CHAPTER 4

Skills and Techniques for Forensic Accounting Practice

4.1 Introduction

The burgeoning field of FA has captured significant attention due to its critical role in unravelling financial discrepancies and investigating fraud within businesses. According to combined research by ASSOCHAM and Grant Thornton, the most frequent business scams committed in India include corruption, money laundering, tax evasion, window dressing, financial reporting fraud, and bribes (Grant Thornton India LLP et al., 2014). In the financial year 2022, the Reserve Bank of India (RBI) reported approximately 9,103 bank fraud cases across India, indicating that corporate India is increasingly aware of fraud. Furthermore, Transparency International's Corruption Perceptions Index for 2022 ranks India as the 85th least corrupt country out of 180, highlighting ongoing challenges in governance. As a consequence of disruptions caused by COVID-19, 95% of businesses that faced fraud in India also reported new instances of fraud according to a PwC report. As the scope of FA broadens, there is an escalating need to delineate and enhance the specific skills required for FAPs in this dynamic field.

This chapter aims to systematically identify the skills and techniques necessary for effective practice in FA. FA is a discipline that not only demands a thorough grounding in accounting knowledge but also a mastery of specialized skills that go beyond the traditional competencies of accountants. FAPs are often at the confluence of accounting, law, investigative mindset, statistics etc. necessitating a diverse skill set that includes but is not limited to critical thinking, detailed financial analysis, communication abilities and an understanding of legal procedures (Crain et al., 2015; Moore & Martin, 2017). These professionals are tasked with the intricate responsibilities of detecting fraud, analysing financial statements for signs of abnormal activities, and contributing to legal proceedings where financial expertise is crucial (Kreuter, 2017).

The demand for FAPs to perform under varied and often challenging circumstances calls for distinctive skill sets (Bhasin, 2007; Singleton & Singleton, 2010; MW, 2018). Further, as highlighted in the literature, FA techniques have evolved to meet the growing complexities of financial crimes and the increasing digitization of financial data. The

increasing complexity and sophistication of financial fraud, coupled with the limitations of traditional auditing methods, have emphasised the need for incorporating advanced FA techniques into standard accounting and auditing practices. Therefore, a comprehensive understanding of the perceived importance of these skills and techniques among FAPs and academicians can inform the development of academic curricula that better align with industry needs, thereby enhancing the preparedness of future FAPs. Moreover, the integration of FA courses into higher education curricula has been advocated to bridge the skills gap identified in professional practice (Chui & Pike, 2013; Bhasin, 2013). These techniques range from traditional methods like trend analying, ratio analysis to more specialized approaches like Benford's Law Model and Altman Z score (Mehta & Bhavani, 2017; Tiwari & Debnath, 2017). This chapter explores the range of skills and techniques identified in contemporary studies as essential for FA. It also presents the demographic profile of the respondents, along with the types of FA services provided by FAPs and the professional composition of their FA department.

4.2 Demographic Profile of the Respondents

Table 4.1: Demographic Profile

	Particular	**N = 668 (100%)**
Respondent Group	FAPs	354 (53%)
	Academicians	314 (47%)
Gender	Male	563 (84.3%)
	Female	105 (15.7%)
Age	20-29	68 (10.2%)
	30-39	211 (31.6%)
	40-49	189 (28.3%)
	50 and above	200 (29.9%)
Experience	0-5	72 (10.8%)
	6-10	128 (19.2%)
	11-15	106 (15.9%)
	16-20	111 (16.6%)
	21-25	127 (19%)
	25 and above	124 (18.6%)

Highest Educational Qualification	Chartered Accountant (CA)	369 (55.24%)
	CA with CFE	20 (3%)
	PhD	155 (23.2%)
	CA with PhD	4 (0.59%)
	CA with Company Secretary	5 (0.74%)
	Post graduation	103(15.41%)
	Cost and Management Accountant	7 (1.04%)
	Company Secretary	5 (0.74%)

Source: Author's Compilation

The study amassed 668 responses, divided between 53% FAPs and 47% academicians. Gender distribution exhibited a significant skew, with males comprising 84.3% (563 respondents) and females only 15.7% (105 respondents). Further, the age groups were fairly evenly distributed with the largest segment being those between 30 and 39 years old (31.6%), followed closely by the 40-49 age group (28.3%), and those 50 and above (29.9%). Experience levels among the respondents were diverse, ranging from novices in the field (0-5 years, 10.8%) to highly experienced professionals (26 years and above, 18.6%). Further, the majority of respondents had CA credentials constituting 55.24% of the total respondents. Another substantial group consists of those with a PhD (23.2%), who contributed more academic and theoretically-informed perspectives. Further, there are respondents having qualification such as CA with PhD, CA with Company Secretary (CS), and Certified Management Accountant (CMA) each adding layers of specialized knowledge that likely enrich the result of study.

Table 4.2: Type of FA Services Provided by FAPs

Type of FA Service	**N = 354 (100%)**
Consulting Only	109 (30.79%)
Investigating Only	38 (10.73%)
Consulting and investigating	104 (29.37%)
Consulting and Non-Scientific Testimony	7 (1.98%)
Investigating and Non-Scientific Testimony	8 (2.26%)
Consulting, Investigating and Non-Scientific Testimony	88 (24.86%)

Source: Author's Compilation

Table 4.2 outlined the types of FA services provided by FAPs' firms reveal a diverse array of service combinations which reflect the multifaceted nature of FA. A significant proportion of the firms (30.79%) provide consulting services exclusively. This indicates a strong emphasis on the advisory aspect of FA. It also reflects a trend towards specialization in non-audit services (NAS) by FAPs as documented by Tiwari and Debnath (2022). Providing consulting services also suggest that these firms prioritize a proactive approach to fraud prevention and financial integrity. The table also reveals that 29.37% combine consulting and investigating services which integrate both proactive and reactive FA services. Additionally, 24.86% of firms provide consulting, investigating, and non-scientific testimony, indicating an even broader scope of service that includes participating in legal processes by providing expert opinions and factual findings in court settings.

Table 4.3: Professional Composition of FA Departments

Professional Groups	**N = 354 (100%)**
Qualified Accountants only	69 (19.49%)
Qualified accountants, lawyers and IT specialists	46 (12.99%)
Qualified accountants and IT specialist	41 (11.58%)
Trainee and qualified accountants	33 (9.32%)
Trainee only	16 (4.52%)
Trainee, qualified accountants and IT specialists	14 (3.95%)
Trainee, qualified accountants, lawyers and IT specialists	12 (3.39%)
Qualified Accountants and lawyers	11 (3.11%)
Trainee, qualified accountants and lawyers	11 (3.11%)
Lawyers and IT Specialists	9 (2.54%)
Lawyers only	8 (2.26%)
Qualified accountants, lawyers, IT specialists and psychologist	8 (2.26%)
Qualified accountants, IT specialists, economists and statistician	8 (2.26%)
IT Specialists	7 (1.98%)
Qualified Accountants, IT specialists and statistician	7 (1.98%)
Qualified accountants, lawyers, IT specialists and statistician	7 (1.98%)

Qualified accountants, lawyers, IT specialists, psychologist and statistician	7 (1.98%)
Trainee, qualified accountants, lawyers, IT specialists and statistician	6 (1.69%)
IT Specialists and statistician	4 (1.13%)
Trainee, qualified accountants and Ex police officer/Ex bankers/data scientist	4 (1.13%)
Trainee, qualified accountants, lawyers, IT specialists, economists and statistician	4 (1.13%)
Trainee, qualified accountants, lawyers, IT specialists, economists and Ex police officer/Ex bankers/data scientist	4 (1.13%)
Trainee and lawyers	3 (0.85%)
Trainee and Ex police officer/Ex bankers/data scientist	3 (0.85%)
IT Specialists and Psychologist	3 (0.85%)
Qualified Accountants, IT specialists and economists	3 (0.85%)
Trainee, qualified accountants, IT specialists and Ex police officer/Ex bankers/data scientist	3 (0.85%)
Qualified accountants, lawyers, IT specialists, economists, psychologist and statistician	3 (0.85%)

Source: Author's Compilation

Table 4.3 provides the professional composition of FA departments which reveal a multidisciplinary landscape. The largest group (19.49%) within FA departments comprises qualified accountants only. Further, a significant trend in FA is the integration of accountants with other professional groups. Notably, combinations of qualified accountants with lawyers and IT specialists represent 12.99% of the departments. The inclusion of professionals from various disciplines further highlights the multidisciplinary aspect of FA thereby necessitating a comprehensive approach that leverages expertise from multiple domains to ensure the provision of high-quality services.

The following sections provide a detailed account of the findings from the analysis conducted to delineate the requisite skills and techniques for FAPs in the Indian context.

4.3 Results and Discussion

4.3.1 Requisite Skills for FAPs

Table 4.4 critically analyses 26 essential skill sets for FAPs, evaluated by FAPs and academicians using a five-point Likert scale, with 5 being the most important. It presents the mean, SD, and rank for each skill, offering a clear perspective on their perceived importance and variability. This analysis highlights the core competencies necessary for effective FA practice. Mean values indicate the consensus on the significance of each skill, while standard deviations reflect the level of agreement among respondents. Rankings prioritize these skills, revealing which are deemed most crucial. The divergence exhibited by SD reiterates the need for a balanced curriculum that integrates academic rigor with practical proficiency.

Table 4.4: Perceived Importance of Requisite Skills for FAPs

Sl No	Skills	Mean	SD	Rank
1	Analytical Logical and Critical thinking skills	4.47	1.195	1
2	Unstructured Problem-solving skills	4.24	1.249	4
3	Deductive analysis	4.23	1.174	5
4	Persistence	4.14	1.212	9
5	Presentation skills	4.05	1.058	11
6	Team management skills	4.05	1.073	12
7	Skills to critically analyse financial statements	4.41	1.200	2
8	Skills to evaluate the effectiveness of internal controls	4.22	1.182	6
9	Professional scepticism and judgment	4.21	1.214	7
10	Fraud investigation skills	4.38	1.172	3
11	Business / Assets valuation skills	3.87	1.223	16
12	Assets tracing skills	3.99	1.202	14
13	Loss quantification skills	4.03	1.078	13
14	Court testifying expertise	2.95	1.273	21
15	Evidence gathering and compilation skills	4.17	1.197	8
16	Advocacy skills	2.86	1.294	25
17	Negotiation skills	2.91	1.367	23

18	Text analysis	4.12	1.14	10
19	Advanced computer skills (including programming)	3.19	1.247	18
20	Ethical Hacking	3.44	1.241	17
21	Recovery of digital data	2.85	1.300	26
22	Digit analysis skill	2.98	1.299	19
23	Communication skill (Written and Interpersonal)	2.92	1.234	24
24	Interview and Interrogative skills	2.94	1.203	22
25	Ethical Sensitivity	2.96	1.220	20
26	Emotional Intelligence	3.88	1.280	15

Source: Author's Computation

Based on the results from Table 4.4 regarding the perceived importance of skills for FAPs, it is evident that analytical, logical, and critical thinking skills rank highest ($\bar{x}$ = 4.47, SD = 1.195) highlighting their central importance to the FA practice. Following closely are skills such as skills to critically analyse financial statements ($\bar{x}$ = 4.41, SD = 1.2) and fraud investigation skills ($\bar{x}$ = 4.38, SD = 1.172), stressing the domain's focus on meticulous financial analysis and investigative rigor. Skills related to unstructured problem-solving and deductive analysis are also ranked highly ($\bar{x}$ = 4.24 and 4.23, respectively), which further supports the notion that FAPs must be equipped to handle complex, non-linear problems in financial investigations.

Conversely, skills such as advocacy skills ($\bar{x}$ = 2.86, SD = 1.294), recovery of digital data ($\bar{x}$ = 2.85, SD = 1.367) and negotiation skills ($\bar{x}$ = 2.91, SD = 1.367) are ranked much lower in perceived importance. This shows that while technical and analytical skills dominate the landscape of required competencies, interpersonal and litigation-related skills are considered less essential, though still necessary in specific contexts such as litigation support. The results reveal a strong emphasis on analytical and investigative skills in FA, consistent with the field's primary focus on uncovering financial irregularities and fraud, while litigation and interpersonal skills are considered secondary but still important in specialized areas. These findings align with previous literature, which consistently underscores the critical role of analytical skills in fraud detection and financial examination (Bhasin, 2013). In a broader context, the results of this study, together with those of Digabriele (2008), Davis et al. (2009), and Salleh and Ab Aziz (2014). Uyar et al.

(2017) and Uyar & ÇAvuşoğlu (2020) confirm that academicians consistently rank critical thinking, deductive analysis, and unstructured problem-solving as the most important skills for FAPs. However, a contrasting view is presented by Astutie and Utami (2013), who found that academicians rated critical thinking as one of the least important competencies.

Table 4.5: Mann–Whitney U-test Results Exhibiting Differences in Rating Importance of Skills between FAPs and Academicians

Sl No	Skills	FAPs		Academicians		Z-Value	P-Value
		Mean	SD	Mean	SD		
1	Analytical Logical and Critical thinking skills	4.73	0.874	4.17	1.419	-5.897	0.000
2	Unstructured Problem-solving skills	4.58	0.910	3.84	1.450	-7.328	0.000
3	Deductive analysis	4.43	0.944	4.01	1.355	-3.367	0.001
4	Persistence	4.31	1.051	3.94	1.346	-3.308	0.001
5	Presentation skills	4.33	0.869	3.74	1.162	-1.800	0.072
6	Team management skills	4.36	0.868	3.69	1.168	-1.590	0.112
7	Skills to critically analyse financial statements	4.69	0.838	4.09	1.444	-6.062	0.000
8	Skills to evaluate the effectiveness of internal controls	4.50	0.901	3.91	1.369	-6.071	0.000
9	Professional scepticism and judgment	4.53	0.973	3.86	1.354	-7.648	0.000
10	Fraud investigation skills	4.67	0.745	4.05	1.448	-1.850	0.065
11	Business / Assets valuation skills	3.97	1.144	3.77	1.301	-1.120	0.261
12	Assets tracing skills	4.14	1.073	3.83	1.314	-1.600	0.109
13	Loss quantification skills	4.17	0.904	3.86	1.225	-2.672	0.008
14	Court testifying expertise	2.65	1.059	3.32	1.271	-3.032	0.002
15	Evidence gathering and compilation skills	4.36	1.004	3.96	1.352	-3.509	0.000
16	Advocacy skills	2.8	1.094	2.89	1.294	-1.150	0.250
17	Negotiation skills	3.12	1.363	2.76	1.348	-3.357	0.001
18	Text analysis	4.40	0.883	3.81	1.305	-6.135	0.000
19	Advance computer skills (including programming)	3.1	1.199	3.27	1.301	-0.130	0.810
20	Ethical Hacking	3.57	1.155	3.29	1.317	-2.586	0.010
21	Recovery of digital data	3.23	1.080	2.5	1.308	-3.086	0.002
22	Digit analysis skill	3.03	1.136	2.94	1.425	-3.975	0.000
23	Communication skill (Written and Interpersonal)	3.36	0.945	2.75	1.220	-7.531	0.000
24	Interview and Interrogative skills	2.77	0.886	3.31	1.242	-5.981	0.000
25	Ethical Sensitivity	2.87	0.964	3.12	1.301	-4.996	0.000
26	Emotional Intelligence	4.16	1.078	3.56	1.411	-1.120	0.261

Source: Author's Computation

The Mann–Whitney U-test results in the table 4.5 demonstrate significant differences in the perceived importance of several skills between FAPs and academicians. For instance, analytical, logical, and critical thinking skills (p = 0.000) were rated significantly higher by FAPs than by academicians which also mirror the FAPs' emphasis on these cognitive abilities in real-world FA practice. Similarly, skills such as unstructured problem-solving (p = 0.000) and deductive analysis (p = 0.001) showed significant discrepancies, with FAPs consistently assigning them higher importance compared to their academic counterparts. These findings are consistent with Uyar & ÇAvuşoğlu, (2020), who found that there is significant difference between the respondent group for critical thinking skill and analytical skill.

In contrast, skills like presentation skills (p = 0.072), team management skills (p =0.112), fraud investigation skills (p =0.065), business / assets valuation skills (p =0.261), assets tracing skills (p = 0.109), advocacy skills (p = 0.250), advance computer skills (including programming) (p = 0.810), emotional intelligence (p = 0.261) did not exhibit the same level of disparity, suggesting closer alignment in the perceived relevance of these competencies between both groups possibly due to their universal applicability and recognition in both practice and theoretical contexts. The results divulge the differing priorities between academia, which may emphasize theoretical knowledge, and FAPs, who focus on skills directly applicable to FA practice.

Tables 4.6 and 4.7 document the top 10 skills perceived by FAPs and academicians respectively for the FAPs to efficiently work in the budding domain. Both the groups ranked high the “analytical, logical and critical thinking skills”, “skills to critically analyse financial statements” and “fraud investigation skills”. However, the divergence in skill prioritization is evident in the skills ranked highly by each group. FAPs emphasize unstructured problem-solving skills ($\bar{x}$ = 4.58, SD = 0.91), professional skepticism and judgment ($\bar{x}$ = 4.53, SD = 0.97), and text analysis ($\bar{x}$ = 4.40, SD = 0.88) showcasing a focus on adaptability, critical thinking, and analytical rigor in navigating ambiguous situations and detecting fraud. Conversely, academicians prioritize evidence gathering and compilation skills ($\bar{x}$ = 3.96, SD = 1.35), persistence ($\bar{x}$ = 3.94, SD = 1.35), and advanced computer skills (including programming) ($\bar{x}$ = 3.91, SD = 1.30), emphasizing systematic data collection, determination, and technological proficiency, revealing a forward-looking and methodical approach to FAE. The critical gap between FAPs and academicians

disseminates the challenge of aligning academic training with the practical needs of the FA domain. While FAPs focus on skills with immediate applicability, such as fraud detection and financial analysis, academicians are conceivably more forward-looking, incorporating the need for technological competence and structured analysis. Both perspectives highlight essential skills, but the divergence in their rankings indicates a contradiction between preparing for present demands and anticipating future trends in FA.

Table 4.6: Top 10 Skills for FAPs as per FAPs

Skills	Mean	SD	Rank
Analytical, Logical and Critical thinking skills	4.73	0.874	1
Skills to critically analyse financial statements	4.69	0.838	2
Fraud investigation skills	4.67	0.745	3
Unstructured Problem-solving skills	4.58	0.91	4
Professional scepticism and judgment	4.53	0.973	5
Skills to evaluate the effectiveness of internal control systems	4.5	0.901	6
Interview and Interrogative skills	4.44	0.886	7
Deductive analysis	4.43	0.944	8
Text analysis	4.4	0.883	9
Ethical Sensitivity	4.39	0.964	10

Source: Author's Computation

Table 4.7: Top 10 Skills for FAPs as per Academicians

Skills	Mean	SD	Rank
Analytical Logical and Critical thinking skills	4.17	1.419	1
Skills to critically analyse financial statements	4.09	1.444	2
Fraud investigation skills	4.05	1.448	3
Deductive analysis	4.01	1.355	4
Evidence gathering and compilation skills	3.96	1.352	5
Persistence	3.94	1.346	6
Skills to evaluate the effectiveness of internal controls	3.92	1.369	7
Advance computer skills (including programming)	3.91	1.301	8
Ethical Sensitivity	3.9	1.301	9
Interview and Interrogative skills	3.89	1.242	10

Source: Author's Computation

Table 4.8: Mann–Whitney U-test Results Exhibiting Gender-based Differences in Rating of Importance of Skills

Sl no	Skills	Male		Female		Mann Whitney U Test	
		Mean	*SD*	*Mean*	*SD*	*Z*	*P value*
1	Analytical, Logical and Critical thinking skills	4.52	1.140	4.42	1.428	-2.297	0.022
2	Unstructured Problem-solving skills	4.30	1.201	4.18	1.431	-3.264	0.001
3	Deductive analysis	4.27	1.131	4.19	1.369	-1.325	0.185
4	Persistence	4.17	1.182	4.11	1.355	-1.226	0.220
5	Presentation skills	4.12	1.028	3.98	1.146	-3.861	0.000
6	Team management skills	4.12	1.035	3.98	1.183	-3.901	0.000
7	Skills to critically analyse financial statements	4.46	1.143	4.36	1.446	-2.234	0.025
8	Skills to evaluate the effectiveness of internal control systems	4.27	1.140	4.17	1.361	-2.361	0.018
9	Professional scepticism and judgment	4.28	1.169	4.14	1.383	-3.425	0.001
10	Fraud investigation skills	4.43	1.105	4.33	1.454	-1.546	0.122
11	Business / Assets valuation skills	3.88	1.213	3.86	1.277	-0.386	0.699
12	Assets tracing skills	4.02	1.184	3.96	1.289	-1.099	0.272
13	Loss quantification skills	4.05	1.048	4.01	1.221	-0.764	0.445
14	Court testifying expertise	3.80	1.156	2.10	1.259	-1.254	0.210
15	Evidence gathering and compilation skills	4.21	1.170	4.13	1.323	-1.661	0.097
16	Advocacy skills	3.64	1.176	2.06	1.290	-0.049	0.961
17	Negotiation skills	3.09	1.364	2.73	1.368	-1.762	0.078
18	Text analysis	4.42	1.103	3.82	1.284	-2.805	0.005
19	Advance computer skills (including programming)	3.14	1.233	3.24	1.327	-0.465	0.642
20	Ethical Hacking	3.60	1.218	3.28	1.348	-1.234	0.217
21	Recovery of digital data	3.53	1.169	2.17	1.366	-1.322	0.186
22	Digit analysis skill	2.32	1.264	3.64	1.455	-1.861	0.063
23	Communication skill (Written and Interpersonal)	2.28	1.102	3.54	1.233	-3.522	0.000
24	Interview and Interrogative skills	1.98	1.071	3.90	1.229	-2.652	0.008
25	Ethical Sensitivity	2.01	1.131	3.91	1.284	-2.153	0.031
26	Emotional Intelligence	4.18	1.243	3.58	1.433	-2.210	0.027

Source: Author's Computation

The results of the Mann-Whitney U test presented in Table 4.8 reveal significant gender-based differences in the perceived importance of skills required for FAPs. These differences reveal distinct priorities between male and female respondents regarding key competencies within FA practice. Male respondents tend to prioritize technical and analytical skills, as evidenced by higher ratings for analytical, logical, and critical thinking skills ($\bar{x}_{male} = 4.52$, $\bar{x}_{female} = 4.42$, $p = 0.022$), and unstructured problem-solving skills ($\bar{x}_{male} = 4.3$, $\bar{x}_{female} = 4.18$, $p = 0.001$). This shows that male respondents may place greater emphasis on cognitive processes essential for navigating the complexities of FA. Similarly, male respondents rate skills to critically analyse financial statements ($\bar{x}_{male} = 4.46$, $\bar{x}_{female} = 4.36$, $p = 0.025$) and skills to evaluate the effectiveness of internal control systems ($\bar{x}_{male} = 4.27$, $\bar{x}_{female} = 4.17$, $p = 0.018$) more highly than their female counterparts. In contrast, female respondents assign greater importance to interpersonal and communication-related skills. Notably, text analysis ($\bar{x}_{female} = 3.82$, $\bar{x}_{male} = 4.42$, $p = 0.005$), communication skills (written and interpersonal) ($\bar{x}_{female} = 3.54$, $\bar{x}_{male} = 2.28$, $p = 0.000$), and interview and interrogative skills ($\bar{x}_{female} = 3.9$, $\bar{x}_{male} = 1.98$, $p = 0.008$) are rated significantly higher by females. This expresses that female respondent place a stronger emphasis on effective communication and the ability to extract information through interviews, which are critical in gathering evidence and conveying findings in legal contexts. The marked differences in these skills underscore the importance female respondents attribute to the human and communicative dimensions of FA.

Additionally, ethical sensitivity ($\bar{x}_{female} = 3.91$, $\bar{x}_{male} = 2.01$, $p = 0.031$) and emotional intelligence ($\bar{x}_{female} = 3.58$, $\bar{x}_{male} = 4.18$, $p = 0.027$) are perceived as more critical by female respondents, reflecting a heightened awareness of the ethical and emotional challenges that FAPs often face. The higher valuation of these skills by females unfolds a focus on navigating ethical dilemmas and managing interpersonal dynamics, which are increasingly relevant in high-stakes FA environments where professional integrity and emotional resilience are paramount.

The results thus attest that male respondents prioritize cognitive and technical competencies, while female respondents emphasize the interpersonal, communicative, and ethical aspects of FA. These gender-based differences highlight divergent perspectives on the skillsets deemed essential for success in the field, showcasing broader variations in professional focus and expectations within the practice of FA.

Table 4.9: Kruskal Wallis Test and Jonckheere-Terpstra Test Results Exhibiting Experience-based Differences in Rating of Importance of Skills

Sl. no.	Skills	Kruskal Wallis test		Jonckheere-Terpstra Test		Mean score as per experience group					
		χ^2	*P value*	Std. J-T Statistic	*p* value	*0-5*	*6-10*	*11-15*	*16-20*	*21-30*	*30 and above*
1	Analytical, logical and critical thinking skills	24.155	0.000	1.200	0.230	4.4	4.19	4.62	4.91	4.39	4.31
2	Unstructured problem-solving skills	28.251	0.000	3.972	0.000	4.14	3.77	4.37	4.59	4.35	4.22
3	Deductive analysis	18.086	0.003	0.806	0.420	4.28	3.95	4.28	4.56	4.21	4.10
4	Persistence	19.118	0.002	-0.219	0.827	4.31	3.91	4.08	4.44	4.05	4.05
5	Presentation skills	11.451	0.043	2.357	0.018	3.94	3.78	4.14	4.28	4.10	4.06
6	Team management skills	23.779	0.000	3.601	0.000	3.98	3.70	4.03	4.32	4.16	4.11
7	Skills to critically analyse financial statements	21.033	0.001	2.025	0.043	4.30	4.10	4.56	4.85	4.38	4.27
8	Skills to evaluate the effectiveness of internal control systems	38.141	0.000	3.831	0.000	4.03	3.92	4.27	4.70	4.27	4.13
9	Professional scepticism and judgment	31.225	0.000	3.247	0.001	3.94	3.84	4.48	4.65	4.17	4.18
10	Fraud investigation skills	26.601	0.000	1.479	0.139	4.27	4.02	4.65	4.76	4.28	4.30
11	Business / assets valuation skills	7.2520	0.203	-0.489	0.625	3.91	3.73	3.96	4.07	3.81	3.74
12	Assets tracing skills	12.525	0.028	1.041	0.298	4.01	3.74	3.97	4.24	4.07	3.91
13	Loss quantification skills	8.294	0.141	0.553	0.580	4.16	3.78	4.04	4.16	4.08	3.96
14	Court testifying expertise	21.487	0.001	1.756	0.079	3.12	3.19	3.23	2.49	3.18	3.03
15	Evidence gathering and compilation skills	21.201	0.001	1.583	0.113	4.06	3.85	4.37	4.49	4.27	3.98
16	Advocacy skills	17.989	0.003	1.282	0.200	3.83	2.60	2.30	2.76	2.34	3.45
17	Negotiation skills	202.543	0.000	13.546	0.000	2.13	2.32	2.35	3.01	3.89	3.76
18	Text analysis	29.778	0.000	2.525	0.012	4.06	3.68	4.40	4.25	4.28	4.05
19	Advance computer skills (including programming)	26.719	0.000	0.622	0.534	3.41	2.88	3.16	2.96	3.43	3.30
20	Ethical hacking	13.422	0.020	1.307	0.191	3.55	3.16	3.33	3.44	3.61	3.55
21	Recovery of digital data	25.011	0.000	1.793	0.073	3.20	3.20	2.03	3.12	2.45	3.10
22	Digit analysis skill	23.420	0.000	1.574	0.115	3.10	3.03	2.50	3.31	4.06	3.10
23	Communication skill (Written and Interpersonal)	35.252	0.000	3.493	0.000	3.80	3.41	3.50	2.30	2.35	3.07
24	Interview and interrogative skills	26.908	0.000	3.406	0.001	3.75	3.50	2.40	2.20	2.04	4.16
25	Ethical sensitivity	25.683	0.000	1.892	0.059	2.32	3.25	2.40	3.20	2.56	3.10
26	Emotional intelligence	17.410	0.004	2.735	0.006	3.55	3.49	4.01	4.06	4.07	3.95

Source: Author's Computation

The results presented in Table 4.9 reveal significant differences in skill ratings across experience levels of the respondents. The Kruskal-Wallis test reveals substantial variance ($p < 0.05$) in several skills, such as analytical, logical, and critical thinking ($\chi^2 = 24.155$, $p = 0.000$), unstructured problem-solving ($\chi^2 = 28.251$, $p = 0.000$), skills to evaluate internal control systems ($\chi^2 = 38.141$, $p = 0.000$), and team management skills ($\chi^2 = 23.779$, $p = 0.000$). These results show a widening gap in skill prioritization, as experienced respondents (16-20 years) consistently rate these skills higher, particularly in complex, real-world applications where adaptability and leadership are critical. In the Jonckheere-Terpstra test, which examines trends across ordered groups, significant results ($p < 0.05$) were found for unstructured problem-solving skills (Std. J-T = 3.972, $p = 0.000$), team management skills (Std. J-T = 3.601, $p = 0.000$), skills to evaluate internal control systems (Std. J-T = 3.831, $p = 0.000$), and professional skepticism and judgment (Std. J-T = 3.247, $p = 0.001$). These findings indicate a positive, monotonic increase in the perceived importance of these skills as experience grows. The significance of these results suggests that the experience gained over time enhances not only the recognition of these skills but also their practical application in resolving complex FA cases. The significant Jonckheere-Terpstra results also suggest that, over time, FAPs adapt and increasingly rely on these skills as they face more demanding challenges. Yet, this raises concerns about how FAE can better bridge the gap between theoretical instruction and the real-world demands on experienced professionals.

In contrast, the absence of significance in certain areas, such as deductive analysis (Std. J-T = 0.806, $p = 0.420$) and persistence (Std. J-T = -0.219, $p = 0.827$), points to a plateauing of their perceived importance, regardless of experience. While the Kruskal-Wallis and Jonckheere-Terpstra tests reveal differences of opinion and important trends in skill development among the groups, call for a rethinking of educational strategies to ensure, regardless of experience, FAPs are equipped with the critical, evolving skills necessary for FA in an increasingly complex and technological landscape.

4.3.2 Factor Analysis

Being an exploratory study due to the under-developed nature of research in the area of FA skills in India, an exploratory factor analysis was performed. The exploratory factor analysis technique allows to suggest the optimum number of factors, rather than the researcher subjectively deciding the numbers (Pallant, 2007). Prior to conducting the

exploratory factor analysis, preliminary tests are to be performed to determine the factorability of the data. The Kaiser-Meyer-Olkin (KMO) would have to be above 0.60, while Bartlett's test of sphericity must be significant. For this study, the KMO was 0.948, while Bartlett's test of sphericity was significant (sig = 0.000). This result indicates good factorability of the data set (Pallant, 2007). The exploratory factor analysis reveals that 4 factors explained 68.07% of the total variance. The factors were further rotated using varimax rotation to make them easier to interpret (Umar et al., 2020; Pallant, 2007). Table 4.10 shows the result of the exploratory factor analysis using the principal component extraction method with varimax rotation converging in 25 iterations. The following factors were extracted,

1. *Analytical and Investigative Skill:* This factor accounted for 29.04% of the total variance indicating that it is the most important factor. It encompasses critical abilities such as analysing financial statements with precision, leveraging analytical, logical, and critical thinking, and executing comprehensive fraud investigations. Professional skepticism and judgment, integral components of this factor, equip forensic accountants with the rigor to question assumptions and identify anomalies. The inclusion of unstructured problem-solving skills reflects the need to adapt swiftly to unpredictable financial challenges. Furthermore, expertise in evaluating internal control systems ensures that potential vulnerabilities within organizational processes are detected and addressed. These competencies are indispensable for FAPs as they navigate complex financial environments. Popoola et al., (2013) also argues that persons who possess FA skills have a better chance of assessing fraud risk task performance effectively.

2. *Interpersonal and Operational Skills:* This factor accounted for 21.82% of the total variance placing it as the second most important factor. It encompasses a range of competencies crucial for effective performance, including ethical sensitivity and emotional intelligence, which are essential for navigating complex interpersonal situations and maintaining professional integrity. The inclusion of deductive analysis and persistence emphasises the need for logical reasoning and resilience when handling prolonged investigations. Skills such as interview and interrogative skills and advocacy skills are critical for gathering accurate information and representing findings effectively. Moreover, technical abilities like advanced computer skills

(including programming), along with operational proficiencies in team management, communication (written and interpersonal), and presentation skills, ensure that FAP can manage teams, communicate findings, and present evidence comprehensively. Collectively, these skills form the backbone of effective FA practice, enabling professionals to handle diverse challenges in investigative settings while maintaining ethical standards. Bhasin (2007) also stressed that FAPs should extend their expertise beyond financial accounting skills, broadening their capabilities to encompass investigative proficiency and strong interpersonal skills.

3. *Technical and Digital Forensics Skills:* This factor accounted for 9.08% of the total variance, making it the third most important factor. It includes critical technical abilities such as ethical hacking, which equips FAPs with the tools to assess and protect digital infrastructures from fraud and breaches. The inclusion of negotiation skills highlights the importance of managing conflict and facilitating agreements during investigations. Additionally, competencies in recovery of digital data and text analysis are essential for retrieving and interpreting vast amounts of electronic information, particularly in cases involving digital evidence. The ability to perform digit analysis further enhances a FAP's capacity to identify anomalies and irregularities in digital records. It has been found that one of the most important skills for FAP's is proficiency in digital forensics, as the complexity of modern financial crimes increases (Bhasin, 2013).

4. *Valuation and Litigation Expertise:* This factor accounted for 8.13% of the total variance, making it the fourth most important factor. It encompasses critical sub-skills such as business and asset valuation, where the ability to accurately assess the value of assets is crucial in cases involving financial disputes. Loss quantification skills add another layer of expertise, enabling professionals to calculate and articulate the financial impact of fraud or mismanagement. The inclusion of assets tracing skills accentuates the importance of tracking financial flows to uncover hidden or misappropriated funds. Additionally, court testifying expertise is indispensable, as FAP must often translate their findings into clear, persuasive testimony in legal proceedings. There is a significant positive association between the use of FA services and increased litigation risk. Therefore, these competencies equip FAPs with the valuation and litigation capabilities required to address complex financial crimes and disputes effectively (Al-Hazaima et al., 2023).

Table 4.10: Rotated Component Matrix for FAS

Sl no	Factors	1	2	3	4	% of variance
1	Skills to critically analyse financial statements	0.898				29.04%
2	Analytical, Logical and Critical thinking skills	0.895				
3	Fraud investigation skills	0.846				
4	Professional scepticism and judgment	0.838				
5	Unstructured Problem-solving skills	0.830				
6	Skills to evaluate the effectiveness of internal control systems	0.825				
7	Ethical Sensitivity		0.789			21.82%
8	Deductive analysis		0.785			
9	Persistence		0.764			
10	Interview and Interrogative skills		0.761			
11	Advance computer skills (including programming)		0.756			
12	Team management skills		0.734			
13	Communication skill (Written and Interpersonal)		0.727			
14	Presentation skills		0.725			
15	Evidence gathering and compilation skills		0.711			
16	Advocacy skills		0.671			
17	Emotional Intelligence		0.628			
18	Ethical Hacking			0.795		9.08%
19	Negotiation skills			0.769		
20	Recovery of digital data			0.668		
21	Text analysis			0.644		
22	Digit analysis skill			0.644		
23	Business / Assets valuation skills				0.814	8.13%
24	Loss quantification skills				0.679	
25	Assets tracing skills				0.610	
26	Court testifying expertise				0.507	

Note(s): Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

Rotation converged in 22 iterations

Source: Author's Computation

The above four factors adequately summarise and explain the larger data set of 26 skills and could be classified as the major competencies required for effective FA services by FAPs from the perspective of academicians and FAPs.

4.3.3 Requisite Techniques for FAPs

Table 4.11 presented below exhibits the perceived importance of various FA techniques among FAPs and academicians. The results reveal the mean scores and SD for each FA technique, rated on a scale of 1 to 5, with 5 indicating the highest importance.

Table 4.11: Perceived Importance of Requisite Techniques for FAPs

Techniques	Mean	SD	Rank
Trend analysis	4.13	1.067	8
Ratio Analysis	4.25	1.070	3
Computer Assisted Audit Technique (CAAT)	4.40	1.069	1
Relative Size Factor	4.20	0.999	5
Benford's Law	4.18	1.005	6
Data Mining technique	4.31	1.115	2
Digital evidence recovery techniques	4.24	1.128	4
Artificial Intelligence	2.97	1.249	14
Big data analysis	3.53	1.212	10
Beneish's M-score	3.21	1.186	12
Transactional analysis	4.14	1.103	7
Analysis of overestimation	3.26	1.162	11
Corporate failure prediction technique like Altman Z score	3.11	1.098	13
Models for fraud such as Bayesian Belief Network, Artificial neural network, Deep learning (DL) models etc.	3.74	1.154	9

Source: Author's Computation

Table 4.11 sheds light on the prioritization of tools and methods for FAPs. Notably, the top-ranked techniques by the respondents are computer assisted audit technique (CAAT) ($\bar{x}$ = 4.40, SD = 1.069), data mining ($\bar{x}$ = 4.31, SD = 1.115), and ratio analysis ($\bar{x}$ = 4.25, SD = 1.07) showing a strong emphasis on data-driven methods and audit automation. The finding reveals the growing reliance on technology in FA practice, where manual processes are increasingly augmented by advanced software to enhance accuracy and efficiency. This finding resonates with findings by Natour et al. (2023); Deepal and Jayamaha (2022), Pham and Vu (2024) who highlighted the growing adoption data-driven methods in FA. However, the high SD across the techniques, particularly for techniques like big data analysis (SD = 1.212) and artificial intelligence (SD = 1.249), accentuate the diversity in respondents' familiarity and confidence in using these methods by the FAPs

unveiling the gaps in training and education as well as uneven technological adoption across the practice. However, the comparatively lower ranking of artificial intelligence ($\bar{x}$ = 2.97, SD = 1.249) and corporate failure prediction technique like Altman Z score ($\bar{x}$ = 3.11, SD = 1.098) reveals a hesitance or lack of proficiency in applying or educating these advanced techniques, despite their potential for improving FA's predictive capabilities (Kilic, 2020). This misalignment between emerging technologies and their perceived relevance raises concerns and call for advance educational curricula adequately which will prepare students for the future demands of the field.

The findings shed light on a domain in transition, where traditional FA techniques are being complemented, but not fully replaced by advanced technology-driven techniques. The growing reliance on automation and data analytics signals progress, yet significant gaps remain in the adoption of AI, big data, and advanced fraud detection models. This reveals the need for a more integrated training and educational framework that aligns emerging technologies with practical FA applications.

Table 4.12: Mann–Whitney U-test Results Exhibiting Differences in Rating of Importance of Techniques between FAPs and Academicians

Sl. No	Techniques	FAPs			Academicians			Mann Whitney U Test	
		Mean	SD	Rank	Mean	SD	Rank	Z Value	P Value
1	Trend analysis	4.33	0.848	7	3.90	1.232	8	-2.968	0.018
2	Ratio Analysis	4.47	0.800	4	4.01	1.266	5	-2.429	0.012
3	Computer Assisted Audit Technique (CAAT)	4.64	0.771	1	4.13	1.275	2	-3.446	0.002
4	Relative Size Factor	4.36	0.807	6	4.02	1.153	4	-2.225	0.028
5	Benford's Law	4.32	0.895	8	4.03	1.097	3	-2.194	0.051
6	Data Mining technique	4.60	0.849	2	3.97	1.274	6	-4.848	0.000
7	Digital evidence recovery techniques	4.52	0.842	3	3.92	1.311	7	-3.404	0.000
8	Artificial Intelligence	3.82	1.111	10	2.12	1.350	14	-4.449	0.000
9	Big data analysis	3.35	1.038	11	3.82	1.248	10	-1.634	0.098
10	Beneish's M-score	2.69	1.032	14	3.79	1.310	11	-2.501	0.009
11	Transactional analysis	4.38	0.954	5	3.87	1.194	9	-3.071	0.003
12	Analysis of overestimation	4.03	1.013	9	2.58	1.265	13	-3.911	0.000
13	Corporate failure prediction technique like Altman Z score	3.14	1.018	13	3.21	1.165	12	-1.150	0.064
14	Models for fraud such as Bayesian Belief Network, Artificial neural network, Deep learning (DL) models etc.	3.18	0.987	12	4.26	1.315	1	-3.240	0.001

Source: Author's Computation

The results from Table 4.12, based on the Mann-Whitney U test, reveal notable differences in the perceived importance of FA techniques between FAPs and academicians. The significant divergence in scores reflects the distinct priorities and perspectives of both groups, likely shaped by their different roles in the domain. For example, Computer Assisted Audit Techniques (CAAT), ranked first by FAPs ($\bar{x} = 4.64$, SD = 0.771) and second by academicians ($\bar{x} = 4.13$, SD = 1.275), reveals a significant gap (Z = -3.446, $p = 0.002$). This result highlights FAPs' strong reliance on automated audit tools, likely driven by their practical need to handle large datasets efficiently. Academicians, however, may place slightly less emphasis on CAAT, potentially reflecting a lag in the integration of such technologies into academic curricula or a more theoretical focus in their approach to FA. The marked difference in the perception of Data Mining Techniques (Z = -4.848, p = 0.000) further highlights this gap. FAPs rate this technique highly ($\bar{x} = 4.6$), suggesting that in practice, data mining is indispensable for uncovering hidden

patterns in financial data. This finding is attuned with the study by VarugheseKoshy (2019). In contrast, academicians' lower rating (Mean = 3.97) points to a possible underrepresentation of this technique in educational programs. This disparity also suggests a critical need for academia to better align with industry practices, ensuring that future FAPs are adequately prepared to leverage advanced data analytics in real-world investigations. Additionally, artificial intelligence shows a significant discrepancy, with FAPs assigning it a much higher value than academicians ($\bar{x}_{FAPs}$ = 3.82, SD = 1.111; $\bar{x}_{Academicians}$ = 2.12, SD = 1.35; Z = -4.449, p = 0.000). This could indicate that while FAPs recognize the emerging importance of artificial intelligence in FA, academicians may be more hesitant to embrace these techniques, possibly due to a lack of familiarity or confidence in artificial intelligence's applicability within forensic contexts. In contrast, Benford's law and relative size factor, while still showing some differences in rankings, are perceived more similarly by both groups, indicating that traditional methods of anomaly detection retain their importance across both academic and practical spheres. In contrast, models for fraud detection, such as Bayesian Belief Networks, Artificial Neural Networks, and Deep Learning (DL) models ($\bar{x}_{FAPs}$ = 3.18, SD = 0.987; $\bar{x}_{Academicians}$ = 4.26, SD = 1.315, Z = -3.240, p = 0.001) while being rated more highly by academicians than FAPs, reflect a growing academic interest in leveraging advanced machine learning algorithms for predictive analytics. However, the lower valuation by FAPs reveals that these models, despite their potential, are not yet fully integrated into routine FA practice. These findings shed light a significant gap between the techniques valued in academic settings and those prioritized in practice. There is a clear need for FAE to more closely reflect the evolving demands of FA, particularly in the integration of advanced technologies like artificial intelligence and data mining. Bridging this gap will be crucial for preparing the next generation of FAPs to meet the increasingly complex challenges of financial crime investigations.

Table 4.13: Kruskal Wallis Test and Jonckheere-Terpstra Test Results Exhibiting Experience-based Differences in Rating of Importance of Technique

Techniques	Kruskal Wallis Test		Jonckheere-Terpstra Test	
	χ2	*P value*	*Std. J-T Statistic*	*p value*
Trend analysis	37.427	0.000	4.022	0.000
Ratio Analysis	33.030	0.000	2.690	0.007
Computer Assisted Audit Technique (CAAT)	14.759	0.011	2.474	0.013
Relative Size Factor	25.558	0.000	1.877	0.060
Benford's Law	32.775	0.000	2.631	0.009
Data Mining technique	34.253	0.000	3.372	0.001

Digital evidence recovery techniques	19.144	0.002	2.936	0.003
Artificial Intelligence	18.258	0.003	1.433	0.152
Big data analysis	24.876	0.000	1.281	0.200
Beneish's M-score	23.441	0.000	1.834	0.067
Transactional analysis	23.920	0.000	2.028	0.043
Analysis of overestimation	23.472	0.000	2.826	0.005
Corporate failure prediction technique like Altman Z score	21.429	0.001	0.498	0.618
Models for fraud such as Bayesian Belief Network, Artificial neural network, Deep learning (DL) models etc.	4.289	0.509	1.749	0.080

Source: Author's Computation

The results of the Kruskal-Wallis and Jonckheere-Terpstra tests in Table 4.13 provide critical overview into how experience influences the perceived importance of various FA techniques. The Kruskal-Wallis test reveals significant differences ($p < 0.05$) in most techniques except for models for fraud ($p > 0.05$), with trend analysis ($\chi^2 = 37.427$, $p = 0.000$) and data mining ($\chi^2 = 34.253$, $p = 0.000$) showing the highest variance across experience groups. This outlines that as FAPs gain more experience, their reliance on and perceived importance of data-intensive techniques increases. FAPs with more years of experience likely recognize the utility of these methods in handling increasingly complex datasets and uncovering financial irregularities.

The Jonckheere-Terpstra test further reinforces these findings, showing significant positive trends ($p < 0.05$) for techniques like trend analysis shows the strongest trend with increasing experience (Std. J-T Statistic = 4.022, p = 0.000), followed by data mining technique (Std. J-T Statistic = 3.372, p = 0.001) and digital evidence recovery techniques (Std. J-T Statistic = 2.936, p = 0.003), indicating that these data-driven methods gain more value as FAPs accumulate experience. Ratio analysis (Std. J-T Statistic = 2.69, p = 0.007), computer assisted audit techniques (CAAT) (Std. J-T Statistic = 2.474, p = 0.013), and Benford's law (Std. J-T Statistic = 2.631, p = 0.009) also show significant trends, showcasing their increasing relevance in practical forensic work. Additionally, transactional analysis (Std. J-T Statistic = 2.028, p = 0.043) and analysis of overestimation (Std. J-T Statistic = 2.826, p = 0.005). In contrast, techniques like artificial intelligence (Std. J-T = 1.433, p = 0.152) and Big Data Analysis (Std. J-T = 1.281, p = 0.200) do not exhibit significant trends, reflecting a gap in the adoption of cutting-edge technologies across all experience levels. Despite the potential of these techniques to revolutionize FA, their underutilization could be attributed to the lack of training, skepticism, or the complexity of integrating such methods into practical workflows. The absence of

significant results for these techniques raises concerns about the preparedness of FAPs to leverage emerging technologies.

These results point to an evolving domain where experience shapes the valuation of key FA techniques. The growing reliance on data analysis and digital tools among experienced FAPs highlights the need for continuous professional development in these areas. However, the underappreciation of advanced techniques like artificial intelligence and predictive modelling across experience levels underscores the importance of further educational and training efforts to bridge the gap between theoretical advancements and their practical implementation in practice field.

4.4 Conclusion

This chapter explored the perceived importance of key skills and techniques for FAPs, stressing differences between academicians and FAPs and across experience levels. The results revealed that analytical, critical thinking, and problem-solving skills are highly valued, with FAPs rating them more essential for real-world applications. Further, experienced FAPs prioritize data-driven techniques like computer Assisted Audit Techniques (CAAT), data mining, and ratio analysis, reflecting their growing reliance on technology. Significant differences between academicians and FAPs also highlight the gap in the integration of advanced tools in education versus practice. The chapter exhibits the need for better alignment between academic curricula and the evolving demands of FA, particularly in adopting advanced technological methods.