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Strategic planning to address wicked problems in farm management – a case study.

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Abstract

Farming "at the edge" is a complex business and increasingly requires strategic management to foster business 'resilience' and ultimately survival. Farm businesses continually need to adapt and transform largely by adopting innovations to remain profitable as a host of complex external and internal factors, some controllable and others uncontrollable (wicked problems), such as climate change. Collectively these problems challenge the resilience and sustainability of such businesses, however, the challenges can in part be addressed through strategic planning. The impact of strategic management initiatives in small businesses, especially agribusinesses, is rarely reported. In working with some 600 farm businesses in Western Australia, an experiential "learning journey", using a multidisciplinary facilitation team approach successfully provided an innovation pathway through strategic planning. The likely sustainability impacts reported are attitude changes and plans to adapt and or transform farming practices. While long term benefits are yet to manifest, the beneficial outcomes of such approaches for the resilience of farming businesses have broader implications, including the provision of extension services and policy.

Keywords: Strategic planning; wicked problems; farm policy; resilience; innovation.

1. INTRODUCTION AND BACKGROUND

Resilience, wicked problems and farming

Farming in Western Australia (WA), a relatively hostile environment, is a complex business (McGregor 2003) and increasingly requires strategic management to foster business 'resilience' and ultimately survival. Managing in such environments, with frequent stochastic events associated with abiotic and biotic factors, climate and the natural resource base is a constant challenge for farmers (McGuckian and Rickards 2011).

The term 'resilience' in a farm management context can have a wide interpretation. Cooper (2003) provides insights into defining 'farm management' and its transdisciplinary nature. Reid and Botterill (2013) provide an expansive discussion of resilience in the context of agriculture, natural resources and public policy. The discussion, in part, focuses on elements of farm businesses and the management of the underpinning financial, human and natural resources. "… the academic literature on resilience illustrates that the term has multiple, and often conflicting meanings" (Reid and Botterill 2013: 38, 38). Nelson et al. (2005: 171, 171) define 'resilience of the farm household' as the ability to "recover their livelihoods following stress or shocks". For this paper, farm management and resilience are considered in the context of the underpinning economic/financial, human and natural resources of WA farming businesses, their management and the ability to recover or bounce back from stresses or shocks.

Complex challenges have been described as 'messes' (Ackoff 1974) (Ritchey 2011) or 'wicked problems' (Rittel and Webber 1973) (King 2012) and 'planning', including 'strategic planning', are widely used as a way to address such challenges.

This paper describes how the opportunity to access government grants had a major impact in attracting farmers into a strategic planning process that they otherwise would have been unlikely to enter. The process focused on building resilience to the impacts of climate change.

Strategic Planning - SMEs, Agribusinesses and Farms

The capacity for large organizations to undertake strategic management initiatives, in this instance strategic planning, is commonplace. Strategic planning is key to ensuring profitability and sustainability of larger firms (Hitt, Ireland, and Hoskisson 2017) and can also be beneficial for small to medium enterprises (SMEs) (Analoui and Karami 2003). For large corporations and some SMEs strategic management is an identifiable function and in the hands of specified people and processes. For SMEs, strategic management and strategic planning are less commonplace, but there are a number of factors in SMEs that link effective strategic planning to successful business outcomes, despite SMEs having a poor inherent capacity for strategic

management and planning (Mazzarol 2005). Strategic planning can also be a tool for managing 'risk' and complexity (Jarzabkowski and Paul Spee 2009; MacAlister 2016).

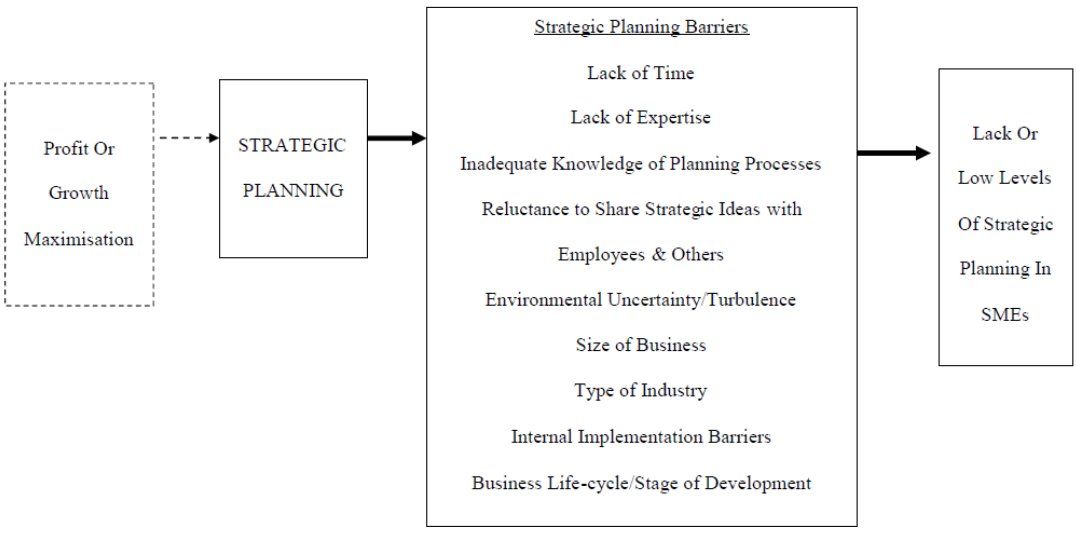
There are many theories around strategic planning. It is a contested space, especially in consideration of SMEs. Importantly, however, Reboud and Mazzarol (2008) find the passing of 24 years (since a review of the value to small firms of strategic planning by Robinson and Pearce (1984)), had not given rise to any discernible evidence of a pattern or generic theory relating to the value of planning, or how such planning should be undertaken.

Wang, Walker, and Redmond (2007, 1) suggests for the "majority of SME owner-operators, business performance often ranks far behind intangible goals such as autonomy, personal satisfaction and lifestyle. ….therefore (it) may have little value to owner-operators driven by such motivators." Flawed assumptions underpin many theories of strategic planning usage by SMEs', Wang, Walker, and Redmond (2007, p4) asserts the pursuit of "profit and growth maximisation in the economic rational sense. SMEs do not strategically plan because they are prevented from doing so by planning 'barriers'". Many SMEs may simply be pursuing their desired goals or objectives.

A 'simplistic' approach to an 'extremely complex problem' (the use of strategic planning) is often encountered in the SME literature and flawed assumptions underpin many theories pertaining to it (Wang, Walker, and Redmond 2007).

Wang, Walker, and Redmond (2007) modeled the simplistic 'approach' (Figure 1) with traits of time and skill paucity (similar to those often cited by farmers) heading a list of barriers to strategic planning.

Figure 1: A 'barriers' model to explain poor levels of Strategic Planning in SMEs



Source: Adapted from Wang, Walker, and Redmond (2007)

Exploration of a 'complex' view (Wang, Walker, and Redmond 2007: 4; Reboud and Mazzarol 2008) of multiple and wider goals is useful in the context of this paper. Two potential principle factors can influence the use of strategic planning in SMEs: a motivation to grow or generate a profit (higher levels of SP use); and personal fulfilment (lower levels of SP use). Through such an alternate view, "It is possible that a more fundamental explanation for the apparent lack of strategic planning in SMEs may be closely related to owner-managers' personally defined 'non-rational' motivation for which strategic planning is perceived as unnecessary" Wang, Walker, and Redmond (2007: 4, 4).

Evidence of the impact of strategic management and planning in agribusiness is largely confined to larger and multinational agribusinesses (King et al. 2010) (Miles, White, and Munilla 1997) (Peterson, Wysocki, and Harsh 2001) and cooperative ventures (Mazzarol 2013). For farming there are even fewer academic pieces, with a paucity of reports on the consequences of strategic management and planning processes in the short run and arguably none with a longer run view (Mazzarol 2005). A Scopus® search of the literature provides few published studies of 'strategic planning' in agribusiness and fewer, if none, in farm management over the past two decades.

What strategic planning activities are required for SME farms?

Historical attempts in WA and more broadly across Australia, to have farmers prepare, or have strategic plans prepared for them, and use them, are believed to be limited to those who Balm (2002) describes as 'Professional Business Mangers'. Impediments, such as: 'no time for that stuff'; 'not of any use in farming'; and 'I've got one, but we don't use it because it was written by a consultant' are a common reply to prompts on the usage of strategic plans.

There are range of factors influencing a farm manager's capacity to learn about and implement new strategies.

Balm (2002) identifies eight categories and two subordinating conditions that support or limit a farmer's appetite for capacity building; change management and strategic planning are one of the categories (Table 1). The eight categories to some extent align with the 'simplistic view of Wang, Walker, and Redmond (2007). At the subordinate lower level, for the key category of 'change management and strategic planning management', the two subordinating conditions move closer to accounting for the underlying complexity of the farm manager's strategic position. Noting that some conditions may be contradictory to others, Balm (2002) explicitly describes complex interactions of factors in some circumstances as being beneficial and in others negating.

In a review of the Australian 'FarmBi$' program, delivered in the early 2000s, one of whose objectives was to promote the use of strategic planning, some 80 per cent of respondents identified relevance of course content to their operations as 'the' driver to attend program courses (Price Waterhouse Coopers 2006). Yet, 6 to 12% of farmers indicated strategic planning courses as relevant (Price Waterhouse Coopers 2006).

Strachan (2007) describes a majority of Australian farmers (80%) with characteristics aligning with the Conditions Limiting panel in Table 1, who are 'task focused' and probably undisposed to strategic planning. Sneddon and Mazzarol (2002) argue that farm management decisions are not considered to be economically rational, but are largely governed by social and cultural constraints. Importantly, the case for Agribusiness and farm SMEs could be, as it is in other sector SMEs, "that by neglecting strategic planning, SMEs may not achieve their full performance and growth potentials, and their survival could be placed at risk" (Wang, Walker, and Redmond 2007: 1, 1).

Table 1: Condition supporting or Limiting Change Management / Strategic Thinking

Conditions Supporting	Conditions Limiting
• A positive attitude to risk, and development of risk management strategies that enable action • Availability and allocation of resources to support implementation of learning outcomes • When the farm business is benchmarked against peers & industry standards provoking improvements • Forward thinking business orientation in relation to people, production & the environment with the ability to seek out & integrate new information into one's farm business context • When the producer links the different levels of decision making on the farm, from the strategic to the operational • Rapid changes in the operating environment (e.g. compliance, technology etc) catalysing new ways of doing things	• Resistance to change and a failure to recognise change unfolding • Competing priorities for the limited available financial resources within the business. • An inability to measure the performance of current practice against external standards to determine the benefits of implementing change • The incapacity to access and assimilate complex information (across technical disciplines) to make informed & actionable decisions • When day-to-day operational activity (working in the business) is valued more highly than longer term strategic thinking (working on the business) • Inability to cope with rapid rate of change in the operating environment, causing paralysis or bunker mentality

Source: Adapted from Balm (2002)

Climate change - the elephant and the canary

Managing the impact of climate change is complex (Pannell 2010) and not a tangible goal for most farmers (Evans, Storer, and Wardell - Johnson 2009).

Policy makers perceive climate change as a major potential threat to farmer and farm business survival (Botterill 2000; Drought Policy Review Expert Social Panel 2008; Nelson, Howden, and Smith 2008; Nelson 2010; Nelson et al. 2010).

Australian agriculture, other than emergency relief and low interest loans at times of natural disasters, receives relatively low government support compared to other nations (Alston 2010). The advent of potentially major impacts from climate change on farming (Kingwell 2011; King 2012; Pannell 2010) - including increased variability of weather events - refocused attention on the viability of existing government mechanisms to support farmers in managing operations. Between 2006 and 2009 government policy was arguably driven by 'issue advocacy' around climate change and not necessarily to address evidential 'honest brokering' (Pielke 2007).

A focus of this paper is that mechanisms, based on a facilitated group learning and action based discovery (for a deeper background see Berkes (2009) and Pahl-Wostl (2009)), improve the way farmers are informed, make decisions, plan for, innovate and measure the impact the increasingly volatile external and internal factors through strategic planning.

Farmer attitudes to climate change and information

Research undertaken in WA in 2008 (Evans, Storer, and Wardell-Johnson 2011) into farming community attitudes toward climate change indicated low acceptance, scepticism and poor understanding of the associated issues, in an environment where there was a high frequency, range and volume of sometimes contradictory messages about climate change in various forms.

As Evans (2012) articulates, WA rural communities and farmers carry biased perceptions around climate change, with a strong denial of its presence – 'the elephant in the room'. Where accepted, the causes are often portrayed in conflicting terms and often not expressed in terms relevant to the farmers' context by informants.

What is clear is that the delivery of climate change risk information and knowledge should - as Cash et al. (2002) and Nelson, Howden, and Smith (2008) propose - be structured within an inclusive framework of what farmers identify as relevant to their business and also aligns with government and scientific aims.

The emerging impacts of climate change, first forecast in the 1970s, resulted in WA becoming 'a' - if not 'the' – test case ('canary in the mine') for the impacts of climate change on rainfed

dryland farming. Robertson and Murray-Prior (2012) postulate ten reasons why it is difficult to gain traction with farmers in discussing the likely impacts of climate change on their farms (see Table 2).

Table 2: Factors influencing the capacity to discuss the impacts of climate change with farmers

1.	Climate change is a slow-moving variable
2.	Climate change projections are uncertain
3.	Time horizons for farm planning are relatively short
4.	Managing the "here and now" of climate, price and cost variability takes precedence
5.	Confidence in technological progress keeping pace with negative impacts of climate change
6.	Agriculture has been faced with, and adapted to, larger and more sudden shocks
7.	The short-term impacts of climate change policy are more immediate than changes in climate
8.	Adaptation options do not offer much that is new
9.	Science does not have much to offer to support longer-term more transformational decisions
10.	Some farmers doubt the purity of intentions of researchers

Adapted from Robertson and Murray-Prior (2012)

Therefore, farmers in WA were a good candidate for the Government objective of testing the potential use of strategic planning as an adaptive management tool to assist in making better decisions in complex situations. A notion which the Minister for Agriculture and Food in WA pursued with the support of staff of the WA Department of Agriculture and Food (DAFWA).

Do farmers make rational decisions?

Much of the farm management and 'adoption of innovation' literature assumes farmers make rational decisions (see Lindner, Fischer, and Pardey (1979) and Lindner (1986)) and are often Bayesian (incremental) learners (Lindner and Gibbs 1990). However, this may not always be the case. For the broader community, Kahneman and Tversky (1972) contrast the Bayesian approach with a heuristic ('rule of thumb') model. Such principles are rereinforced by Kahneman (2011) who demonstrates a propensity for less rational decision making by most humans, most of the time.

Arguably farming operations and associated 'wicked problems' add complexity to decision making processes and to potentially sub-optimal decisions.

It is then possible to ask, are farmers predisposed to making less rational decisions, especially under times of increased stress? If so, could strategic planning be considered in helping to reduce the potential for irrational decisions?

Personality, stress, decisions, innovation and strategy

Evidence in farm management decision-making literature indicates that decision-making are inextricably linked to personality and management styles (Pannell 2005; Strachan 2011; Long 2013; Nicholson et al. 2015).

McGuckian and Rickards (2011, 805) describe decision making as "an extremely complex process as many factors must be taken into account, some factors are difficult to quantify and uncertain variables such as climate and commodity prices are important". Importantly, most Australian rainfed cropping farming operations are marked by periods of high intensity long day work periods, and consequential fatigue. Arguably, at such times - crop planting and harvest - cognitive levels and decision-making capacity are reduced due to fatigue and stress.

McGregor et al. (1996) were some of the first to explore stress, psychological traits and decision making of farmers and links to innovation and intelligence; finding psychological variables provide a richer picture of farmer decision processes. The famers under stress shared Myers Briggs Type Indicator (MBTI) characteristics of the majority of Australian farmers (Strachan 2007; Nicholson et al. 2015) of being conservative and introverted.

Malmgren (2014) and MacAlister (2016) aggregate a range of traits under the catch all of 'character', or, the way people go about things in their daily lives, and the influence character has on decision making and management performance. For larger businesses, often there is a capacity to undertake strategic initiatives through the resources of dedicated staff and teams (MacAlister 2016), arguably such opportunities do not exist in farming enterprises.

Drivers for change and innovation – government intervention

In early 2010, largely as a repose to the recommendations of the Expert Panel on Dryness (Drought Policy Review Expert Social Panel 2008), the Australian Commonwealth and WA Governments initiated a pilot to investigate a series of Drought Reform Measures in WA. One of the seven measures in the program was a Farm Planning component. The wider intent of the program was to help farmers "better manage risks and future challenges" (Department of Agriculture Fisheries and Forestry 2010).

The Farm Planning Program (FPP) aimed to encourage farmers to place more value on strategic planning and improve their planning skills; it did this through development of a strategic plan to improve the ability to manage risk. If a farm business completed an approved strategic plan, it was eligible to apply for assistance to undertake activities. Support was provided through

grants of $AU15,000[1] each year for two to four years, subject to certain criteria, from the Building Farm Businesses Program (BFBP) (Keogh, Granger, and Middleton 2011), another of the measures in the Pilot. In the context of this paper, the deliverables for the FFP were provided under the guise of Curtin University's Farm Business Resilience (FBR) Program (the program).

2. METHODS

Based on the outcomes of a pre-pilot phase with 53 farm businesses in four geographically and farming systems diverse groups, the initial phase of the program was delivered to some 423 farm businesses across much of WA and consisted of five modular workshops (see Table 3), with an optional sixth module.

The 423 participating business included some 1400 participants who were serviced by 60 facilitators from more than 90 who commenced the facilitator training and selection process. Over a period of less than 18 months it covered just over one tenth of the WAs broadacre farming businesses plus worked some 30 horticultural and pastoral business. Workshops were delivered in a group setting, with an average of 12 farm businesses in attendance in each group. On completion of the fifth workshop, participants could nominate for an optional 'kitchen table' session, where one-on-one support was available to help the participants finalize their strategic plans.

The program focused on businesses without a strategic planning process in place or in their past; with an intent to develop a strategic planning approach, to improve skills at managing risk and other challenges

A number of key delivery constructs of the program follow.

Workshop design

Design of the workshops, especially after the initial pre-pilot, focused on an experiential learning process, facilitated by competent facilitators. Facilitated learning is a process where trained facilitators assist small groups in the learning process and has similarities with group learning and action learning processes. Facilitated learning is useful for learning about complex concepts, especially where input is needed from multiple people simultaneously and to gain trust (Vanclay 2004), and acquire tacit knowledge that is not easily described, only learnt through experience (Thornton and Yoong 2011). An important reason for using a facilitated approach is that the facilitators manage the process of learning, rather than the content, which is the domain of the participants, although it can go beyond this. Schwarz et al. (2005) defines

[1] At the time of writing (April 2017), $AU1 was approximately equivalent to £0.58, $US0.75, and €0.68.

facilitation a process where an individual/s is acceptable to the group for reasons of their competence and expertise, and remains neutral to the group helps them diagnose, problem solve and make decisions to increase their individual or group effectiveness.

A lead facilitator, with high competency facilitation skills (IAF 2005) and three support facilitators, with the intent of having a skill base across the disciplines of business or farm management, natural resource management, and psychology / sociology, in addition to robust facilitation skills, supported each group. From an initial training group of over 90 potential facilitators, a core group of some 35 were assessed as having adequate facilitation skills.

The work reported here was activity underpinned by action research (Wong 2006), case study research methodology (Yin 1994) and participatory action research (Whyte 1991).

In the first workshop, 'Click! Cards' (Barnes and Koutsoukis 2012) were used to undertake rapid MBTI assessments. A range of other 'instruments' were unsuccessfully trialed.

Bennett's hierarchy (Bennett 1975) was used as a framework to evaluate the effectiveness of the training and the strategic planning process, it is often used is such circumstances. The hierarchy represents a cause-and-effect chain of outcomes resulting from on intervention—in this case, the experiential learning.

Evaluation

An evaluation team, independent of the design and delivery, established a broad evaluation framework based upon action leaning research processes (Marquardt and Waddill 2004) and five identified characteristics of complex adaptive systems (Eoyang and Berkas 1999).

The team considered and implemented eight broad evaluation methods or metrics. Four key methods reported here are 1) a survey of farm businesses before entry to the program; 2) end of workshop participant reviews and surveys; 3) end of workshop facilitator reviews; and 4) a survey of farm businesses at the end of the program. A shift in 'policy' has limited the prospect of resurveying the participants; however, a potential change in policy perspective (at the time of writing) may see this situation change. Other methods included a semi- retired farmer joining in the tea break conversations to capture *ad hoc* comments and video-recorded feedback from participants on a range of open-ended questions after they had completed the program (Burke 2013).

To assess the overall response to the program, one person from each business completed a survey in the month prior to starting the program (the 'entry' survey) and preferably within two months of completing the program (the 'exit' survey). The survey either was undertaken electronically or paper form.

The entry survey consisted of a range of questions, including 'standard' start of program questions such as to age, gender, educational background of participants and information about the nature and size of the farm business. Specific questions to elicit the training experiences and strategic planning experiences and capacity of the participants and perceived key factors influencing the business currently and in the future. Questions focused on the potential impact of climate change were included.

Exit surveys were designed to specifically illicit the short term impact of the program in terms of Bennet's hierarchy (Bennett 1975).

Of the 423 businesses considered in this paper, 355 businesses appropriately completed entry surveys (89% response) and 303 businesses appropriately completed exit surveys (76%); the responses were self-completed resulting in inconsistent or missing responses and the loss of 24% of the sample. All of the businesses were family businesses, with most being businesses of less than five people ('micro businesses' (Mazzarol and Reboud 2012)). No corporate farms participated.

For categorical data scales, the statistical significance of comparisons used Pearson chi square statistics and, for ordinal data scales, Kendall's tau was calculated. For metric data scales, comparisons were assessed using paired sample t-tests. While there is an academic debate as to the appropriate use of statistical measures in studies such as this (Pannell 1997), statistical significance where reported is for a p value of 0.05.

Much of the data collected from participants was feedback about the content and processes used in the program and the facilitators involved. The feedback enabled adaptation of the program to better meet participant expectations and needs. This paper reports the overall assessments of the program in terms of changes in attitudes, current behaviour and expected behaviour. It was hypothesised that the facilitated learning process used in the program would result in a positive change in participant attitudes, behaviour during the training period, participation in the training and planned future activities.

A more detailed discussion of the methodology can be found in Storer et al. (2011).

3. RESULTS

The program delivered 144 workshops across WA in the context of what became a 1 in 100 year drought event. The workshops also provided culturally sensitive environments for two groups of recently migrated, ethnical diverse farmers, some of whom had limited English language skills.

Reported here are a small proportion of the total number of findings from the FBR programs undertakings for the Drought Pilot.

Eliminating invalid responses from the entry and exit data collected (missing information in the responses from the 303 participants who completed the 'exit' survey) reduced the number of businesses to 260 or 61% of the 423 who commenced the program.

The evaluative data collected at the end of each module by the delivery teams indicate statistically significant changes in capacity (particularly participant attitudes) over the course of the modules. Participants self-belief of increased capacity included improved:

- Attitudes toward strategic planning, a work-life balance, and climate change;
- Aspirations to build resilience and the preparedness of the farm business to respond to future challenges;
- Knowledge and understanding of strategic planning, farm business resilience, climate change;
- Financial management skills;
- Confidence in the future viability of their farms; and
- An ability to keep plans up-to-date

Four key results relate to:

1. propensity to use of written strategic plans.
2. preparedness to deal with drought/climate variability.
3. confidence about the viability of the farm business (a de facto measure of resilience).
4. incentives to engage participants.

No major departures from the farmer personality profile work of Strachan (2011) were identified in the process of using the Click!Cards (Barnes and Koutsoukis 2012) as a proxy MBTI assessment.

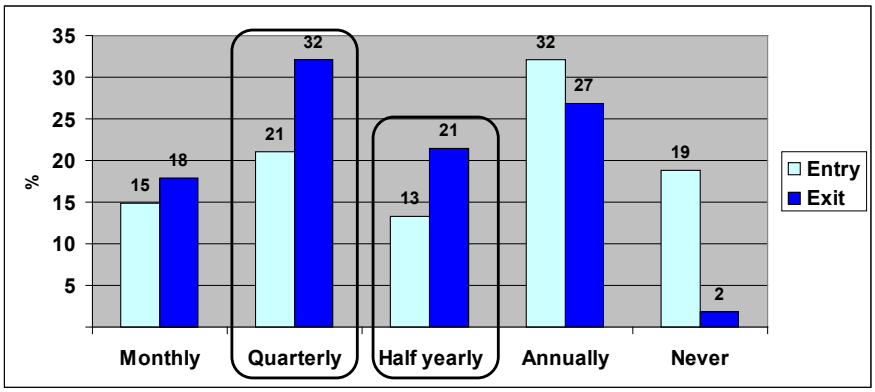
Entry and exit survey

Data collected in the 'entry' survey indicated 36% of participants reported past exposure to the use of documented strategic plans. In part addressing the anecdote that most farmers had a strategic plan 'in their head'. Fewer had a formalised strategic plan, and fewer had self-created (or assisted) and instituted plans (removed for anonymity). The strategic plans had been derived from a range of mechanisms: written by a consultant; and other pedagogic style group training programs and were variably utilised by the participants.

By the end of the process 92% of participants had a written strategic plan covering more aspects of the farm business than had previous plans. Furthermore, there was a significant increase in the frequency of participants expected referral to their plans (Figure 2), and that planning horizons had shifted from a short term (if they existed, it was predominantly on for the existing season) to a medium term view (five years).

Figure 2: Increased frequency and usage of the written strategic plan.

'Before (entry) and After (exit)'

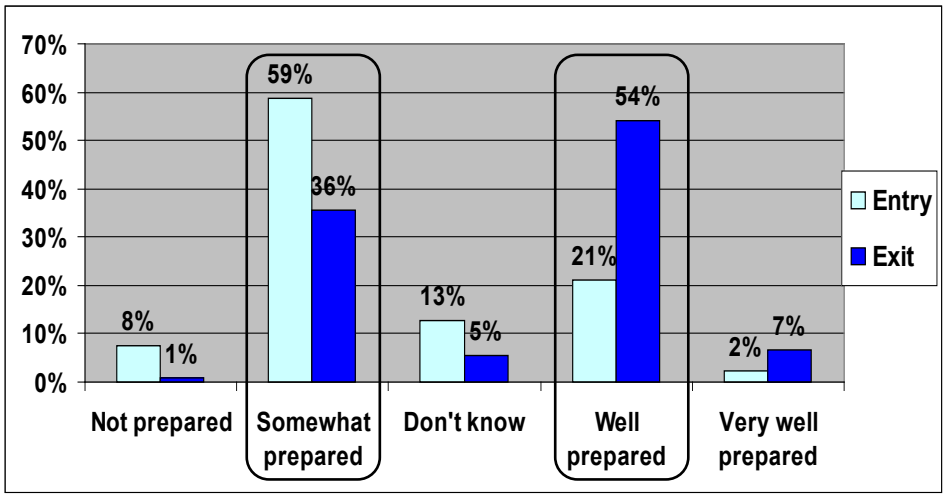


paired entry and exit surveys for 260 = 66% businesses
Rounded box indicate significant change *p* 0.05

Source: Adapted from Noonan et al. (2012)

Figure 3: How well prepared are businesses to deal with drought/climate variability?

'Before (entry) and After (exit)'



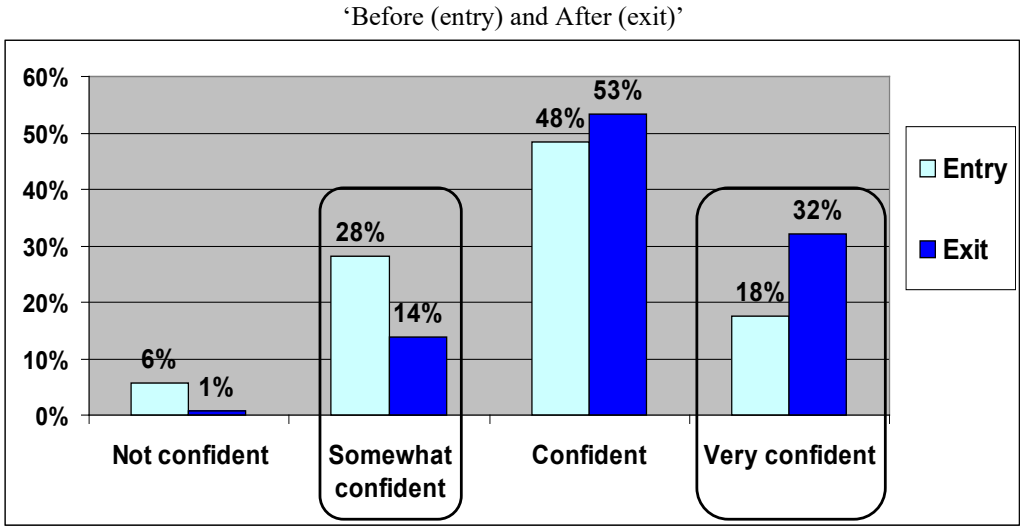
paired entry and exit surveys for 260 = 66% businesses
Rounded box indicate significant change *p* 0.05

Source: Adapted from Noonan et al. (2012)

A key outcome was significantly increased participant understanding of the impact of climate change and variability change on their businesses (an increase from 40-50% at entry to 80% at completion) (Figure 3). There was a shift in attitude in terms of how well participants thought they were prepared for drought and climate variability, and their confidence in the future viability of their farm.

There was a change from only one in five (21%) to over half (55%) of the participants stating they thought they were prepared or well-prepared for drought and climate variability after participating in the program, with half (49%) increasing their level preparedness. It was noted that prior to the program nearly half the participants (48%) were uncertain about the impacts of climate change, and only one quarter (27%) believed climate change was occurring, These findings are similar to those of Evans et al (2011).

Figure 4: Confidence about future viability of the farm business



paired entry and exit surveys for 260 = 66% businesses
Rounded box indicate significant change *p* 0.05

Source: Adapted from Noonan et al. (2012)

Figure 4 demonstrates participants had significantly greater confidence to farm in the future where previously many lacked confidences about their future. The program retained 95% of participants past commencement of the first module with only 18 of 423 withdrawing, a largely unprecedented completion rate in any type of activity to support farm businesses.

Response to the modules

In addition to the entry and exit surveys, after each of the five core modules participants were encouraged to provide responses to a range of closed and open ended questions relating to activities, content and outcomes. Standard metrics were captured for environmental and procedural factors such as administrative and communication matters, catering, and facilities. Participants were asked after each workshop if they learnt anything new and would they do anything differently in the future (see Table 3), a proxy for changing practice.

Table 3: Perceptions of new information & incentive to do something different

Module	New information presented	Would do something different
1 - Moving Forward - Introduction to strategic planning	75%	74%
2 - Managing production environment	76%	72%
3 - Balancing Life	58%	58%
4 - Managing Finances	68%	73%
5 - Going Forward with the strategic plan	57%	51%

Source: adapted from Noonan et al. (2012)

Table 3 demonstrates that for many the learning experiences offered new information that could be taken into practice. Climate change information was 'imbedded' into the second workshop module – managing environments. Over three quarters of participants indicated receipt of new information about climate change, despite the workshop only using materials previously in the public domain, broadly circulated and heavily emphasized (much of it in an information deficiency delivery model). On further exploration, many indicated recall of seeing or hearing about climate change, but, of 'switching off ' for a variety of reasons. The positing of carefully crafted information about the impacts of climate change through the experiential learning journey was more successful than previous undertakings in other programs.

It is important to note at the outset that the majority of participants were almost singularly motivated by the prospect of the grants on offer through the BFBP grants. Given the option of stating only one reason for participating, 42% of participants indicated the possibility of accessing the grants as the reason. Yet, at the close of the initial phase of the 'journey', after the five learning modules, the grant motivation factor had diminished to 24% and was largely replaced by the value of setting short and long term goals (31% up from 5%) in the strategic plan in a similarly framed question.

4. Discussion

A range of factors challenges the resilience of WA farm businesses. Trade agreements, domestic government policies, variable foreign exchange rates, volatile markets, consumer acceptance of agricultural practices are but a few influences from beyond the farm gate. Resource management issues such as climate change, frost events, salinity, soil acidification and waterlogging impact on production systems; and a raft of human capital issues such as, aging populations, functional literacy and financial numeracy, stress management and

succession planning are all influencing resilience (Kingwell and Pannell 2005; Kingwell 2011; Lawes and Kingwell 2012).

The multidisciplinary facilitated approach to developing 'business resilience' underpinning the program aimed to help individuals and businesses develop strategies to implement and become more innovative and more resilient.

The incorporation of culturally and community sensitive farmer engagement approaches, through 'hands on' participation, appears to have tapped into the affective (emotional) and psychomotor (physical skill) domains of learning (Bloom 1972); as well as social learning (Hoppitt and Laland 2013) strategies. A major outcome was that participants believed and demonstrated they had developed ways for communicating and managing strategically; and arguably became more predisposed to being innovative, consistent with the proposition of Wang, Walker, and Redmond (2007).

For many participants, the process of compiling a strategic plan was in itself an innovation. Many of the factors inhibiting "traction with farmers in discussing the likely impacts of climate change on their farms" (Robertson and Murray-Prior 2012, 1) were mitigated. Many participants reached a point where the challenges identified by government (Nelson, Howden, and Smith 2008; Botterill 2006; Drought Policy Review Expert Social Panel 2008) had been addressed, without resistance (Cash et al. 2002) and highly innovative transformational change (Rickards and Howden 2012) was the next step.

The pre-pilot development phase clearly evidenced the challenges of an 'information deficit' approach (Maibach, Roser-Renouf, and Leiserowitz 2008), in which participants are presumed to not have enough information at their disposal to bring about behavioural change. The policy agenda 'issue advocacy', was to focus participant's attention on climate change and reconcile a perceived information deficit. The pragmatic mix of engaging with the participants to reach the primary objective of producing strategic plans identified that participants were already subconsciously addressing much of the climate change challenge. Consequently the 'honest broker' (Pielke 2007) role quickly overrode the 'issue advocacy'; information 'topping up' was replaced with recognition and consensus around the participants pre-existing knowledge and understanding.

Cash et al. (2002) observed that a failure to prepare a relevant framework for programs can contribute to an increase in participant conflict and resistance, ultimately leading to potential failure to improve adaptive capabilities at all levels. In the context of this study, the farmers have engaged and acquired new skills through the framework. The effectiveness of maintaining contextual relevance and salience (Cash et al. 2002), that is to say importance and

meaningfulness to the participants, is reflected in the outcomes achieved; similar studies in Eastern Australia (Souness et al. 2012) provide similar outcomes.

It is important to note that, most WA farmers are accustomed to working within a range of localised climate variability and accept the variability as 'normal' (Evans et al 2009), arguably the framework has mediated the consequences of the 'normalisation' and reduces the risk/threat described by Pannell (2010) of not being receptive or capable of identifying future risks.

A clear outcome for many participants was achieving greater confidence in their own ability to make reasonably founded decisions, where there was balanced and palatable information on offer through the various workshops. For example, the production workshop, with its focus on climate change, provided a 'supportive environment' and a good 'mental space', for the participants to consider the potential impacts and scenarios of variable weather patterns on their farming systems and management processes, before addressing het issue of climate change. Likewise, the finance module offered a gentle introduction to the concepts of cashflow budgeting, profitability and equity, then onto more 'challenging' circumstances and more 'volatile' financial constraints. Similar outcomes were found in the context of other modules, such as considering financial performance ratios from the managing finances module and relating them into the 'kitchen table' sessions where financial sensitivities, 'mental health' and learning disability issues could be appropriately managed.

Surprisingly low levels of financial literacy was reported in many of the groups by the facilitators, as was the levels of functional literacy and numeracy.

The grants on offer initially attracted the participants. However, once engaged, the process maintained the farmer's attention, keeping them task focused, contributing to the retention rate.

Facilitators reported farmers vociferously protesting at having to attend the program at the outset to access the grants, were in many instances effusive in supporting the program at the end. Through the development of a experiential learning environment and a targeted approach providing context specific information, when the participants asked for it, coupled to the jettisoning of the information deficit approach (Maibach, Roser-Renouf, and Leiserowitz 2008); either intentionally or serendipitously, brought about change in attitudes to strategic planning and life-long learning. Factors such as: focusing on personal fulfilment (Wang, Walker, and Redmond 2007); circumvention of poor inherent capacity for undertaking strategic planning (Mazzarol 2005); and disassociating with perceived barriers (Wang, Walker, and Redmond 2007; Reboud and Mazzarol 2008; Mazzarol 2005), all contributed to the significant uplift in capacity and commitment to continued strategic planning. Also capacity and

enthusiasm for engagement in other lifelong learning activities (Kilpatrick, Field, and Falk 2003) was apparent in many with little, or no, previous disposition.

A paramount finding is that the delivery process, driven by teams of appropriately skilled facilitators, and not the content, is critical. While it was important to contextualize content on a regional and industry basis, this is a less important enabler than the process and delivery approach. It also helped surmount the major impediment of farmer's resistance to according science and extension automatic legitimacy (Vanclay 2004).

The strategic planning process included the identification of priority activities to help farmers be more resilient and prepared to face a changing climate. A 70 year old farmer from the Eastern WA Wheatbelt (the driest edge of the arable land) said,

> "You know, I have been coming to courses and field days for more than 40 years and they are mostly 'xxxx' ! I thought this would be the same. But it is not!

Further evidence of the enduring functionality of the facilitated learning journey approach to strategic planning is from an anonymous participant, who in reporting to an ongoing assessment said,

> "the original strategic plan we put together a couple of years ago was [censored], we have rewritten our plan all by ourselves!".

The above statement aligns with the summation of Reboud and Mazzarol (2008) that the process of creating a strategic plan is as important as the plan itself.

An analysis of so called 'top farmers' in WAs found the farmers' "have an uncompromising commitment to focusing on what drives profit, being highly prepared, making major decisions outside of high stress periods, attention to detail and being positive about the future." (McConnell, Carter, and White 2012: 160, 160). The FBR program has provided, through strategic planning, a pathway for farm business to become 'top' farmers. A 55 year old farmer said,

> "Thanks for your help throughout the program I found the process useful for our business and have already made some significant changes to the way we run our business."

Two comments received at the end workshop feedback of one group, and an unsolicited email some weeks after completion from another, encapsulate the contribution of the program to lift the resilience of the participating businesses. Both comments were from female participants who at the outset had major concerns as to the viability of farming.

> "…now I believe there is a future in agriculture for my family".

"My husband and I have been through a life changing experience. Our daughter is now coming back to the farm and taking it over."

Collectively the above outcomes point to increased capacity for innovative and more entrepreneurial behaviors and derivatively improved resilience.

The program has reframed the beliefs of a sizable proportion of WA farmers towards the influencing factors and management response to factors, ranging from climate change and globalization. Improved strategic and succession planning and better financial management competency is a clear outcome. For many significant shifts in attitude, belief and practice are apparent.

The provision of education / extension for farmers and learning about the complexity of the climate threat appears better managed through strategic planning than through other mechanisms: A salient message for Government and other agencies.

5. CONCLUSION

Strategic planning facilitated by participatory action learning has provided a mechanism to shift attitudes. Primary producers are characteristically unlikely to pursue strategic planning horizons beyond one to two seasons. Attracting and engaging farmers through grants was preemptive, the prospect of receiving a largely unencumbered government grant was a key factor in attracting participants, yet, at the close, participants were significantly more engaged with the strategic management processes and outcomes.

In essence, the program has delivered where many others have failed.

For policy makers and planners of extension programs four key learnings are evident:

1. incentivisation is very influential in attracting participants;
2. strategic planning can be successfully utilised as a mechanism to enhance resilience in farming businesses;
3. a facilitated approach can retain participant engagement through complex and challenging learning processes (specifically about the impacts of climate change and farm financial management); and
4. competent and trained facilitators were central to success.

The resilience of the participants, 'farming at the edge', has in the short term been enhanced by addressing their strategic view of factors within and beyond the control of the farm businesses. Longer-term enhancements are yet to be quantified; however, case study participants provide sufficient support of an enduring benefit of strategic planning and the experiential learning process, therefore warranting the pursuit of a longitudinal study.

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