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Unlocking sustainable competitive performance in agro-based small and medium enterprises in South Asian Association for Regional Cooperation countries

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Electronic supplementary material

Supplementary Tables S1–S10

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Table S1. Demographic details of study respondents

Demographic variables	Value	Frequency	Percentage
Gender	male	155	44.93
	female	190	55.07
Country	Pakistan	195	56.50
	Bangladesh	52	15.00
	India	67	19.42
	Bhutan	8	2.31
	Nepal	5	1.44
	Sri-Lanka	3	0.80
	Afghanistan	15	4.45
Age (years)	21–25	78	24.84
	26–30	70	22.29
	31–35	122	28.85
	> 35	75	26.30
Work experience (years)	< 5 years	304	88.11
	5–10	31	8.93
	10–15	5	1.47
	15–20	4	1.21
	> 20	1	0.36
Designation	senior officer	37	11.78
	assistant manager	80	25.48
	deputy manager	76	24.20
	manager	79	18.79
	general manager	73	19.75
Education level	less or high	25	6.00
	high school / diploma	6	1.20
	bachelor's degree	247	71.60
	masters degree	30	9.00
	Ph.D	37	10.70

Source: Author's own elaboration

Table S2. Quality criteria

Variables	F^2					Q^2	R^2	Adjusted R^2
	access to digital finance	business experience	financial literacy	sustainable performance	business experience × financial literacy			
Access to digital finance	–	–	–	0.253	–	0.247	0.362	0.358
Business experience	0.085	–	–	–	–	0.000	–	–
Financial literacy	0.182	–	–	0.265	–	0.000	–	–
Sustainable performance	–	–	–	–	–	0.341	0.533	0.531
Business experience × financial literacy	0.001	–	–	–	–	–	–	–

F^2 – effect size in the context of PLS-SEM; Q^2 – predictive relevance of the model

Source: Authors' own elaboration

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Table S3. Total indirect effect

Direct paths	Path	SE	*T* statistics (|O/SD|)	*P*-values
Business experience → sustainable performance	0.132	0.047	2.795	0.005
Financial literacy → sustainable performance	0.184	0.035	5.276	0.000
Business experience × financial literacy → sustainable performance	–0.003	0.015	0.195	0.845

O – original standard deviation
Source: Authors' own elaboration

Table S4. Special indirect effect

Mediated paths	Path	SE	*T* statistics (|O/SD|)	*P*-values
Financial literacy → access to digital finance → sustainable performance	0.184	0.035	5.276	0.000
Business experience → access to digital finance → sustainable performance	0.132	0.047	2.795	0.005
Business experience × financial literacy → access to digital finance → sustainable performance	–0.003	0.015	0.195	0.845

O – original standard deviation
Source: Authors' own elaboration

Table S5. Total effect

Total effects for paths coefficients	Path	SE	*T* statistics (|O/SD|)	*P*-values
Access to digital finance → sustainable performance	0.431	0.073	5.927	0.000
Business experience → access to digital finance	0.305	0.077	3.943	0.000
Business experience → sustainable performance	0.132	0.047	2.795	0.005
Financial literacy → access to digital finance	0.426	0.075	5.646	0.000
Financial literacy → sustainable performance	0.613	0.057	10.671	0.000
Business experience × financial literacy → access to digital finance	–0.007	0.034	0.197	0.844
Business experience × financial literacy → sustainable performance	–0.003	0.015	0.195	0.845

O – original value for path coefficients
Source: Authors' own elaboration

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Table S6. Construct indicators

Variable	Description
Sustainable competitive performance (*SCP*)	
SCP1	We regularly benchmark our performance against industry standards to identify areas for improvement.
SCP2	Our organization consistently outperforms competitors in terms of market share and profitability.
SCP3	We effectively leverage digital finance technologies to gain a competitive advantage.
SCP4	We have a clear understanding of our target market and effectively position ourselves for competitive advantage.
SCP5	Our organization has a strong reputation and brand recognition in the market.
SCP6	Our organization fosters a culture of continuous improvement to sustain competitive performance.
SCP7	Our organization adapts quickly to changes in the business environment to maintain a competitive edge.
SCP8	We regularly innovate and introduce new products or services to meet evolving customer needs.
SCP9	We anticipate an increase in the growth of our business.
SCP10	We intend to acquire more assets.
SCP11	Our annual sales increase each year.
SCP12	Rapid confirmation of customer orders.
SCP13	We intend to increase the number of employees.
SCP14	Our assets have increased this year compared to last year.
Financial literacy (*FL*)	
FL1	A high-return investment will also be high-risk.
FL2	The cost of living rises as inflation rises.
FL3	I regularly save money in order to achieve long-term financial goals, such as educating my children, purchasing a home, retiring.
FL4	I find it more rewarding to spend money than to save for the future.
FL5	I tend to live today and let tomorrow happen.
FL6	I've been able to save money over the last year.
FL7	I receive training on proper book keeping skills.
FL8	My enterprise makes monthly income returns to the lender.
FL9	I have the ability to analyse our financial performance.
FL10	I am aware of the costs and benefits of accessing credit.
FL11	I save some part of the money I receive monthly for future needs.
FL12	The firm is aware of the operations of lending firms relating to our financial needs.
FL13	The firm is able to correctly calculate interest rates on my loan payments.
FL14	I have skills of minimizing losses by minimizing bad debts.
FL15	I am responsible for my own money matters.
Business experience (*BE*)	
BE1	Business experience has provided me with valuable insights into the dynamics of the industry.
BE2	Through my business experience, I have gained expertise in various aspects of business operations.
BE3	Business experience has provided me with valuable insights into the dynamics of the industry.
BE4	Business experience has enabled me to build a strong network of industry professionals and contacts.
BE5	Through my business experience, I have become more innovative and open to exploring new ideas.
BE6	Business experience has contributed to my development of leadership skills and decision-making abilities.
BE7	My business experience has enhanced my ability to assess and manage risks effectively.
BE8	I believe that my business experience has made me more adaptable to changing business environments.
BE9	Ability to develop and implement business strategies.
BE10	Track record of achieving business goals and targets.
BE11	Experience in budgeting, financial analysis, and resource management

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Table S6. to be continued

Variable	Description
BE12	Skills in team leadership, mentorship, and employee development.
BE13	Participation in professional development programs or workshops.
BE14	Experience in negotiating contracts and partnerships.
BE15	A business that has a strong financial foundation is likely to have experience in managing its finances effectively.
Access to digital finance (*ADF*)	
ADF1	I am knowledgeable about financial concepts and terms related to digital finance.
ADF2	I understand the risks and benefits associated with using digital finance technologies.
ADF3	I feel confident in managing financial resources in the context of digital finance.
ADF4	I am familiar with various digital financial products and services available in the market.
ADF5	I can effectively analyse financial information related to digital finance.
ADF6	I am comfortable using digital finance tools and platforms for financial decision-making.
ADF7	I have the necessary skills to evaluate the financial performance of digital finance initiatives.
ADF8	I continuously update my knowledge and skills in digital finance to stay informed and competent.
ADF9	I use my bank account regularly
ADF10	I usually receive payment from customers through my bank.
ADF11	I make more savings to qualify for bigger loans
ADF12	The terms and conditions on use of loans provided by the bank is favourable to us
ADF13	The cost of making a trip to the bank is affordable
ADF14	My organization actively explores and adopts digital finance technologies to enhance business operations.
ADF15	We have a clear strategy for integrating digital finance tools and platforms into our organization.
ADF16	Our organization invests in training programs to ensure employees are proficient in using digital finance technologies.
ADF17	We actively seek partnerships and collaborations with digital finance providers to expand our capabilities.
ADF18	We prioritize cyber security measures to protect digital finance transactions and sensitive information.
ADF19	Our organization has streamlined processes to facilitate the acquisition and implementation of digital finance solutions.
ADF20	We regularly evaluate and update our digital finance infrastructure to meet evolving business needs.
ADF21	We monitor and assess the impact of digital finance adoption on our organizational performance.
ADF22	Availability of internet access for financial transactions.
ADF23	Usage of digital wallets or mobile payment apps for financial transactions.

All items were measured on a 10-point Likert scale ranging from strongly disagree 1 to strongly agree 10. *SCP* items are modified from Degong et al. (2018), *FL* items are modified from Huston (2010) and Yang et al. (2018), *BE* items are modified from Ying et al. (2019), *ADF* items are modified from Guo et. al. (2020) and Wu and Huang (2022)

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Table S7. Descriptive statistics for financial literacy (FL)

Items of FL	Mean	SD	Skewness		Kurtosis	
			statistic	SE	statistic	SE
*FL*1	6.39	2.738	–0.439	0.125	–0.821	0.248
*FL*2	6.42	2.719	–0.447	0.125	–0.857	0.248
*FL*3	6.72	2.835	–0.643	0.125	–0.728	0.248
*FL*4	6.78	2.936	–0.584	0.125	–0.983	0.248
*FL*5	6.69	2.925	–0.535	0.125	–0.925	0.248
*FL*6	4.82	2.768	0.236	0.125	–0.951	0.248
*FL*7	6.20	3.202	–0.246	0.125	–1.351	0.248
*FL*8	4.43	3.166	0.383	0.125	–1.308	0.248
*FL*9	6.68	2.904	–0.559	0.125	–0.929	0.248
*FL*10	4.96	5.296	6.649	0.125	60.556	0.248
*FL*11	6.72	2.748	–0.500	0.125	–0.959	0.248
*FL*12	6.75	2.743	–0.620	0.125	–0.743	0.248
*FL*13	6.73	2.805	–0.505	0.125	–0.916	0.248
*FL*14	6.77	2.745	–0.666	0.125	–0.668	0.248
*FL*15	6.99	2.786	–0.760	0.125	–0.591	0.248

The table presents descriptive statistics for various financial literacy metrics, identified as *FL*1 through *FL*15. The analysis of each measure includes four primary statistical dimensions: mean, standard deviation, skewness, and kurtosis. The mean scores, which indicate the average level of financial literacy for each measure, mostly fall between 6.39 to 6.99, suggesting a generally moderate to high degree of financial literacy across the measures. The mean is a central measure of location, indicating that the average respondent possesses a relatively high level of financial literacy. Standard deviation measurements offer insight into variability. The majority of financial literacy measures exhibit standard deviations ranging from about 2.7 to 3.2, indicating a considerable amount of dispersion in the responses. Exceptionally high standard deviation of 5.296 is seen in *FL*10. This suggests a broader range of responses, indicating that opinions or knowledge regarding this specific facet of financial literacy are more diverse than others. Skewness, indicating the lack of symmetry in the distribution, displays a combination of negative and positive numbers. Most of the metrics show negative skewness, suggesting a distribution with a longer or fatter tail on the left side.

For instance, *FL*1 exhibits a skewness of –0.439. Lower scores in these financial literacy assessments exhibit greater variability compared to higher values. On the other hand, metrics such as *FL*6 and *FL*8 exhibit positive skewness, indicating an extended tail on the right side of the distribution. The tiny standard error of skewness (0.125) indicates a high level of confidence in these skewness estimates. Kurtosis indicates the degree of 'tailedness' in the distribution. The kurtosis values for *FL*1 and *FL*7 are predominantly negative, with –0.821 and –1.351 respectively, suggesting distributions with thinner tails and less pronounced peaks than a normal distribution. This indicates that outliers (very high or low scores) are less probable in certain measurements. *FL*10 stands out as an outlier due to its remarkably high kurtosis of 60.556, suggesting a distribution with a strong peak and heavy tails, which differs significantly from the other metrics. The standard error for kurtosis is consistent at 0.248 across measures, indicating the dependability of these kurtosis estimations.

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Table S8. Descriptive statistics for sustainable performance (SCP)

Items of SCP	Mean	SD	Skewness		Kurtosis	
			statistic	SE	statistic	SE
*SCP*1	5.30	2.519	–0.057	0.125	–0.825	0.248
*SCP*2	5.34	2.279	0.037	0.125	–0.700	0.248
*SCP*3	5.76	2.636	–0.212	0.125	–0.924	0.248
*SCP*4	5.49	2.412	0.002	0.125	–0.827	0.248
*SCP*5	4.88	2.495	0.318	0.125	–0.698	0.248
*SCP*6	5.53	2.621	0.025	0.125	–1.065	0.248
*SCP*7	4.40	2.379	0.316	0.125	–0.706	0.248
*SCP*8	5.33	2.569	–0.047	0.125	–0.864	0.248
*SCP*9	5.60	2.454	–0.159	0.125	–0.795	0.248
*SCP*10	5.41	2.450	0.003	0.125	–0.797	0.248
*SCP*11	4.87	2.530	0.116	0.125	–0.790	0.249
*SCP*12	5.48	2.463	–0.181	0.125	–0.773	0.248
*SCP*13	4.72	2.818	0.279	0.125	–1.061	0.248
*SCP*14	5.15	2.474	–0.007	0.125	–0.805	0.248

The table presents descriptive statistics for different indicators of sustainable performance, labelled as *SCP*1 to *SCP*14. The analysis of each indicator includes mean, standard deviation, skewness, and kurtosis, offering a thorough statistical summary of sustainable performance. The mean values, which represent the average level of sustainable performance, vary from 4.40 (*SCP*7) to 5.76 (*SCP*3). These findings indicate that the average sustainable performance levels across various indicators are moderately high. The mean is an important measure that shows where most of the data is concentrated. In this case, it suggests that respondents generally rank sustainable performance at a reasonably high level on average. The standard deviation, indicating the extent of data dispersion from the mean, often falls within the 2.4 to 2.8 range. *SCP*13 exhibits a high standard deviation of 2.818, suggesting a broader range of answers and increased diversity in opinions or assessments related to this component of sustainable performance. *SCP*2 had a smaller standard deviation of 2.279, indicating greater consensus across respondents. Skewness evaluates the lack of symmetry in the distribution. The skewness values in this dataset are predominantly near zero, with *SCP*10 having a value of 0.003, suggesting distributions that are relatively symmetrical. Skewness numbers below zero, like –0.212 for *SCP*3, imply a left-skewed distribution with a longer tail on the left side, while values above zero, such as 0.318 for *SCP*5, suggest a right-skewed distribution with a longer tail on the right. The standard error for skewness is consistent at 0.125 across all metrics, enhancing the dependability of these estimations. Kurtosis offers information on the distribution's tail behaviour. The majority of the kurtosis values are negative, such as -0.825 for *SCP*1, indicating distributions with thinner tails and less pronounced peaks compared to a normal distribution. This suggests a minimal presence of outliers in the responses. *SCP*13 exhibits a negative kurtosis of –1.061, indicating a distribution that is even less peaked. The standard error for kurtosis is consistently around 0.248 throughout the metrics, indicating the dependability of these kurtosis estimations.

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Table S9. Descriptive statistics for business experience (BE)

Items of BE	Mean	SD	Skewness		Kurtosis	
			statistic	SE	statistic	SE
*BE*1	4.63	1.783	0.437	0.125	1.664	0.248
*BE*2	4.53	1.749	0.689	0.125	1.748	0.248
*BE*3	4.80	1.776	0.300	0.125	1.428	0.248
*B*34	4.86	1.741	0.417	0.125	1.602	0.248
*B*35	4.87	1.757	0.480	0.125	1.765	0.248
*BE*6	4.96	1.757	0.408	0.125	1.395	0.248
*BE*7	4.92	1.759	0.417	0.125	1.578	0.248
*BE*8	4.90	1.726	0.342	0.125	1.573	0.248
*BE*9	4.75	1.795	0.501	0.125	1.529	0.248
*BE*10	4.99	1.777	0.069	0.125	1.123	0.248
*BE*11	4.61	1.878	0.598	0.125	1.315	0.248
*BE*12	4.71	1.763	0.618	0.125	1.595	0.249
*BE*13	4.65	1.813	0.543	0.125	1.429	0.248
*BE*14	4.82	1.773	0.658	0.125	1.705	0.248
*BE*15	4.85	1.743	0.332	0.125	1.299	0.248

The table displays descriptive statistics for different metrics of business experience labelled as *BE*1 through *BE*15, as well as *B*34 and *B*35. The statistics consist of the mean, standard deviation, skewness, and kurtosis for each metric, offering a comprehensive statistical summary. The mean values, representing the average business experience level, vary from 4.53 (*BE*2) to 4.99 (*BE*10). The average scores, about in the mid-4s range, indicate a reasonable amount of business experience among the participants. The mean is a crucial measure of central tendency that indicates the average value of replies in relation to business experience. The standard deviation numbers, indicating the dispersion of answers from the mean, are consistently around 1.7 to 1.8. This suggests a moderate degree of diversity in responses. For instance, *BE*11 has a standard deviation of 1.878, indicating a significantly wider range of replies compared to others in terms of business experience. A smaller standard deviation, such as 1.726 for *BE*8, signifies a more concentrated distribution of results. Skewness evaluates the lack of symmetry in the distribution of responses. The dataset has predominantly positive skewness values, suggesting distributions with extended tails on the right side. *BE*2 has a skewness of 0.689, indicating a distribution biassed towards higher values. The standard error for skewness is consistent at 0.125 throughout the measures, which enhances the reliability of these skewness estimates. Kurtosis reveals the degree of peakedness or flatness of a distribution's tails. The kurtosis values, such 1.664 for *BE*1 and 1.748 for *BE*2, are mainly positive, suggesting distributions with heavier tails and sharper peaks compared to a normal distribution. This indicates a higher probability of outliers in the responses. The constant standard error for kurtosis, approximately 0.248 across measurements, indicates the dependability of these kurtosis estimates.

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Table S10. Descriptive statistics for access to digital finance (ADF)

Items of ADF	Mean	SD	Skewness		Kurtosis	
			statistic	SE	statistic	SE
*ADF*1	7.16	2.914	–0.940	0.125	–0.358	0.248
*ADF*2	4.53	3.481	0.322	0.125	–1.554	0.248
*ADF*3	3.83	2.980	0.718	0.125	–0.853	0.248
*ADF*4	2.18	2.251	2.230	0.125	4.253	0.248
*ADF*5	2.17	2.301	2.195	0.125	4.042	0.248
*ADF*6	1.59	1.771	3.492	0.125	11.820	0.248
*ADF*7	7.02	3.003	–0.830	0.125	–0.621	0.249
*ADF*8	4.10	3.405	0.530	0.125	–1.370	0.248
*ADF*9	3.49	2.903	0.967	0.125	–0.369	0.248
*ADF*10	2.05	2.152	2.387	0.125	5.034	0.248
*ADF*11	2.07	2.264	2.279	0.125	4.115	0.249
*ADF*12	1.91	2.024	2.627	0.125	6.403	0.248
*ADF*13	2.05	2.214	2.337	0.125	4.571	0.248
*ADF*14	4.08	3.352	0.524	0.125	–1.350	0.248
*ADF*15	3.65	2.895	0.870	0.125	–0.542	0.248
*ADF*16	2.17	2.294	2.117	0.125	3.512	0.248
*ADF*17	2.23	2.348	2.052	0.125	3.286	0.248
*ADF*18	4.75	2.712	0.304	0.125	–0.921	0.248
*ADF*19	5.46	2.856	–0.059	0.125	–1.162	0.248
*ADF*20	4.60	2.803	0.359	0.125	–0.936	0.248
*ADF*21	4.94	2.572	0.193	0.125	–0.864	0.248
*ADF*22	5.26	2.583	–0.033	0.125	–0.971	0.248
*ADF*23	5.32	2.591	0.006	0.125	–0.884	0.248

The table presents descriptive statistics for different areas of access to digital finance, labelled as *ADF*1 through *ADF*18, and *ADF*19 through *ADF*23. The data consists of the mean, standard deviation, skewness, and kurtosis for each variable. The mean values for average access to digital finance vary greatly across different measurements, ranging from 1.59 (*ADF*6) to 7.16 (*ADF*1). The respondents exhibit a varied level of access to digital finance, with certain parts being more widespread (such as *ADF*1) and others less prominent (like *ADF*6). Standard deviation quantifies the dispersion of data points from the average. Greater values, such as 3.481 for *ADF*2, reflect a wide range of responses, indicating varied experiences with digital finance. Lower numbers, as 1.771 for *ADF*6, indicate greater regularity in replies. Skewness evaluates the lack of symmetry in the distribution. A positive skewness score of 3.492, such as for *ADF*6, suggests a distribution with a long tail on the right side, indicating that higher values are more severe but less frequent. Adf1 has a negative skewness of –0.940, indicating a distribution skewed towards the lower end. The standard error for skewness is consistently about 0.125 across measures, which enhances the dependability of these results. Kurtosis reveals the degree of peakedness or flatness of a distribution's tails. High kurtosis values, such as 11.820 for *ADF*6, indicate a distribution with heavy tails and an abrupt peak, suggesting a higher chance of outliers. When kurtosis values are negative, like –0.358 for *ADF*1, it indicates that the distribution has lighter tails compared to a normal distribution. The standard error for kurtosis is consistently about 0.248 throughout the metrics.