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Expert insights: Ranking essential entrepreneurial skills for emerging Free State commercial farmers

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Background: This study examines the entrepreneurial skills needed to enhance the economic sustainability of upcoming commercial farmers in the Free State, South Africa.

Aim: The study aimed to identify and prioritise essential entrepreneurial skills for new and upcoming commercial farmers.

Setting: The research focuses on the regional and socio-economic realities of commercial farming in the Free State.

Method: A two-round Delphi study collected data from 30 academics, commercial farmers and upcoming commercial farmers. Qualitative responses were thematically analysed, while quantitative ratings were analysed using descriptive and consensus statistics.

Results: Financial management was ranked as the most important skill, followed by critical thinking, personal skills, risk management, management skills and knowledge or experience. Budgeting, cash flow management, strategic planning, and risk management were central to sustaining farming enterprises in a market-driven agricultural environment.

Conclusion: Farming expertise alone is insufficient for long-term commercial sustainability. Integrated entrepreneurial and managerial capabilities are required to respond to changing markets, resource constraints and risk.

Contribution: The findings of this study provide a context-specific basis for integrating entrepreneurial skills into agricultural training, extension services, mentorship programmes and land-reform support initiatives.

Keywords: agriculture; commercial farmers; economic sustainability; Delphi technique; entrepreneurial skills; Free State; upcoming commercial farmers.

Introduction

Farming, often regarded as a cornerstone of South Africa's economy and food security, is far from straightforward. It requires managing numerous interconnected factors, including climate variability, natural resource management, market dynamics, technological advancements, animal health and welfare, labour management, agronomic expertise, soil and crop production knowledge, pest and disease control and sustainable farming practices, all of which contribute to long-term agricultural sustainability (Fischer & Riechers 2019; Pindado & Sánchez 2017).

Within this complex environment, the agricultural sector remains diverse and deeply divided, characterised by a sharp contrast between well-established, large-scale commercial farms that are technologically advanced and financially robust, and smaller, emerging enterprises striving to establish themselves amid persistent structural challenges (Fischer & Riechers 2019; Pindado & Sánchez 2017).

'Upcoming commercial farmers', also referred to in this study as 'new farmers', are individuals entering commercial agriculture for the first time, whether through transitioning from subsistence farming, starting a new farming enterprise or inheriting and developing a family farming operation. These farmers are characterised by their movement towards market-oriented, profit-driven agricultural production, aiming to establish sustainable, viable commercial farming enterprises (Slabbert & Meintjes 2024). For new and upcoming farmers – terms used interchangeably throughout this article to refer to individuals entering commercial farming for the first time, whether transitioning from subsistence farming, starting with limited resources or inheriting family-owned farms – this journey is daunting (Von Bormann 2019).

Success in such a demanding and competitive industry requires more than technical farming knowledge; it demands strong entrepreneurial capacity to navigate uncertainty, adapt to changing industry conditions and achieve long-term economic sustainability. This article addresses that critical gap by proposing a framework of entrepreneurial skills necessary for the success of new and upcoming commercial farmers in the Free State province. By identifying and fostering these skills, the study aims to empower farmers to build sustainable and resilient agricultural enterprises, thereby contributing to South Africa's economic growth and food security. Through this lens, the article underscores entrepreneurial development as a fundamental pillar for upcoming farmers, offering a pathway to bridge historical divides and ensure the sustainability of the country's agricultural sector.

Literature review

The South African agricultural landscape and structural challenges

South Africa's agri-food system is dynamic and diverse, characterised by an advanced commercial farming sector and a promising group of small-scale, emerging and upcoming commercial farmers (Fischer & Riechers 2019). Yet, significant barriers remain. Historical inequalities, economic challenges and policy constraints impede access to essential resources, including land, credit and knowledge (Von Bormann 2019).

The country's recent land reform initiatives aim to address these inequalities by redistributing land and providing opportunities for emerging commercial farmers. However, land redistribution alone is insufficient; success hinges on equipping these farmers with entrepreneurial skills to overcome micro-, market- and macro-environmental challenges (McElwee & Wood 2018).

The South African agricultural industry faces a range of economic and environmental pressures. Agricultural deregulation in the 1990s exposed the sector to market-driven forces, eliminating previous support mechanisms and intensifying the competition many upcoming farmers face today (Greenberg, McKone-Sweet & Wilson 2011).

Large-scale commercial farms, which comprise only a fraction of the agricultural sector, dominate retail and wholesale supply chains, often leaving new farmers with limited access to market opportunities and resources (Barrientos & Visser 2013). According to Hermans et al. (2017), over the last two decades, an increasing number of large-scale farming operations have emerged worldwide, from South America to Eastern Europe to China and the countries of the Former Soviet Union. These agribusinesses operate as mega-farms or agroholdings: horizontally or vertically integrated operations with farm sizes of up to 500 000 hectares and sometimes even more. These types of farms are found not only in crop farming but also in animal husbandry. Although some information on agroholdings and other forms of mega-farming operations is available, a systematic analysis of their prevalence, economic performance and social and environmental implications from an international perspective is lacking. To achieve success, emerging commercial farmers must manage a wide array of variables, spanning micro-level factors such as psychological and human resource management to macro-level influences, including regulatory compliance, global trade dynamics and economic shifts. These layers of complexity introduce significantly greater variability in management demands for farmers compared to conventional business operations. Meeting these standards requires substantial technical, financial and managerial expertise. Given these pressures, commercial farming in South Africa has evolved from a production-focused activity into a multifaceted entrepreneurial business (Von Bormann 2019).

Entrepreneurship and farming: Identifying core entrepreneurial skills for economic sustainability in agriculture

Entrepreneurship in agriculture emphasises adaptability, opportunity identification and strategic management, all of which are essential for maintaining viability amid the sector's challenges (Rudmann 2008; Shane & Venkataraman 2001). Scholars argue that entrepreneurial success in farming requires integrating traditional farming skills with managerial, financial and market-oriented capabilities (Vesala & Pyysiäinen 2008). Entrepreneurship theory further highlights opportunity recognition and innovation as vital traits for navigating uncertainty in the agricultural sector (Davidsson 2017).

The entrepreneurial skills required for success in agriculture extend across four main areas: management, opportunity recognition, strategic planning and networking (De Wolf & Schoorlemmer 2007). These skills are crucial for upcoming farmers transitioning from subsistence or smallholder agriculture to viable commercial enterprises within South Africa's agricultural landscape. Specifically, they must develop strategic planning, financial management and adaptability capacities to successfully participate in South Africa's consolidated agricultural value chains. The Six Capitals Model provides a relevant framework for understanding sustainability in agriculture (Adams 2008; Haller & Tacu Hârşan 2021). This model emphasises financial, human, social, intellectual, manufactured and natural capital, stressing the value of each in building a holistic, resilient agricultural enterprise. For upcoming commercial farmers, integrating these capitals into their skills can create a sustainable foundation for long-term success.

Theoretical framework

In South Africa, upcoming commercial farmers must respond to these challenges by developing entrepreneurial skills that meet both the operational and strategic demands of commercial farming enterprises.

This study was grounded in Schultz's (1961) Human Capital Theory, Schumpeter's (1934) Innovation Theory and the Six Capitals Model, which together provide a strong theoretical foundation for understanding how entrepreneurial skills contribute to resilience and economic sustainability. Human Capital Theory explains that investment in skills such as financial management, leadership, strategic planning and decision-making improves productivity, competitiveness and long-term sustainability (Schultz 1961). Schumpeter's Innovation Theory emphasises innovation, adaptability and opportunity recognition, supporting the importance of critical thinking, problem-solving and market responsiveness in commercial farming (Schumpeter 1934, 1939). The Six Capitals Model broadens this perspective by recognising that sustainability depends not only on financial capital but also on human, social, intellectual, natural and manufactured capital and by highlighting the value of collaboration, networking, resource management and knowledge development (Adams 2008). The integration of these theoretical perspectives guides the research framework, emphasising entrepreneurial skills that are contextually relevant and applicable to the unique challenges faced by South African farmers.

Methods

The philosophical stance underpinning the Delphi method is rooted in pragmatism and constructivism, in which knowledge is generated through collective reflection, expert judgement and iterative consensus-building. Rather than seeking a single objective truth, the method acknowledges that complex social and economic issues, such as identifying entrepreneurial skills in agriculture, are best understood through the informed perspectives of individuals with relevant experience and expertise. This approach values both subjective interpretation and practical problem-solving, making it particularly suitable for studies that require context-specific insights and informed decision-making (Tapio et al. 2011). Most researchers have utilised either all or a selection of the definitions established by Linstone and Turoff (eds. 1975), who characterise the Delphi technique as 'a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem'.

The Delphi method facilitates consensus-building among expert informants, allowing them to assess and prioritise entrepreneurial skills through iterative rounds. This study included 30 expert informants from academic, commercial farming and emerging farmer backgrounds. Expert feedback was collected and refined across two rounds, with importance ratings analysed to identify core entrepreneurial skills. A five-point Likert scale will measure the relative importance of each skill, allowing experts to review and adjust their assessments iteratively (Tapio et al. 2011).

The study used ATLAS.ti (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany) and IBM SPSS Statistics for Windows, version 29.0 (IBM Corp., Armonk, New York, United States) to analyse the qualitative and quantitative data, respectively. Qualitative responses from the Delphi questionnaires were analysed in ATLAS.ti using a thematic analysis process. The analysis began by organising, transcribing, and repeatedly reading all responses to gain a general understanding of the data. Open coding was then applied to identify key ideas, concepts and recurring patterns from expert informants' responses. Similar codes were grouped into broader categories, which were refined through focused coding to develop major themes such as financial management, critical thinking and personal skills. These themes were then interpreted in relation to the study objectives and supported by direct expert quotations. Quantitative data from Likert-scale ratings were analysed in SPSS version 29 using descriptive statistics, including frequencies, mean scores, median values, standard deviations and ranking analyses to prioritise entrepreneurial skills. Consensus among expert informants was further measured using Kendall's coefficient of concordance (Kendall's W), interquartile range (IQR) and coefficient of variation to determine agreement across Delphi rounds. This combined analytical approach improved both the clarity and reliability of the findings (Creswell & Clark 2017).

Sample and data collection

A purposive sampling technique was used to select expert informants based on their agricultural expertise. The sample comprised 10 agricultural academics, 10 established commercial farmers and 10 upcoming commercial farmers from the Free State. Data were collected via structured questionnaires distributed electronically, ensuring timely, iterative feedback within each Delphi round. The interval between rounds was less than 2 weeks, which ensured that the expert informants' memories remained recent and reliable (Creswell & Clark 2017; Tapio et al. 2011).

Ensuring research validity and reliability

The study engaged expert informants with specific knowledge and interest in agricultural entrepreneurship to enhance validity. Instrument validity was ensured through a structured feedback process involving academic expert reviews. Trustworthiness was further maintained by documenting all methodological decisions in a journal, providing transparency throughout the research process (Creswell & Clark 2017).

Ethical considerations

Ethical clearance to conduct this study was obtained from the General/Human Research Ethics Committee of the University of the Free State (No. UFS-HSD2024/0147). Participation was voluntary, and all data will be kept confidential to protect informants' privacy. Only the researcher and statistician have access to the data, with all records securely stored for the required period per university guidelines (Creswell & Clark 2017).

Results

The Delphi method

The biographical data guarantee the validity, relevance and applicability of the study's conclusions to entrepreneurship in agriculture. Understanding the expert informants' qualifications, history and experience ensures that the insights and consensus derived from the Delphi technique and other studies are grounded in substantial, relevant expertise. The biographical information contextualises the expert informants' viewpoints, aiding interpretation of their responses and elucidating how their professional experiences may shape their opinions on the entrepreneurial abilities required for sustainable agriculture. Evaluating biographical data help assess the expert informant's diversity and representativeness, ensuring that the entrepreneurial skills identified are widely relevant to upcoming commercial farmers.

The group consisted of 30 expert informants, evenly distributed among three main categories: academics, established commercial farmers and upcoming commercial farmers. Each category accounted for 33.3% of the experts, demonstrating that the study encompassed diverse opinions. The investigation included the perspectives of academics, commercial farmers and upcoming commercial farmers, as evidenced by the equitable distribution across the three categories. The experts were categorised into three age groups: 35–44 years, 45–59 years and 60+ years. The 60+ age group was the largest, accounting for 50% of participants, followed by the 45–59 age group, which comprised 41% of the sample. The 35–44 age group represented 9%, making it the least represented category and suggesting a transitional stage in professional careers. Overall, the sample was weighted towards older participants, with 91% of experts aged 45 years and above. This composition is advantageous for studies that require extensive professional experience, deep industry knowledge and a comprehensive understanding of historical trends in the agricultural sector. The inclusion of specialists aged 60 years and above, together with those in the 45–59 years category, ensured that the study benefited from both longstanding expertise and current practical insights. The age distribution, therefore, reflects a well-positioned group of professional informants capable of providing comprehensive analysis and informed perspectives grounded in experience.

The study examined the gender composition of 30 expert informants, with 73% male and 27% female. The predominant demographic group represented in the study was White, with comparatively lower representation from Black African, Coloured and other racial groups. White experts accounted for 76% of the total sample, while Black African experts accounted for 14%, contributing valuable perspectives to enhance diversity and equity within South Africa's agricultural sector. Coloured experts comprised 5% of the sample, further strengthening the diversity of expert perspectives, while participants classified as Other represented the remaining 5%. This alignment indicates that the experts reflect the region's demographic composition, in which White farmers have historically dominated land ownership and agricultural leadership.

The highest academic qualifications among the 30 expert informants ranged from Grade 12 to advanced academic credentials, with a substantial proportion holding university degrees, postgraduate qualifications, doctorates and professorships. This diversity in educational attainment is essential for promoting transformation and inclusivity within the agricultural sector, which are critical components of South Africa's broader socio-economic development objectives. Experts with university degrees or higher are well positioned to provide informed perspectives on complex topics such as entrepreneurship, entrepreneurial skills and sustainability. The inclusion of participants with postgraduate degrees, doctorates and professorships further demonstrates the panel's capacity to engage with the theoretical and practical dimensions of these fields at an advanced level. At the same time, a foundational level of educational attainment ensures that all participants are adequately equipped to understand and contribute meaningfully to discussions on entrepreneurship and sustainability. The expert's academic credentials provide a robust foundation for the research, ensuring that specialists with profound knowledge of the topics examined guide the study. Aligning these credentials with the research's emphasis on entrepreneurship and sustainability amplifies the study's significance and potential influence.

The Delphi research indicated that the progression from prospective farmer to established commercial farmer is influenced by factors such as resource availability, training, experience, mentorship, market access, financial management and the completion of industry cycles. Since 60% of respondents indicated that acquiring the necessary knowledge and expertise to be regarded as experienced requires at least 5 years, lifelong learning remains essential.

The transition to commercial farming may take between 2 years and 3 years under favourable conditions, such as sufficient resources, training opportunities, market access and government support. However, for many individuals, this process can take 5–10 years or even 10–20 years, depending on resource availability, technical expertise, geographic location, funding and the adoption of sustainable practices. Both the literature and qualitative findings support a timeframe of 5–10 years as the most common period required to become an established farmer, often aligned with the completion of at least one full agricultural cycle, which typically spans approximately 7 years.

The journey towards becoming an experienced commercial farmer is therefore not linear but continuous, requiring adaptability, innovation and ongoing learning. Entrepreneurship in this context is characterised by the ability to identify and exploit opportunities, develop innovative and sustainable solutions and manage farming operations for long-term

economic profitability. Expert informants emphasised the importance of opportunity recognition, solution-oriented thinking, innovation and sustainable enterprise development for entrepreneurial success in agriculture.

The following research questions from the study are presented as supplementary insights to support this research article's findings on identifying entrepreneurial skills. Specifically, the discussion addresses the question: *What is the required timeframe for an individual to transition from an upcoming commercial farmer to a sustainable experience commercial farmer?*

Regarding the timeline to transform, the expert informants (A = Academics; CF = Commercial Farmers and UCF = Upcoming Commercial Farmers) said:

> 'You should be established as an entrepreneur after five years according to theory, yet my experience shows that entrepreneurs could stay in an emerging phase/start-up phase for many years as a result of the lack of resources, training, their inability to penetrate the market and the lack of the environment created by the government for these entrepreneurs to prosper.' (A2, departmental manager; academic and entrepreneurship adviser; 29 years in academia)

Associated Themes: Resource availability, Training and Experience, Guidance and support, Market access, less than 5 years, more than 10 years:

> 'Between 2 and 3 years.' (A3, professor; entrepreneurship lecturer and small-business consultant; 16 years in academia)

Associated Themes: Less than 5 years:

> '8–10 years, although it is a process of lifelong learning. Stages are identifying an opportunity, developing the business concept, planning, collecting resources and getting started. These stages may take up to 2 years. These stages in themselves may take up to 2 years. After that, the business must grow towards maturity, which may be a short cycle for some businesses and very long for others.' (A6, faculty dean; senior manager of an entrepreneurship development unit; 35 years in academia)

Associated Themes: Resource availability, Guidance and support, Complete an industry cycle (7 years for agriculture), Process of life-long learning:

> 'It's difficult to determine an exact timeframe because several factors could influence this process. However, I believe it would take at least 5 years, but more likely around 10 years, to gain the knowledge and experience necessary to be recognised as experienced.' (A7, assistant dean for teaching and learning; women and small-enterprise specialist; 24 years in academia)

Associated Themes: Less than 5 years, 5–10 years:

> 'Ten to 20 years, depending on the individual and previous farming experience, e.g., growing up on a farm.' (A8, Emeritus professor; 30 years teaching entrepreneurship; 40 years in academia)

Associated Themes: Resource availability, more than 10 years:

> 'Depending on the individual and previous experience of farming.' (A9, doctorate-level academic, problem-solving and entrepreneurship lecturer; 10 years' experience)

Associated Themes: Resource availability, Guidance and support:

> 'There is no definite time to successfully move from emerging to a fully-fledged commercial farmer. This largely depends on the support and resources one has access to. Those with the necessary support and resources would most likely transition much quicker than those who may not have.' (A10, lecturer; mentor; 10 years in academia)

Associated Themes: Resource availability, Training and Experience, Guidance and support:

> 'The time required for a business owner to evolve from an emerging entrepreneur to a seasoned business operator, in my opinion, is four years because the first two years are a trial-and-error period and building the business foundation and the pilot stage. Then the following year, it's redefining stage and improving on the product or service the entrepreneur offers.' (A11, lecturer; social and student entrepreneurship specialist; more than 10 years' entrepreneurship experience)

Associated Themes: Less than 5 years:

> 'Every industry has a specific cycle. For a successful transition, an individual must complete at least one industry cycle. Agriculture runs in a seven-year cycle.' (CF2, farm owner, commercial farmer, and innovator; 30 years' farming experience)

Associated Themes: Complete an industry cycle (7 years for agriculture), 5–10 years:

> 'Upcoming commercial farmers are farmers who start as smallholder farmers with commercial farming as the target. Upcoming commercial farmers can be smallholder farmers who grow their businesses or new farmers who grow gradually. Therefore, the timeframe for individual farmers to become upcoming commercial farmers depends on factors that might influence the transition. Factors such as geographic spread, stigma, financing and technical knowledge.' (CF4, farm owner; farmer-entrepreneur; 10 years' farming experience)

Associated Themes: Resource availability, Training and Experience, Guidance and support:

> 'When you have completed one agriculture business cycle with an academic foundation, you can move to be seen as an experienced commercial farmer.' (CF5, part-time farm owner; entrepreneurship and management lecturer; 8 years' farming experience)

Associated Themes: Complete an industry cycle (7 years for agriculture), 5–10 years:

> '8 years.' (CF6, farm owner; established commercial farmer; 43 years' farming experience)

Associated Themes: 5–10 years:

> 'Without sponsorship, it would take about ten years. Steps would include: 1. Acquire a 3-year academic background, 2. Then, get at least two years of practical experience. After that,

use the guidance of agricultural experts and get support from a full-time agricultural mentor.' (CF7, farm owner; mentor of upcoming farmers; 40 years' farming experience)

Associated Themes: Resource availability, Guidance and support, Market access, 5–10 years, more than 10 years:

'Ten years. Everything will be new, so remember that other, more experienced neighbours will not mind giving advice. Do not pretend to know everything; talk to other farmers, find a mentor(s), ask questions (Why & what, and understand how EVERYTHING works, from different soils and their characteristics and how they impact different crops to finances and how you can improve profitability), join farmer associations, etc.' (CF8, farm co-owner and chief executive officer; MBA-qualified farmer; Delphi Round 1 [years not recorded])

Associated Themes: More than 10 years:

'5 years -skills- financial management has to be developed over time and different risks are involved.' (CF9, farm owner; established commercial farmer; 44 years' experience)

Associated Themes: 5–10 years:

'It takes a few years to go through all the cycles because history repeats itself.' (UCF2, farm co-owner; upcoming commercial farmer; 5 years' experience)

Associated Themes: Complete an industry cycle (7 years for agriculture), a lifelong learning process:

'8 years.' (UCF5, farm co-owner; upcoming commercial farmer; 4 years' experience)

Associated Themes: 5–10 years:

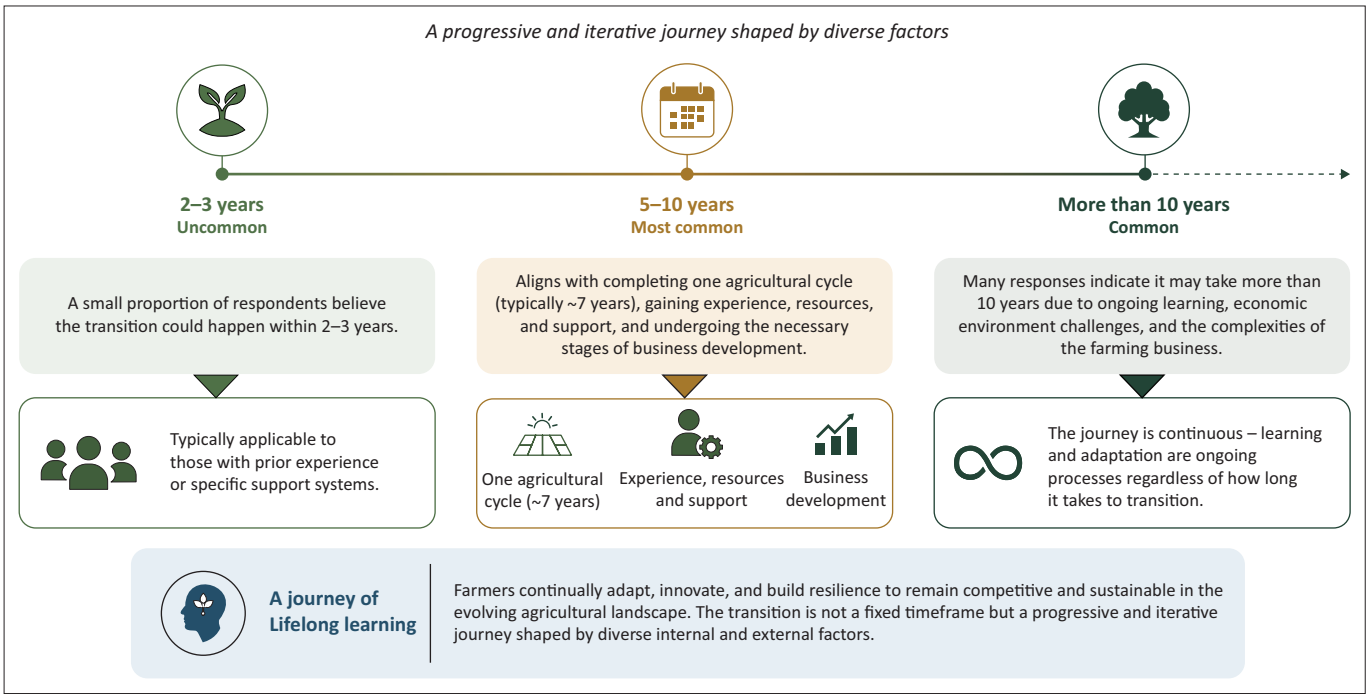
'I think it will take 10 years. The first 3 years are spent understanding the commodity you are working with. How it thrives, and what is detrimental to it. The next 3 years will be spent understanding your market and defining your target market. The final 4 years will be about penetrating that market efficiently and effectively to make a meaningful impact.' (UCF6, piggery manager; upcoming commercial farmer; 3 years' experience)

Associated Themes: Resource availability, Guidance and support, Market access, 5–10 years, more than 10 years.

The literature emphasises that transitioning from an emerging to an established commercial farmer is lengthy, especially in sustainable agriculture. The transition requires significant time as a result of factors such as capital intensity, market dynamics and the adoption of sustainable practices.

The literature generally supports a timeline of 5–10 years or more, particularly when completing an entire industry cycle, such as the 7-year agricultural cycle mentioned (Pereira et al. 2018; Stringer et al. 2020). Most respondents in the qualitative study suggested that transitioning to an established farmer takes 5–10 years, which aligns with theoretical research and indicates this is a realistic timeframe. The emphasis on factors such as resource availability, training and the completion of an industry cycle (7 years for agriculture) also reflects the theoretical understanding of the complexities involved in this transition. A minority of respondents indicated that this transition could occur within 5 years if there is significant support or prior experience.

This contrasts with the broader literature, which generally does not account for such accelerated timelines except under exceptional circumstances. The research adds detail by identifying specific conditions under which the transition might occur more quickly, such as prior experience or



Source: Slabbert, A. & Meintjes, A., 2024, 'An entrepreneurial skills framework to promote economic sustainability of upcoming commercial farmers in the Free State', PhD thesis, University of the Free State

FIGURE 1: Timeline: Transition from upcoming to established commercial farmer.

significant external support, addressing a gap in the literature that does not fully explore these accelerated pathways.

A small proportion of respondents believe the transition could happen within 2–3 years, but this is uncommon.

The primary emphasis here is on those with prior experience or specific support systems. The most common timeline identified is 5–10 years. This range aligns with completing one agricultural cycle (typically 7 years), gaining the necessary experience, resources and support and progressing through the stages of business development. Many responses suggest it may take more than 10 years, mainly as a result of ongoing learning, economic challenges and the complexities of the farming business. This theme underscores that the journey towards becoming an established farmer is continuous, with learning and adaptation ongoing processes, regardless of how long it takes to transition.

Furthermore, the journey reflects a lifelong learning process, in which farmers continually adapt and innovate to remain competitive and sustainable in the evolving agricultural landscape. Thus, the transformation from an upcoming to an established commercial farmer is not merely a fixed timeframe but a progressive and iterative journey shaped by diverse internal and external factors. The progressive and iterative transition from an upcoming to an established commercial farmer is illustrated in Figure 1. The factors and timeframes identified by the expert informants are summarised in Table 1.

Research questions

The following Table 2, Table 3, Table 4, and Table 5 present feedback that addresses key research questions and complements the study's findings. These questions explore what entrepreneurial activities and characteristics are essential for the sustainability of established entrepreneurs, including commercial farmers. What critical entrepreneurial skills are required to achieve economic and financial sustainability within the Free State, particularly in the agricultural sector? Furthermore, which entrepreneurial skills should be prioritised to tackle the unique challenges and opportunities faced by entrepreneurs and upcoming commercial farmers in the Free State, and how can these skills be effectively developed or acquired?

Table 2 presents the skills identified from the qualitative data's thematic analysis (Henning 2004). The data in Table 2 are organised according to the thematic framework, systematically categorised from Theme 1 to Theme 11, with each theme delineated.

TABLE 1: The frame for an individual to transition from an upcoming commercial farmer to a sustainable experience farmer.

Transition timeframe or influencing factor	Frequency	Percentage (*n* = 30 experts)
Less than 5 years	2	7
5–10 years	13	43
Complete an industry cycle (7 years for agriculture)	3	10
More than 10 years	1	3
Process of life-long learning	1	3
Depends on different factors	9	30
Training and experience	6	20
Resource availability	4	13
Guidance and support	2	7
Market access	2	7

Source: Adapted from Slabbert, A. & Meintjes, A., 2024, 'An entrepreneurial skills framework to promote economic sustainability of upcoming commercial farmers in the Free State', PhD thesis, University of the Free State

Theme 1: Critical thinking

Critical thinking emerged as essential, encompassing innovation, problem-solving and opportunity-seeking.

TABLE 2: Identification of entrepreneurial skills (Question 2.8).

Themes	Frequency	Percentage (*n* = 30 experts)
Critical thinking (problem-solving and strategic planning)	8	27
Positive outlook and proactive behaviour	7	23
Innovative	7	23
Budgeting	5	17
Willingness to seek advice and assistance	4	13
Resource mobilisation (understanding resources)	4	13
Self-discipline and motivation	4	13
Solution-driven	3	10
Time management and planning	3	10
Resilience	3	10
Building networks and connections	3	10
Leadership	2	7
Calculated risk-taking	2	7
Market research	2	7
Work under pressure	1	3

Source: Adapted from Slabbert, A. & Meintjes, A., 2024, 'An entrepreneurial skills framework to promote economic sustainability of upcoming commercial farmers in the Free State', PhD thesis, University of the Free State

TABLE 3: Critical entrepreneurial skills necessary for economic sustainability (Question 2.23).

Themes	Frequency	Percentage (*n* = 30 experts)
Critical thinking	20	67
Innovative	7	23
Problem-solvers	6	20
Opportunity seekers	5	17
Personal skills	16	53
Leadership and people skills	11	37
Hardworking and determined	8	27
Adaptability	4	13
Self-management	2	7
Resilience	2	7
Communication skills	1	3
Willingness to learn	1	3
Positive	1	3
Financial management	16	53
Budgeting	7	23
Risk management	11	37
Knowledge and experience	11	37
Management skills	10	33
Time management	3	10
Detail orientated	2	7
Record keeping	1	3
Marketing skills	10	33
Collaboration and building networks	7	23
Resource management	3	10

Source: Adapted from Slabbert, A. & Meintjes, A., 2024, 'An entrepreneurial skills framework to promote economic sustainability of upcoming commercial farmers in the Free State', PhD thesis, University of the Free State

TABLE 4: Critical entrepreneurial skills required for economic sustainability in Free State agriculture (Question 2.28).

Themes	Frequency	Percentage (*n* = 30 experts)
Financial management	17	57
Budgeting	5	17
Critical thinking	17	57
Innovative	12	40
Problem-solvers	5	17
Opportunity seekers	3	10
Personal skills	16	53
Leadership and people skills	7	23
Hardworking and determined	5	17
Resilience	2	7
Adaptability	3	10
Willingness to learn	3	10
Communication skills	3	10
Positive	2	7
Humble	1	3
Self-management	1	3
Marketing skills	12	40
Management skills	12	40
Administrative skills	2	7
Time management	1	3
Knowledge and experience	9	30
Risk management	8	27
Collaboration and building networks	8	27
Resource management	4	13
Negotiation skills	2	7
Digital literacy	2	7

Source: Adapted from Slabbert, A. & Meintjes, A., 2024, 'An entrepreneurial skills framework to promote economic sustainability of upcoming commercial farmers in the Free State', PhD thesis, University of the Free State

Academic 4 stated, 'Critical thinking is needed when considering the different choices available during resource or opportunity exploitation. Opportunity exploitation allows one to draw on resources and find mechanisms to maximise economic returns'. (A4, professor; entrepreneurship teacher, researcher and postgraduate supervisor; experience since 2014). Similarly, CF8 remarked:

> 'Critical entrepreneurial skills are the following: Leadership, problem-solving, time management, and communication. All of these can be taught … recognising that your ideas' ultimate success or failure depends on you.' (CF8, farm co-owner and chief executive officer; MBA-qualified farmer; Delphi Round 1 (years not recorded])

The final entrepreneurial skills framework and the ranking of the skills from most to least important are presented in Table 6. Schumpeter's innovation theory supports this, describing entrepreneurs as innovators driven by creativity and foresight. However, static economic models fail to fully capture the dynamic, opportunity-seeking aspect of critical thinking, which is essential to modern entrepreneurship.

Theme 2: Personal skills

Personal skills such as self-management, resilience and creative problem-solving were highly valued. Academic 8 stated, 'Self-management – understanding your strengths and growth areas. Self-motivation (taking initiative and persistence), self-control, planning, goal setting (specific, measurable, achievable, relevant and time-bound [SMART] objectives), organising, decision-making, self-awareness, perception, handling stress, right beliefs in life' (A8, Emeritus professor; 30 years teaching entrepreneurship; 40 years in academia). Upcoming Commercial Farmer 3 added, 'Optimistic thinking, creative thinking. Initiative. Persistence. Communication. Negotiation. Ethics. Planning and Project management. Budgeting' (UCF3, farm owner; cattle, sheep and poultry farmer; 4 years' experience).

These insights align with Whetton and Cameron's management skills model and Schultz's Human Capital Theory, emphasising personal development as critical for entrepreneurial success.

TABLE 5: Entrepreneurial skills prioritised to address the challenges and opportunities of upcoming commercial farmers (Question 2.30).

Themes	Frequency	Percentage (*n* = 30 experts)
Financial management	15	50
Budgeting	1	3
Personal skills	11	37
Leadership and people skills	5	17
Resilience	4	13
Self-management	2	7
Hardworking and determined	1	3
Willingness to learn	1	3
Positive	1	3
Knowledge and experience	10	33
Collaboration and building networks	9	30
Critical thinking	8	27
Problem-solvers	3	10
Opportunity seekers	2	7
Innovative	2	7
Management skills	7	23
Time management	4	13
Marketing skills	6	20
Business skills	5	17
Risk management	3	10
Technical skills and digital literacy	4	13
Resource management	2	7
Negotiation skills	1	3

Source: Adapted from Slabbert, A. & Meintjes, A., 2024, 'An entrepreneurial skills framework to promote economic sustainability of upcoming commercial farmers in the Free State', PhD thesis, University of the Free State

TABLE 6: Entrepreneurial skills.

No.	Skills	Skills listed from most important to least important
1	Critical thinking skills	Financial management skills
2	Personal skills	Critical thinking skills
3	Financial management skills	Personal skills
4	Risk management skills	Risk management skills
5	Knowledge and experience	Management skills
6	Management skills	Knowledge/experience
7	Marketing skills	Resource management
8	Collaboration and building networks	Collaboration and building networks
9	Resource management	Negotiation skills
10	Negotiation skills	Marketing skills
11	Technological skills and digital literacy	Technological skills/digital literacy

Source: Adapted from Slabbert, A. & Meintjes, A., 2024, 'An entrepreneurial skills framework to promote economic sustainability of upcoming commercial farmers in the Free State', PhD thesis, University of the Free State

Theme 3: Financial management

Financial management skills were deemed crucial, including budgeting, forecasting and strategic planning. Academic 8 highlighted, 'Finances – personal and farm budgeting essential. Save and spend wisely. Accounting of farm activities – a farm needs money for various contingencies' (A8, Emeritus professor; 30 years teaching entrepreneurship; 40 years in academia). Commercial Farmer 4 emphasised, 'Understanding budgeting, cash flow management and financial planning is crucial. Farmers need to manage their finances effectively to ensure sustainability and profitability' (CF4, farm owner; farmer-entrepreneur; 10 years' farming experience).

The Six Capitals Model and Schultz's Human Capital Theory strongly support these findings, underscoring financial literacy's role in sustaining business operations amid market volatility and economic challenges.

Theme 4: Risk management

Risk management was identified as key for navigating uncertainties such as weather changes, market fluctuations and pest outbreaks. Commercial Farmer 4 noted, 'Risk Management: Identifying potential risks and developing strategies to mitigate them can help farmers navigate uncertainties' (CF4, farm owner; farmer-entrepreneur; 10 years' farming experience). Commercial Farmer 9 added, 'Management skills. The entrepreneurs and managers are not necessarily the same person. Being innovative doesn't make you a manager. The manager has to assess and manage controllable risks' (CF9, farm owner; established commercial farmer; 44 years' experience).

Knight's Uncertainty-Bearing Theory aligns with these findings, emphasising risk mitigation as critical for entrepreneurial success, especially in volatile environments like agriculture.

Theme 5: Knowledge and experience

Understanding market dynamics, sustainability and technical practices was emphasised. Academic 1 stated:

> 'Understand markets and market needs. Understand the concept of profitability and risks. Understand that the use of external funding is only limited and available … Listen and apply expert advice on the farm's external funding to be used to finance growth.' (A1, agricultural economic consultant; academic; Delphi Round 1; 40 years' experience)

Commercial Farmer 4 added:

> 'Technical Knowledge: Understanding modern agricultural practices, including technology and sustainable farming methods, is essential for improving efficiency and reducing environmental impact'. (CF4, farm owner; farmer-entrepreneur; 10 years' farming experience)

Schultz's Human Capital Theory reinforces these insights, highlighting how accumulated knowledge and experience enhance decision-making and adaptability in complex markets.

Theme 6: Management skills

Strong leadership, strategic decision-making and operational management were highlighted as critical. Commercial Farmer 4 stated, 'Leadership and Management: Strong leadership and management skills are necessary to lead teams, make strategic decisions and drive the business towards its goals' (CF4, farm owner; farmer-entrepreneur; 10 years' farming experience). Upcoming Commercial Farmer 9 further emphasised, 'Strong leadership is needed to manage farm labour, including the hiring, training and retaining skilled workers' (UCF9, family-farm participant; upcoming commercial farmer; 1 year's experience).

Whetton and Cameron's management skills model and Nieman and Nieuwenhuizen's work support these findings, underscoring the dual necessity of visionary and managerial skills.

Theme 7: Marketing skills

Marketing skills were emphasised to understand market demands and promote products effectively. Commercial Farmer 4 remarked, 'Marketing and Sales: Skills in marketing their products, understanding market demands and effectively selling their produce are essential' (CF4, farm owner; farmer-entrepreneur; 10 years' farming experience). Upcoming Commercial Farmer 4 added, 'Market Research and Marketing Case Studies: Analyse other farmers' or agricultural businesses' successful marketing strategies' (UCF4, farm owner and director; vegetable and livestock farmer; 7 years' experience).

These insights align with Rudmann's assertion that modern farmers must possess entrepreneurial skills, particularly in adapting to market-driven environments.

Theme 8: Collaboration and building networks

Building networks and fostering collaboration were identified as vital. Commercial Farmer 4 stated, 'Networking and Collaboration: Building strong networks with other farmers, suppliers and buyers can provide valuable support and opportunities' (CF4, farm owner; farmer-entrepreneur; 10 years' farming experience). Upcoming Commercial Farmer 6 emphasised, 'Established farmers must form part of the training programmes. Each commercial farmer must mentor a certain number of farmers going forward' (UCF6, piggery manager; upcoming commercial farmer; 3 years' experience).

These findings align with Latruffe et al.'s (2016) emphasis on knowledge exchange and shared resources in fostering economic sustainability.

Theme 9: Resource management

Efficient management of natural and physical resources was highlighted. Commercial Farmer 4 noted, 'Resource Management: Efficient management of natural resources (water, soil, biodiversity) to ensure long-term sustainability'

(CF4, farm owner; farmer-entrepreneur; 10 years' farming experience). Upcoming Commercial Farmer 1 added, 'Adopting technologies for resource optimisation. Monitoring resource use to minimise waste' (UCF2, farm co-owner; upcoming commercial farmer; 5 years' experience).

Mmako et al.'s (2021) time and resource management framework supports these findings, emphasising prioritisation and strategic allocation to enhance efficiency.

Theme 10: Negotiation skills

Negotiation skills were identified as crucial for maintaining strong business relationships. Upcoming Commercial Farmer 3 remarked, 'Optimistic thinking, creative thinking. Initiative. Persistence. Communication. Negotiation. Ethics. Planning and Project Management. Budgeting' (UCF3, farm owner; cattle, sheep and poultry farmer; 4 years' experience). Academic 3 further highlighted, 'Marketing skills. Negotiation skills. Basic skills in the agricultural industry' (A3, professor; entrepreneurship lecturer and small-business consultant; 16 years in academia).

Emphasising fairness and assertiveness aligns with collaborative negotiation theories that prioritise mutual benefit over competitive tactics.

Theme 11: Technological skills and digital literacy

Technical proficiency and digital literacy were underscored as essential. Commercial Farmer 4 stated, 'Technical Knowledge: Understanding modern agricultural practices, including technology and sustainable farming methods, is essential for improving efficiency and reducing environmental impact' (CF4, farm owner; farmer-entrepreneur; 10 years' farming experience). Academic 10 added, 'Farmers must experience these concepts and not just hear about them' (A10, lecturer; mentor; 10 years in academia).

Casson's (2003) theory and Shane and Venkataraman's (2001) entrepreneurial model support these findings, highlighting the importance of technological adaptability in the digital age.

Conclusion

This study identifies a comprehensive range of entrepreneurial skills essential for the economic sustainability of emerging commercial farmers in the Free State, supported by both theoretical frameworks and expert insights. Financial management emerged as the highest-ranked entrepreneurial skill, followed by critical thinking, personal skills, risk management and management skills. These findings confirm that successful commercial farming requires more than technical agricultural knowledge; it demands strong entrepreneurial capacity to manage farming as a sustainable and profitable business enterprise. While traditional entrepreneurial theories such as Human Capital Theory, Schumpeter's Innovation Theory and the Six Capitals Model validate many of these competencies, gaps remain in addressing technological advancement, digital literacy and rapidly changing market demands, highlighting the need for more contemporary and context-specific approaches to entrepreneurship education and practice.

Entrepreneurship in agriculture extends beyond business creation and reflects a continuous process of opportunity recognition, innovation, adaptability and long-term sustainability. Successful entrepreneurs balance innovation with the practical demands of budgeting, cash flow management, strategic planning, leadership and risk mitigation. In the agricultural context, these competencies are essential for navigating uncertainty, responding to market fluctuations, and ensuring long-term economic viability. The findings further show that the transition from entry-level farming to an established commercial farming enterprise is a lengthy and complex process, commonly requiring 5–10 years and often aligned with the completion of at least one full agricultural cycle of approximately 7 years. This progression is strongly influenced by access to resources, mentorship, market access, training and external support systems.

The findings must be understood within South Africa's unique socio-economic and historical context, where agriculture is shaped by the shift from a state-supported to a market-driven sector. Emerging commercial farmers often face barriers to land, finance, markets, technical knowledge and mentorship, which directly affect their ability to establish sustainable farming enterprises. The study therefore supports national development priorities by emphasising that land redistribution alone is insufficient without the parallel development of entrepreneurial capacity. Policy interventions should integrate land access with entrepreneurship training, financial literacy, mentorship programmes and stronger market integration to ensure long-term agricultural sustainability, rural development and food security. In this context, entrepreneurial skills are not merely business competencies but essential survival tools for overcoming systemic inequalities and building resilient farming enterprises.

Entrepreneurial skill development should be viewed as a continuous learning process rather than a once-off achievement. Future research should therefore examine how these competencies are acquired, strengthened and sustained over time within the agricultural sector. Longitudinal studies could explore the progression from new farming entrants to established commercial operations, while further research should assess the effectiveness of mentorship programmes, agricultural extension services, entrepreneurship training and the growing importance of digital literacy, technology adoption and climate adaptation skills. Such research would strengthen policy design and contribute to more targeted and inclusive support systems for sustainable commercial farming in South Africa.

Limitation

A limitation of this study was potential bias in the composition of the expert panel, particularly the overrepresentation of older and White participants, reflecting the historical structure of South African commercial agriculture. Most expert informants were aged 45 years and above, and White participants constituted the majority of the sample, while younger farmers, women, Black farmers and other previously disadvantaged groups were less represented. Although this demographic distribution aligns with the current commercial farming landscape in the Free State, it may have influenced the findings by placing greater emphasis on perspectives shaped by established farming systems and traditional agricultural practices.

Consequently, certain entrepreneurial challenges, opportunities and support needs experienced by younger, female, Black and newly entering commercial farmers may have been underrepresented. Future research should therefore prioritise greater demographic diversity by intentionally expanding participation among underrepresented groups to ensure a more inclusive and representative understanding of the entrepreneurial skills required for agricultural sustainability in South Africa.

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CRediT authorship contribution

Andrika J.M. Slabbert: Conceptualisation, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Visualisation, Writing – original draft, Writing – review & editing. Aloe A. Meintjes: Conceptualisation, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualisation, Writing – original draft, Writing – review & editing. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication and take responsibility for the integrity of its findings.

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Data availability

The data that support the findings of this study are not openly available due to confidentiality reasons to protect informants' privacy. Only the researcher and statistician have access to the data, with all records securely stored for the required period per university guidelines. The authors declare that all accessible data that support this research article and findings are available in the article and its references.

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