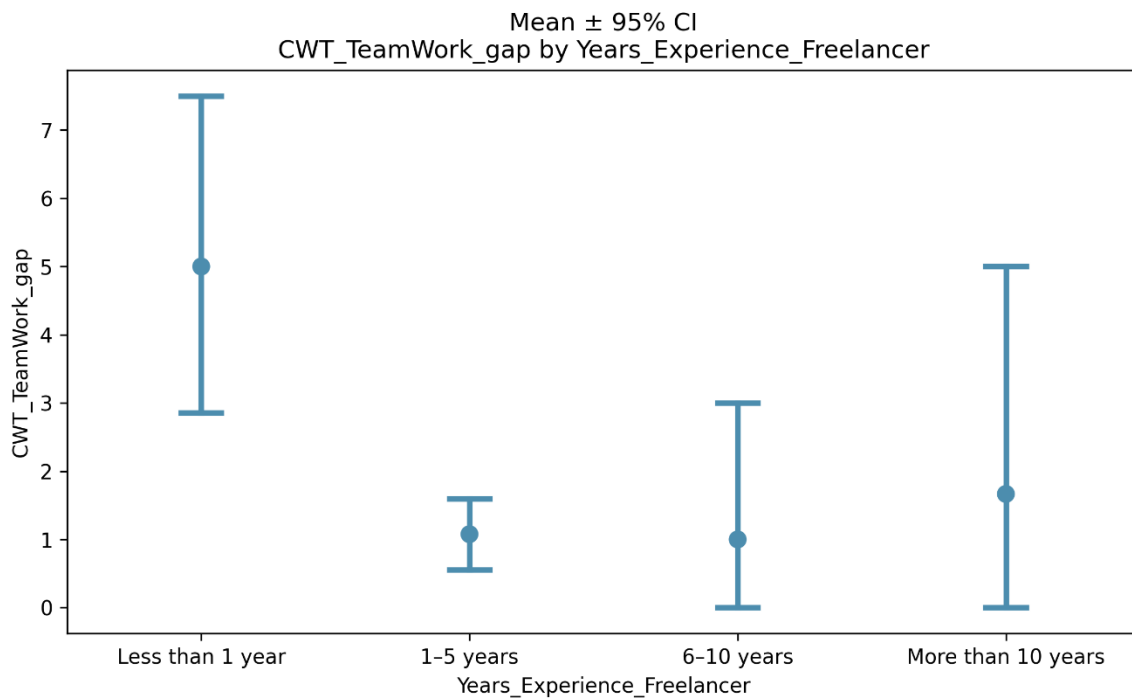


Figure 79. Mean \pm 95% CWT_TeamWork_gap by Years_Experience_Freelancer.

At the mean level, freelancers with less than one year of experience report the highest teamwork gap (approximately 5.0), indicating substantial misalignment between the importance of teamwork and their current capability. In contrast, freelancers with 1–5 years and 6–10 years of experience report much lower gaps (approximately 1.0–1.1), suggesting improved alignment during early and mid-career stages. Freelancers with more than 10 years of experience exhibit a moderate increase (approximately 1.7), though still significantly lower than entry-level freelancers.

The distributional plots further clarify this pattern. The less-than-one-year group displays a high median, wide interquartile range, and substantial upper dispersion, indicating that new freelancers experience considerable teamwork misalignment. This likely reflects the transition from structured organizational environments to independent, project-based collaboration contexts. In contrast, the 1–10 year groups show tightly clustered distributions centred near zero, suggesting that teamwork competence stabilizes relatively quickly once freelancers gain practical collaboration experience and establish professional networks. Among freelancers with more than 10 years of experience, moderate dispersion reappears, potentially reflecting more complex coordination roles, leadership responsibilities, or cross-functional

collaboration demands. Unlike stress competence, teamwork gaps show a clearer adaptation trajectory: very high during entry, sharply reduced during early professional development, and relatively stable thereafter with only modest re-elevation among senior freelancers.

Conclusion

Teamwork competence gaps differ significantly by years of freelancing experience, with the largest misalignment concentrated among entry-level freelancers. Gaps decline sharply after the first year and remain low throughout mid-career stages, indicating rapid adaptation to collaborative freelance work structures. A modest increase among highly experienced freelancers may reflect increasing coordination complexity rather than fundamental competence deficiencies. These findings suggest that teamwork skill reinforcement is particularly critical during the transition into freelancing.

5 Gap Analysis (Paired t-tests)

5.1 Interpretation of paired mean differences between importance and proficiency ratings of competences by categorical variables

Paired-sample t-tests were performed within distinct subgroups defined by categorical variables such as demographic characteristics, primary professional activity, years of freelance experience, anticipated AI usage, and patterns of engagement in upskilling. Within each subgroup, perceived competence importance was directly compared with self-reported proficiency. Conducting the analysis at this level makes it possible to detect competence discrepancies that are associated with specific freelancer profiles, rather than presuming uniformity across the national freelance population.

To ensure that the findings reflect both methodological rigor and substantive relevance, a set of cumulative inclusion criteria was applied. First, only comparisons demonstrating statistical significance at the conventional threshold ($p < 0.05$) were retained. This requirement reduces the likelihood that observed differences between importance and proficiency are attributable to random fluctuation. Second, attention was restricted to large or very large effects, defined as Cohen's d values equal to or greater than 0.80. By imposing this condition, the analysis concentrates on competence gaps of practical consequence, avoiding overinterpretation of statistically detectable yet substantively minor differences.

A further requirement concerned subgroup size. Only paired comparisons based on at least 15 observations were considered eligible for reporting. This minimum threshold is consistent with established statistical power principles for paired-sample t-tests. In practical terms, samples of approximately this magnitude are generally necessary to achieve adequate power (around 0.80) when the objective is to detect large effects at an alpha level of 0.05 (Cohen, 1988; Lakens, 2013). Results derived from

smaller subsamples were excluded, as such estimates are vulnerable to instability and potential inflation of effect sizes.

By simultaneously applying criteria related to statistical significance, effect magnitude, and minimum sample size, the Indonesian analysis isolates competence areas in which the divergence between perceived importance and current proficiency is both statistically credible and substantively meaningful for policy and training design. In the reported results, positive effect sizes correspond to situations where perceived importance exceeds self-assessed proficiency, indicating areas of unmet competence development needs among Indonesian freelancers.

| Competence | Category | Level | N | Mean Prof. | Mean Imp. | Mean Gap. | t | p | Cohen's d |
|-------------------------------|----------------------|-------------------|----|------------|-----------|-----------|-------|-------|-----------|
| PP_Pers_Fin | Education_Level | Bachelor's degree | 50 | 3.88 | 4.52 | 3.02 | -6.27 | <.001 | 0.89 |
| PP_Formal_Reg | Gender | Female | 30 | 3.20 | 4.17 | 4.57 | -4.97 | <.001 | 0.91 |
| CWT_ClarityExpr | Gender | Female | 30 | 4.10 | 4.73 | 3.27 | -4.54 | <.001 | 0.83 |
| DL_DigitalLabourP latforms | Education_Level | Bachelor's degree | 50 | 3.82 | 4.42 | 2.82 | -5.82 | <.001 | 0.82 |
| PP_Uncert_Stress | Age | 24–28 | 33 | 3.82 | 4.42 | 2.91 | -4.66 | <.001 | 0.81 |
| PP_SelfOrg_WorkD isc | Upskilling_Frequency | Occasionally | 31 | 3.97 | 4.55 | 2.74 | -4.49 | <.001 | 0.81 |

Table 4. Significant paired mean differences between importance and proficiency ratings across freelancer subgroups.

5.1.1 Personal financial management (PP_Pers_Fin) – Bachelor's degree

Based on the paired t-test results with a total N of 50, it indicates a statistically significant discrepancy, $t = -6.27$, $p < .001$, with importance ratings ($M = 4.52$) substantially exceeding proficiency levels ($M = 3.88$). The effect size is large (Cohen's $d = 0.89$), suggesting a pronounced competence gap. This finding implies that degree-holding freelancers in Indonesia clearly recognise the critical role of financial management—such as budgeting, income planning, and cash flow monitoring—in

sustaining freelance careers, yet they feel insufficiently equipped in this domain. Given the volatility of freelance income streams in Indonesia's gig economy, strengthening financial literacy and financial planning skills appears to be a strategic development priority for this subgroup.

5.1.2 Understanding formal regulations (PP_Formal_Reg) - Female

Among female freelancers ($N = 30$), a paired t-test reveals a statistically significant difference between perceived importance and proficiency in understanding formal regulations, $t = -4.97, p < .001$. Importance ($M = 4.17$) is rated considerably higher than proficiency ($M = 3.20$). The effect size is large ($d = 0.91$), indicating a substantial mismatch. This result suggests that female freelancers strongly acknowledge the importance of regulatory knowledge—such as taxation rules, contractual obligations, and legal compliance—yet report limited mastery. Considering Indonesia's evolving regulatory landscape for digital and independent workers, this gap may reflect limited access to structured guidance or formal training on legal and administrative procedures. Policy interventions targeting regulatory literacy could therefore enhance security and professional confidence among female freelancers.

5.1.3 Clarity of expression (CWT_ClarityExpr) - Female

For female freelancers ($N = 30$), the paired t-test also identifies a significant gap in clarity of expression, $t = -4.54, p < .001$, with importance ($M = 4.73$) rated higher than proficiency ($M = 4.10$). The associated effect size is large ($d = 0.83$), highlighting a meaningful competence discrepancy. This suggests that while communication clarity is perceived as highly critical, particularly in client negotiation, remote coordination, and proposal writing. Female freelancers may experience challenges in confidently articulating ideas or positioning themselves competitively. Given the client-driven nature of freelance markets in Indonesia, enhancing persuasive and professional communication skills could directly contribute to improved project acquisition and long-term career sustainability.

5.1.4 Digital labour platform usage (DL_DigitalLabourPlatforms) – Bachelor’s degree

A significant difference is also observed among freelancers with a Bachelor’s degree (N = 50) in competencies related to digital labour platforms, $t = -5.82$, $p < .001$. Importance (M = 4.42) exceeds proficiency (M = 3.82). The effect size is large ($d = 0.82$), indicating a considerable competence gap. Although Indonesian freelancers with higher education recognise the strategic importance of optimising digital labour platforms such as profile positioning, algorithm understanding, and platform-based networking, they may lack advanced operational skills to maximise visibility and competitiveness. In an increasingly platform-mediated labour market, improving digital platform literacy represents a critical leverage point for enhancing freelancer performance and income stability.

5.1.5 Managing uncertainty and stress (PP_Uncert_Stress) – Age 24–28

For freelancers aged 24–28 (N = 33), a paired t-test reveals a statistically significant gap between importance and proficiency in managing uncertainty and stress, $t = -4.66$, $p < .001$. Importance (M = 4.42) is rated higher than proficiency (M = 3.82). The effect size is large ($d = 0.81$), indicating a notable mismatch. This finding suggests that younger Indonesian freelancers strongly acknowledge the psychological demands of freelance work such as irregular income, client dependency, and project instability, yet feel moderately underprepared to cope effectively. As early-career freelancers are particularly vulnerable to market fluctuations, structured mentoring and resilience-building interventions could support long-term sustainability in this demographic group.

5.1.6 Self-organisation and work discipline (PP_SelfOrg_WorkDisc) – Occasional Upskilling

Among freelancers who engage in upskilling only occasionally (N = 31), a significant difference emerges between importance and proficiency in self-organisation and work discipline, $t = -4.49$, $p < .001$. Importance (M = 4.55) clearly exceeds proficiency (M = 3.97). The effect size is large ($d = 0.81$), indicating a substantial competence gap. This

suggests that freelancers who do not consistently invest in skill development may struggle with time management, deadline adherence, and structured work routines. The finding underscores the reinforcing relationship between continuous learning and self-discipline. Freelancers who upskill more systematically may simultaneously develop stronger organisational competencies. Encouraging regular upskilling practices could therefore indirectly enhance broader professional self-management capacities.

5.2 Global gap analysis (paired *t*-tests)

This section presents the results of the global competence gap analysis for the Indonesian freelancer sample. The analysis is based on paired-sample *t*-tests that compare, within the same individuals, the perceived importance of each competence with the corresponding self-assessed proficiency level. The purpose of this approach is to identify systematic mismatches between the competences freelancers consider essential and the level at which they currently believe they perform.

The paired comparisons were conducted using the full freelancer sample, thereby capturing aggregate-level patterns rather than subgroup-specific variations. For each competence, the mean difference between importance and proficiency ratings was tested against zero to determine whether a statistically meaningful discrepancy exists at the national level. To maintain analytical rigor and practical interpretability, only competences meeting two cumulative criteria are retained for discussion. First, the difference must reach conventional statistical significance ($p < 0.05$), ensuring that the observed mismatch is unlikely to be attributable to random fluctuation. Second, the magnitude of the discrepancy must reach at least a medium effect size (Cohen's $d \geq 0.50$), thereby focusing attention on gaps of substantive importance rather than marginal statistical deviations.

By combining significance testing with effect size evaluation, the global analysis isolates competences that represent nationally relevant development priorities. In all retained cases, effect sizes indicate that perceived importance exceeds self-assessed proficiency, pointing to consistent patterns of unmet competence needs. This

directional consistency strengthens the interpretation that targeted interventions in these areas may contribute meaningfully to improving the overall resilience, competitiveness, and sustainability of Indonesian freelancers.

| Variable | Mean Prof | Mean Imp | Mean Gap | t | p | Cohen's d |
|---------------------------|-----------|----------|----------|---------|----------|-----------|
| PP_Uncert_Stress | 3.7838 | 4.3919 | 3.2568 | -5.4347 | 6.92E-07 | 0.6318 |
| PP_Engage_Relat | 4.0270 | 4.4865 | 2.5270 | -4.8551 | 6.65E-06 | 0.5644 |
| PP_Learn_Expand | 4.1216 | 4.5000 | 1.8919 | -4.8117 | 7.84E-06 | 0.5593 |
| PP_Identify_Solve | 4.0946 | 4.5270 | 2.2297 | -5.0152 | 3.60E-06 | 0.5830 |
| PP_Formal_Reg | 3.3514 | 3.9730 | 3.2703 | -4.9438 | 4.74E-06 | 0.5747 |
| PP_Pers_Fin | 3.7432 | 4.3784 | 3.0405 | -6.1750 | 3.38E-08 | 0.7178 |
| CWT_ClarityExpr | 4.0676 | 4.5000 | 2.4865 | -4.5798 | 1.87E-05 | 0.5324 |
| CWT_Courage_Assert | 4.0946 | 4.5270 | 2.5270 | -4.3186 | 4.87E-05 | 0.5020 |
| CWT_SelfPromo_Brand | 3.6081 | 4.3649 | 3.9730 | -5.6879 | 2.50E-07 | 0.6612 |
| CWT_Negotiation | 3.7027 | 4.3649 | 3.6351 | -5.7136 | 2.25E-07 | 0.6642 |
| DL_DigitalLabourPlatforms | 3.8108 | 4.3378 | 2.4865 | -5.8102 | 1.52E-07 | 0.6754 |

Table 5. Global competence gaps between perceived importance and self-assessed proficiency.

5.2.1 Managing uncertainty and stress

Managing uncertainty and stress (PP_Uncert_Stress) reveals a statistically significant mismatch between perceived importance and self-assessed proficiency among Indonesian freelancers. While freelancers attribute high importance to coping with uncertainty ($M_{imp} = 4.3919$), their reported proficiency is notably lower ($M_{prof} = 3.7838$). The paired t-test confirms a robust difference ($t = -5.4347$, $p < .001$), with a large effect size (Cohen's $d = 0.6318$). The negative t-value indicates that importance exceeds proficiency, signalling a substantial unmet competence need. This finding

suggests that freelancers are highly aware of the volatility and psychological pressures of freelance work, yet do not feel fully equipped to manage these demands effectively.

5.2.2 Engagement and relationship building

Engagement and relationship-building competence (PP_Engage_Relat) also shows a statistically significant gap. Importance ($M_{imp} = 4.4865$) exceeds proficiency ($M_{prof} = 4.0270$), with $t = -4.8551$, $p < .001$, and a large effect size ($d = 0.5644$). Although freelancers rate their relational competence relatively high, they still perceive a shortfall relative to its importance. This suggests that sustaining professional networks and long-term client relationships remains a critical, yet not fully mastered, capability within Indonesia's freelance ecosystem.

5.2.3 Continuous learning and expansion

Continuous learning and expansion (PP_Learn_Expand) demonstrates a significant importance–proficiency mismatch. Freelancers rate importance at 4.5000, compared to proficiency at 4.1216, resulting in $t = -4.8117$, $p < .001$, and a large effect size ($d = 0.5593$). Despite relatively strong proficiency levels, freelancers perceive that ongoing learning demands outpace their current capabilities. The gap indicates sustained pressure for continuous upskilling.

5.2.4 Problem identification and solution development

Problem identification and solution development (PP_Identify_Solve) shows a statistically robust gap, with importance ($M_{imp} = 4.5270$) exceeding proficiency ($M_{prof} = 4.0946$). The paired comparison yields $t = -5.0152$, $p < .001$, and a large effect size ($d = 0.5830$). Although proficiency levels are relatively high, freelancers still perceive a meaningful shortfall relative to market expectations. This underscores the centrality of analytical and solution-oriented thinking in freelance work and signals room for further development.

5.2.5 Understanding formal regulations

Formal regulatory competence (PP_Formal_Reg) presents a clear and statistically significant mismatch. Importance is rated at 3.9730, while proficiency is considerably lower at 3.3514, with $t = -4.9438$, $p < .001$, and $d = 0.5747$. The sizeable gap indicates that freelancers recognise the importance of understanding contracts, taxation, and regulatory compliance but lack sufficient mastery. This may reflect limited access to structured guidance in navigating Indonesia's regulatory environment.

5.2.6 Personal financial management

Personal financial management (PP_Pers_Fin) exhibits one of the strongest mismatches in the dataset. Importance ($M_{imp} = 4.3784$) clearly exceeds proficiency ($M_{prof} = 3.7432$), producing $t = -6.1750$, $p < .001$, and a large effect size ($d = 0.7178$). This represents one of the largest observed effects, indicating a particularly pronounced development need. Freelancers appear acutely aware of the importance of financial planning and income management but feel underprepared to manage financial volatility effectively.

5.2.7 Clarity of expression

Clarity of expression (CWT_ClarityEngine) shows a statistically significant gap between importance (4.5000) and proficiency (4.0676), $t = -4.5798$, $p < .001$, with a large effect size ($d = 0.5324$). Although communication skills are rated relatively highly, freelancers still perceive that professional expectations, especially in client-facing and digital contexts, exceed their current capability.

5.2.8 Courage and assertiveness

Courage and assertiveness (CWT_Courage_Assert) also demonstrate a significant importance–proficiency mismatch. Importance (4.5270) exceeds proficiency (4.0946), with $t = -4.3186$, $p < .001$, and $d = 0.5020$. While the effect size is just above the threshold for a large effect, it still indicates a meaningful gap. Freelancers recognise the importance of asserting boundaries and defending professional value, yet may hesitate in practice.

5.2.9 Self-promotion and personal branding

Self-promotion and branding (CWT_SelfPromo_Brand) reveal a strong and statistically robust mismatch. Importance (4.3649) substantially exceeds proficiency (3.6081), resulting in $t = -5.6879$, $p < .001$, and $d = 0.6612$. This sizeable effect suggests that visibility and digital positioning are perceived as crucial for success, yet freelancers feel insufficiently skilled in strategic personal branding.

5.2.10 Negotiation

Negotiation competence (CWT_Negotiation) presents one of the most pronounced mismatches. Importance (4.3649) exceeds proficiency (3.7027), with $t = -5.7136$, $p < .001$, and a large effect size ($d = 0.6642$). This indicates a substantial development need in price negotiation, contract discussion, and scope clarification. In competitive freelance markets, insufficient negotiation skills may directly affect income and professional sustainability.

5.2.11 Digital labour platform competence

Digital labour platform competence (DL_DigitalLabourPlatforms) shows a strong and statistically significant gap. Importance (4.3378) is rated higher than proficiency (3.8108), with $t = -5.8102$, $p < .001$, and a large effect size ($d = 0.6754$). This finding suggests that freelancers recognise the strategic importance of digital platforms for project acquisition and career advancement but may lack advanced platform optimisation skills. The magnitude of the effect underscores digital platform literacy as a critical competence area within Indonesia's freelance landscape.

5.2.12 Overall analysis

When the Indonesian data are examined as a whole, a clear and structured pattern emerges across the competence landscape. In every competence retained for analysis, the average importance score is higher than the corresponding proficiency score. This systematic direction of difference confirms that Indonesian freelancers consistently perceive market expectations to exceed their current level of preparedness. The negative t-statistics across all selected competences reinforce this directional

imbalance. However, the magnitude of the gaps is not evenly distributed. The stacked bar chart shows that the most substantial discrepancies are concentrated in entrepreneurial and market-facing competences rather than purely technical ones. The largest mean gaps appear in self-promotion and personal branding, negotiation, personal financial management, and managing uncertainty and stress. These competences share a common thread: they relate to economic positioning, income stability, and professional sustainability. In other words, the strongest mismatches are found in areas that directly influence freelancers' ability to secure, price, and manage work in competitive environments.

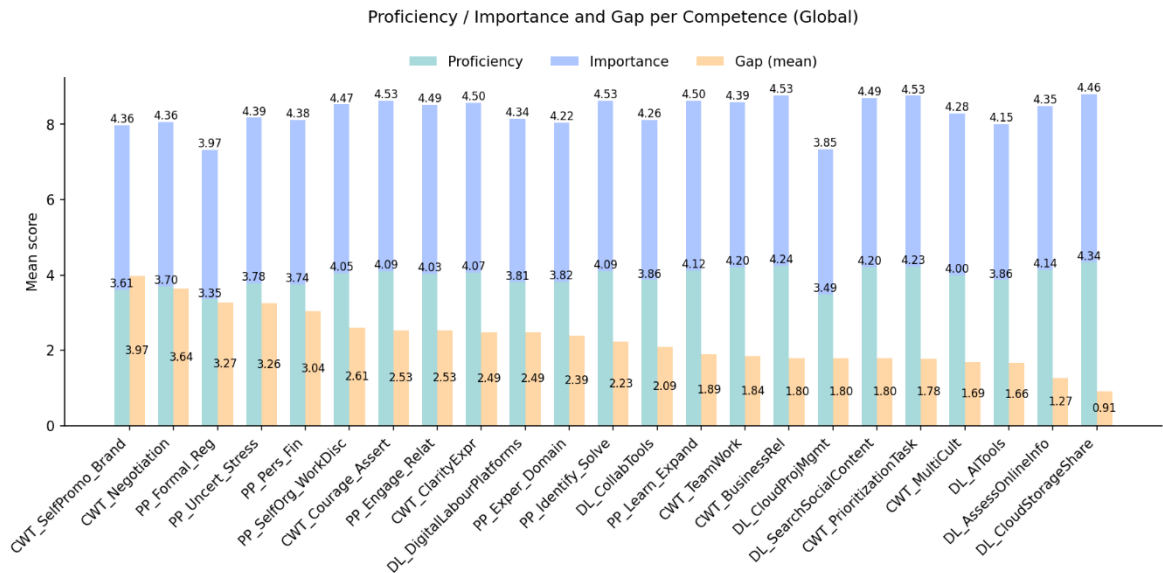


Figure 80. Proficiency/importance and gap per competence (global).

The radar chart further clarifies this structure by displaying the relative intensity of each mean gap on a single scale. Rather than forming a uniform shape, the radar profile shows pronounced peaks in branding, negotiation, financial management, and stress management, while digital tool-related competences display comparatively moderate discrepancies. Digital labour platform skills still register a meaningful gap, but it is not as dominant as entrepreneurial competences. This visual configuration suggests that the primary tension in the Indonesian freelance ecosystem is not simply digital literacy, but strategic self-management within platform-mediated markets. Another important observation concerns the balance between transversal and

technical skills. Communication clarity and assertiveness show notable but moderate gaps, indicating that freelancers recognise the importance of professional interaction standards. Meanwhile, regulatory understanding remains a significant weakness area, highlighting challenges in navigating formal administrative and legal systems. These patterns suggest that Indonesian freelancers operate in a context where informal practice may be common, yet formal institutional expectations are increasingly shaping professional legitimacy.

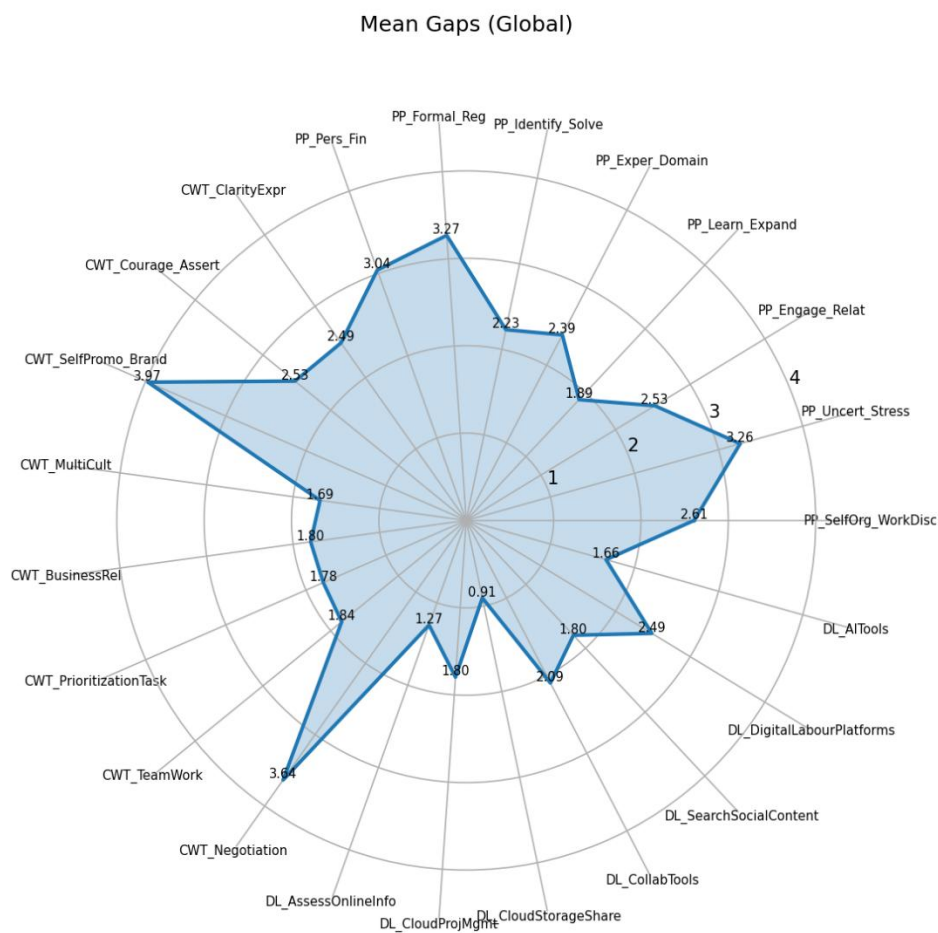


Figure 81. Mean gaps (global).

Overall, the Indonesian competence gap structure points toward a transition phase in the freelance economy. Freelancers appear confident in core operational abilities, as reflected in relatively high proficiency means, yet they perceive heightened expectations in areas that determine long-term resilience and competitiveness. The data therefore suggest that development priorities should extend beyond technical

upskilling and focus strongly on financial literacy, negotiation strategy, self-branding, stress management, and regulatory navigation. Taken together, the statistical results and graphical representations reveal a competence ecosystem characterised by high awareness but incomplete preparedness. Indonesian freelancers understand what is required to thrive in contemporary digital markets, yet the capacity to fully meet those expectations remains uneven. This configuration provides a clear empirical basis for policy and training initiatives that integrate entrepreneurial capability, psychological resilience, and platform strategy into national upskilling frameworks.

6 Segmentation and Profile

Analysis (k-means and CHAID)

6.1 Freelancers

This section presents the segmentation results for the Indonesian freelancer subsample derived from k-means clustering and further interpreted through CHAID profiling. The objective is to identify structurally coherent freelancer typologies that differ across competence endowment, professional maturity, and behavioural readiness toward AI-driven transformation. The clustering solution is based on standardized means across seven dimensions: overall competences, digital literacy, non-digital labour (Non-DL) competences, domain experience, freelance years, AI future use orientation, and upskilling frequency.

The five-cluster solution (Figure 82) reveals a differentiated freelancer ecosystem in which competence capital and behavioural dynamism do not always move in parallel. Some clusters combine strong competence stocks with moderate AI orientation, while others demonstrate strong AI engagement despite lower accumulated experience. This structural diversity justifies a typological interpretation rather than a linear ranking of groups.

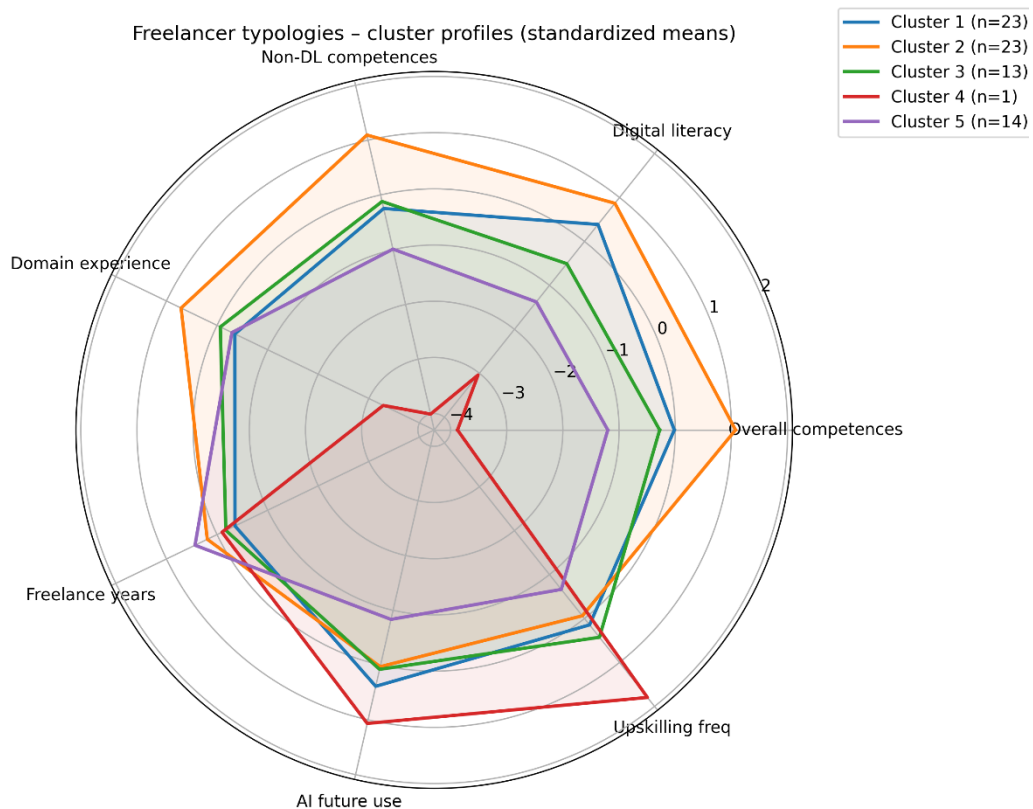


Figure 82. Freelancer typologies - cluster profiles based on standardized means (Indonesia).

To synthesize the typological interpretation, Table 6 summarizes the assigned cluster profiles and their defining characteristics.

| Cluster | Assigned profile | Key characteristics |
|-----------|---------------------------|--|
| Cluster 1 | Traditional Experts | High domain experience, strong non-digital competences, lower AI use |
| Cluster 2 | Early-Career Learners | Low experience, lower overall competences, moderate upskilling |
| Cluster 3 | AI-oriented Adopters | High AI future use, strong digital literacy, medium experience |
| Cluster 4 | Digital-Native Innovators | Highest digital competences and upskilling frequency |
| Cluster 5 | Balanced Professionals | Moderate-to-high competences across all dimensions, stable experience, pragmatic AI adoption |

Table 6. Freelancer cluster profiles and key characteristics (Indonesia).

Cluster 1 – Consolidated Professionals (n = 23)

Cluster 1 displays moderately high overall competences and strong digital literacy relative to the sample mean. Non-DL competences and domain experience are also

solid, while freelance years are above average, indicating accumulated professional exposure. AI future use and upskilling frequency are positive but not extreme.

This profile reflects freelancers who have achieved structural consolidation: they possess balanced human capital across technical, digital, and experiential dimensions. Their AI orientation is aligned with their competence base, suggesting readiness for applied AI integration rather than experimentation-driven transformation. Strategically, this group represents a stable backbone of the freelancer ecosystem, capable of integrating AI tools incrementally to enhance productivity and service quality.

Cluster 2 – High-Competence Specialists (n = 23)

Cluster 2 records the strongest standardized means across overall competences, digital literacy, Non-DL competences, and domain experience, as illustrated in Figure 6.1. Freelance tenure is also high, reinforcing their position as experienced and skill-intensive professionals. However, AI future use and upskilling frequency, although positive, are not proportionally higher than in more behaviourally dynamic clusters.

This configuration suggests strong absorptive capacity combined with selective AI engagement. These freelancers possess the structural capability to lead technological transformation but may not perceive immediate necessity for aggressive AI adoption. From a policy perspective, they represent a high-potential segment for advanced, innovation-oriented programs that encourage experimentation with AI-enhanced business models.

Cluster 3 – Emerging AI-oriented Freelancers (n = 13)

Cluster 3 exhibits moderately positive scores in overall competences and digital literacy, with medium domain experience and freelance years. Notably, AI future use orientation is comparatively strong relative to their competence stock, and upskilling frequency is solid.

This pattern indicates a forward-looking, strategically adaptive segment. Although not the most experienced or competence-intensive group, they demonstrate behavioural alignment with technological transformation. Their profile suggests openness to innovation and willingness to experiment with AI tools. With targeted

reinforcement of domain expertise and advanced digital capabilities, this group could rapidly transition into a leading segment of the ecosystem.

Cluster 4 – AI-Driven Outlier (n = 1)

Cluster 4 displays an extreme configuration. Overall competences, digital literacy, and domain experience are significantly below the sample mean, yet AI future use and upskilling frequency are exceptionally high. Given the very small cluster size, this profile must be interpreted as an outlier rather than a stable typology.

The configuration suggests compensatory behavioural dynamism—strong motivation to adopt AI tools despite limited accumulated competence capital. While analytically noteworthy, this cluster does not represent a generalizable segment within the Indonesian freelancer population.

Cluster 5 – Balanced Experience-based Professionals (n = 14)

Cluster 5 shows moderate-to-high competences across most dimensions, particularly in freelance years and domain experience. Digital literacy and overall competences are stable, and AI future use and upskilling frequency are positive but measured.

This group reflects professional equilibrium rather than specialization or experimentation. Their AI adoption appears pragmatic, embedded within established workflows rather than driven by disruptive ambition. Training strategies for this segment should emphasize practical AI applications, workflow efficiency, and gradual capability enhancement.

Overall Interpretation

The Indonesian freelancer segmentation reveals differentiated adaptation logics rather than a single developmental ladder. Cluster 2 concentrates the highest competence capital; Cluster 1 represents consolidated and balanced professionals; Cluster 3 demonstrates forward-looking AI orientation; Cluster 5 embodies stable and pragmatic professionals; and Cluster 4 constitutes an isolated outlier.

Together, Figure 82 and Table 6 confirm that AI readiness in Indonesia's freelancer ecosystem is shaped by the interaction between structural competence capital and

behavioural orientation toward continuous learning and technological change. Consequently, differentiated training pathways (ranging from foundational reinforcement to advanced AI innovation) are essential to effectively support the diverse profiles identified in this analysis.

6.2 Companies

This subsection presents the CHAID-based segmentation results for the Indonesian company subsample. The objective of this analysis is to identify the key structural factor that differentiates organizational responses within the dataset. Unlike k-means clustering, which groups cases based on multidimensional similarity, CHAID (Chi-square Automatic Interaction Detection) identifies statistically significant splits in categorical variables and constructs a decision tree that reveals the most influential predictors of the selected outcome. In this case, the analysis seeks to determine which company-level characteristic most strongly explains variation in the observed response pattern.

For the Indonesian company sample ($n = 8$), the CHAID procedure identifies *Years Hiring Freelancers* as the only statistically significant splitting variable ($p = 0.0183$). This finding indicates that the length of organizational engagement with freelancers is the primary structural determinant differentiating company responses in the dataset. No additional predictors met the statistical threshold for further segmentation, which suggests that, within the limits of this sample, accumulated experience with freelancers outweighs other potential organizational characteristics.

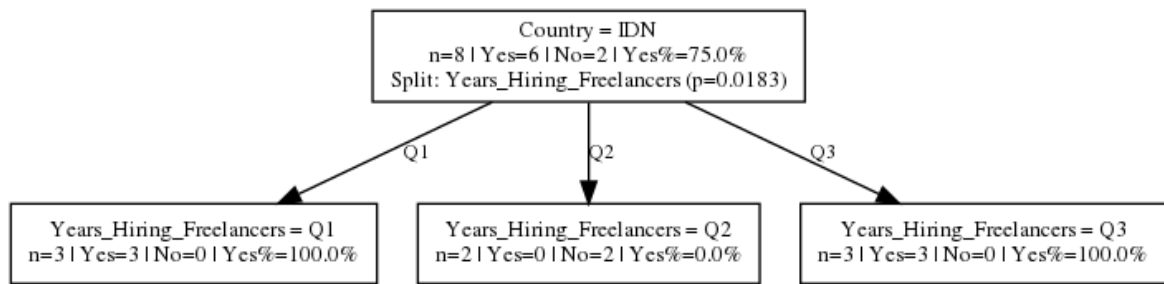


Figure 83. CHAID segmentation tree for companies (Indonesia).

As illustrated in Figure 83, the root node represents the full Indonesian company subsample ($n = 8$). The CHAID algorithm partitions this root node into three subgroups based on the categorical variable *Years Hiring Freelancers*, classified into Q1, Q2, and Q3. The statistically significant split ($p = 0.0183$) confirms that differences in hiring duration are systematically associated with different outcome distributions.

A closer examination of the terminal nodes reveals a striking pattern. Companies in Q1 (shorter experience category) and Q3 (longer experience category) both display 100% occurrence of the “Yes” outcome. In contrast, companies in Q2 (intermediate experience category) display 0% occurrence of the “Yes” outcome. Although the absolute number of cases is small, the distribution is internally consistent within each subgroup, producing a clear segmentation effect.

The observed configuration suggests a non-linear relationship between freelancer hiring duration and company-level outcomes. Rather than following a simple progression from low to high experience, the pattern indicates that companies at the earliest and most advanced stages of engagement exhibit similar responses, while those in the intermediate stage diverge. One plausible interpretation is that organizations in the initial phase of hiring freelancers may experience immediate and noticeable operational effects (either benefits or challenges) that shape their evaluations. Over time, highly experienced companies may develop structured integration practices, refined coordination mechanisms, and clearer role definitions, leading to stable and consistent outcomes.

By contrast, companies in the intermediate stage may be navigating transitional adjustments. During this phase, firms might encounter coordination inefficiencies, unclear performance expectations, or integration challenges that alter their evaluation

patterns. The absence of the “Yes” outcome in Q2 could reflect temporary frictions or adaptation processes that are eventually resolved as organizations accumulate more experience.

From an analytical perspective, the segmentation tree highlights that organizational learning and accumulated engagement experience are central structural drivers within the Indonesian company subsample. The absence of further significant splits suggests that other potential predictors (such as size, sector, or organizational structure) do not demonstrate sufficient explanatory power within this dataset. However, given the limited sample size ($n = 8$), these findings should be interpreted with caution. The statistical significance of the split indicates a meaningful relationship, yet the small number of observations restricts the generalizability of conclusions.

Overall, the CHAID analysis underscores the importance of longitudinal engagement with freelancers as a differentiating factor among Indonesian companies. The findings suggest that organizational maturity in managing freelance collaboration plays a crucial role in shaping company-level outcomes. Future research with a larger company sample would be necessary to validate the stability of this pattern and to explore whether additional structural determinants emerge under more robust statistical conditions.

7 Identifying Training Needs

This chapter synthesizes the findings from the Indonesian dataset to identify priority training needs for both freelancers and companies. The analysis integrates results from competence gap assessment, segmentation (k-means), and CHAID profiling to determine which competence domains require targeted intervention. The objective is not merely to list areas with lower scores, but to identify structurally significant gaps—those that are both prevalent and strategically relevant for AI-driven transformation within the Indonesian freelance ecosystem.

The training needs matrix consolidates competence domains across three major dimensions: (1) Core Work and Transferable (CWT) competences, (2) Digital Labour (DL) competences, and (3) Personal and Professional (PP) competences. The table below summarizes the priority areas identified based on gap magnitude, segmentation differentiation, and behavioural relevance (e.g., AI future use and upskilling frequency).

| Competence Dimension | Specific Competence Area | Gap Level | Strategic Priority | Target Groups |
|--------------------------------|--|------------------|---------------------------|---|
| Core Work & Transferable (CWT) | Prioritization and task management | High | Very High | Early-Career Learners, Emerging AI-oriented Freelancers |
| Core Work & Transferable (CWT) | Negotiation skills | Moderate-High | High | Traditional Experts, Balanced Professionals |
| Core Work & Transferable (CWT) | Self-promotion and personal branding | High | Very High | Early-Career Learners, AI-oriented Adopters |
| Digital Labour (DL) | Advanced AI tool usage | Moderate-High | Very High | All clusters (especially Cluster 1 & 3) |
| Digital Labour (DL) | Cloud collaboration and digital workflow tools | Moderate | High | Balanced Professionals, Traditional Experts |
| Personal & Professional (PP) | Managing uncertainty and stress | Moderate-High | High | Early-Career Learners |
| Personal & Professional (PP) | Formal regulations and contract literacy | Moderate | High | Freelancers with limited hiring experience |
| Personal & Professional (PP) | Continuous learning strategies | Moderate | Very High | All clusters |

Table 7. Priority Training Needs – Indonesia.

Core Work and Transferable Competences

The training needs matrix indicates that gaps in prioritization and task management represent one of the most structurally significant areas. This competence is particularly critical for freelancers operating in multi-client, deadline-driven environments. Segmentation results show that early-career freelancers and emerging AI-oriented adopters demonstrate stronger behavioural dynamism but comparatively weaker structural organization skills. Strengthening task prioritization and workflow structuring is therefore essential to ensure sustainable productivity, especially in AI-augmented work contexts.

Similarly, self-promotion and personal branding emerge as a high-priority domain. The Indonesian freelance market is highly competitive and platform-mediated, requiring freelancers to effectively position their expertise. The matrix suggests that this competence gap is pronounced among early-career freelancers and those transitioning into more AI-oriented roles. Without strong branding skills, even technically capable freelancers may struggle to capture market opportunities.

Negotiation skills also appear as a structurally relevant competence area. Although not universally high across all clusters, this gap is particularly visible among more

experienced freelancers who rely on domain expertise but may lack advanced negotiation strategies. Strengthening this competence could improve income stability and contract quality.

Digital Labour Competences

Within the Digital Labour dimension, advanced AI tool usage stands out as a strategic priority. Although several clusters demonstrate positive AI future use orientation, competence depth in structured AI integration remains uneven. This gap is particularly relevant for consolidated professionals and emerging AI adopters who possess sufficient digital literacy but require structured guidance for advanced AI implementation. Training programs should therefore move beyond introductory AI awareness and focus on practical, workflow-integrated applications.

Cloud collaboration and digital workflow tools also appear as an area of moderate but consistent need. Balanced professionals and traditional experts, while experienced, may not fully leverage collaborative digital infrastructures. Strengthening these competences could enhance efficiency, scalability, and client communication.

Personal and Professional Competences

In the Personal and Professional dimension, managing uncertainty and stress emerges as an important area, especially among early-career freelancers. The freelance ecosystem is characterized by income variability, client dependency, and platform algorithmic dynamics. Without adequate coping strategies, freelancers may experience performance instability. Training modules that combine resilience-building with strategic planning could mitigate this risk.

Another relevant area concerns formal regulations and contract literacy. Companies' CHAID results indicate that experience in hiring freelancers influences organizational outcomes. From the freelancer perspective, improved understanding of contracts, compliance, and regulatory frameworks could strengthen bargaining power and reduce legal vulnerability.

Finally, continuous learning strategies appear as a cross-cutting priority. Although upskilling frequency is present in several clusters, the matrix suggests that structured, strategic learning pathways are not yet fully institutionalized. Given the rapid

evolution of AI tools and digital platforms, systematic learning competencies are essential for long-term competitiveness.

Overall Interpretation

The Indonesian training needs analysis reveals that priority areas are not limited to digital skills alone. Instead, the ecosystem requires an integrated approach combining task management, branding, AI application, negotiation capability, regulatory literacy, and resilience development. The interaction between competence gaps and segmentation profiles suggests that differentiated training pathways are necessary.

Early-career freelancers require foundational reinforcement; consolidated professionals need structured AI integration; AI-oriented adopters benefit from competence deepening; and experience-based professionals require pragmatic digital enhancement. Consequently, the training strategy for Indonesia should adopt a modular and cluster-sensitive design, aligning competence development with the structural diversity identified in Chapters 6.1 and 6.2.

Conclusions

This National Report for Indonesia has provided a comprehensive analysis of the structure, characteristics, and transformation dynamics of the freelance and company ecosystem within the ENTEEF framework. Drawing on descriptive statistics, cross-tabulation and Chi-square analysis, effect size evaluation (Cramer's V), segmentation through k-means clustering, CHAID modelling, and structured identification of training needs, the findings collectively reveal a freelance market that is heterogeneous, rapidly evolving, and increasingly shaped by digital and AI-related developments.

Across Chapters 1–3, the descriptive and inferential analyses demonstrate that Indonesian freelancers operate within a structurally differentiated landscape. While overall competence levels appear moderate to high in several dimensions, statistically significant differences emerge across demographic, structural, behavioural, and strategic variables. Strong associations—particularly those meeting both statistical significance ($p < 0.05$) and practical significance (Cramer's V thresholds)—indicate that variables such as AI future use, years of freelance experience, upskilling frequency, and main freelancer activity are not merely background characteristics, but meaningful predictors of competence gaps and developmental trajectories.

One of the most consistent patterns throughout the analysis is the central role of AI orientation. Freelancers who express stronger intention to use AI in the future tend to display differentiated profiles in digital literacy, cross-working competences, and professional positioning skills. Rather than being a marginal variable, AI orientation functions as a strategic segmentation factor that separates more adaptive, forward-looking freelancers from those operating within more traditional models of freelance work. This finding suggests that the Indonesian freelance market is entering a phase of technological bifurcation, where AI adoption becomes a key axis of professional competitiveness.

The cross-tabulation analyses in Chapter 3 further reveal that competence gaps are not uniformly distributed. Significant differences were identified in areas such as task

prioritization, self-promotion and personal branding, cloud-based collaboration tools, and regulatory knowledge. Importantly, many of these gaps are located not in core technical capabilities, but in hybrid competences combining digital skills, strategic positioning, and adaptive resilience. This indicates that the challenge for Indonesian freelancers is not primarily access to technology, but the ability to strategically leverage technology within competitive market environments.

The segmentation analysis in Chapter 6 reinforces this structural differentiation. The k-means clustering identified five distinct freelancer typologies: Traditional Experts, Early-Career Learners, AI-oriented Adopters, Digital-Native Innovators, and Balanced Professionals. These clusters reflect not only different levels of competence, but different orientations toward learning, AI integration, and professional development. Traditional Experts exhibit strong domain experience but comparatively lower AI integration. Early-Career Learners demonstrate motivation but lack accumulated competence capital. AI-oriented Adopters represent a strategically adaptive group leveraging digital literacy and AI intention. Digital-Native Innovators display high upskilling frequency and digital readiness, albeit with smaller representation. Balanced Professionals combine moderate-to-high competences across dimensions, suggesting stable and sustainable positioning.

This segmentation confirms that the Indonesian freelance ecosystem cannot be addressed through uniform training policies. The existence of distinct competence constellations implies that differentiated intervention strategies are required. For instance, Early-Career Learners require foundational competence strengthening and structured mentoring pathways. Traditional Experts may benefit from targeted digital and AI upskilling to prevent technological stagnation. AI-oriented Adopters and Digital-Native Innovators, by contrast, represent high-potential groups that could be supported through advanced, innovation-focused training and ecosystem-building initiatives.

The CHAID analysis for companies (Chapter 6.2) complements the freelancer segmentation by demonstrating how hiring behaviour and cost dynamics are structured by experience variables such as years of hiring freelancers. The decision-tree model shows that organizational experience significantly differentiates hiring

patterns and perceived cost structures. Companies with longer engagement histories demonstrate more stable hiring behaviour, while newer or less experienced organizations exhibit greater variability. This suggests that the demand side of the freelance market is also undergoing institutional learning processes, reinforcing the importance of structured market maturation.

Chapter 7, identifying training needs, synthesizes the competence gap patterns into actionable developmental priorities. The training needs matrix clearly indicates that the most pressing areas extend beyond narrow digital literacy. While digital competences remain important, the most significant developmental needs cluster around cross-working competences (e.g., task prioritization, negotiation), professional positioning (e.g., branding, regulatory knowledge), and adaptive resilience (e.g., coping with uncertainty and stress). This confirms that freelance sustainability in Indonesia depends increasingly on integrative competences that combine digital proficiency, entrepreneurial mindset, and self-management capacity.

Taken together, the findings suggest three overarching conclusions. First, the Indonesian freelance market is structurally diverse and stratified. Competence levels, AI orientation, and upskilling behaviour produce distinct professional trajectories rather than a homogeneous workforce profile. Second, digital transformation (particularly AI integration) is not uniformly diffused. It functions as a strategic differentiator that amplifies advantages for adaptive freelancers while potentially widening gaps for others. Third, training and policy interventions must adopt a holistic and segmentation-sensitive approach. Effective capacity-building should integrate digital upgrading, strategic market positioning, regulatory awareness, and psychosocial resilience. Narrow technical training alone will be insufficient to ensure long-term competitiveness and inclusive growth.

In conclusion, the Indonesian freelance ecosystem demonstrates significant potential for growth and digital transformation, but this potential is unevenly distributed. Strategic investment in differentiated training pathways, AI literacy integration, and ecosystem-level coordination between freelancers and companies will be essential to foster sustainable, inclusive, and innovation-driven development within the ENTEEF framework.

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