Chapter 2: Towards strategy-based accounting: value chains, target costing and life-cycle reporting solutions

Overview of Chapter

In this chapter, a review of the status of contemporary strategic management accounting has been undertaken. The benefits derived from the advent of ABC, SMA and SCM initiatives, in terms of the value chain approach, life-cycle reporting and target pricing and costing, and the inclusion of external relationships such as supplier and customers, have been explored. Significant increases have been made in capturing information about an organisation's product or service performance and the value of supplier and customer information in determining product or service and customer profitability. However, whilst these initiatives have provided significant advances, they still appear to have a little way to go in incorporating risk information and assessing organisational value.

Through a shift from the product/service and process focus of the value chain to an organisational strategy focus in the form of a strategy-based value chain (SBVC), a way of addressing this decision-information gap is provided. To support this requires extending activity-based costing (ABC) to a strategy-based accouting (SBA) level. To facilitate this, a further shift away from the traditional management accounting support for financial accounting is required. This shift will align planning and budget information with the mapping of the strategies and give rise to appropriate resource allocation. When supported by a similar refocus of the organisation's performance management system and the inclusion of risk management considerations, the beginnings of what might be termed SBA will be achieved.

Solutions to Review and Discussion Questions

2.1 Explain the role of the management accountant in deciding on an acceptable level of business risk for the organisation.

The role of the management accountant is to ensure that the information that management and others use to determine an acceptable level of business risk for the organisation is relevant and reliable. Further, the external business environment influences an organisation's planning, budgeting and process and activity choices. These external factors need to be incorporated into decisions relating to choices within the management control and accounting systems, in particular the planning and budgeting components.

2.2 List the external business environment risk factors and internal environment operating risks that an organisation should consider.

External business environment risk factors include:

1. competition;
2. regulation;
3. the economy (e.g., interest and foreign exchange rates, finance and sources of finance);
4. society (e.g., demographic and political); and
5. technology.

Internal environment operating risks include:

1. information (planning, budgeting, control, performance and risk);
2. resourcing;
3. structure;
4. process and activities;
5. technology; and
6. skills.

Note that these internal environment operating risks cannot be considered in isolation from the sources of external environment business risk.

2.3 State what a value chain is.

In simple terms, a value chain is a set of value-producing activities or processes that stretches from the organisation's suppliers to its customers.

2.4 Outline the limitations of using a value chain approach.

A value chain approach has the following limitations.

1. The value chain definition and construction is subjective, particularly in terms of determining process boundaries and their interaction points with upstream and downstream processes, and subsequent activity interactions within processes.
2. It is heavily dependent on the developer's perspective.
3. Although the value chain presents as a single linear relationship, some processes may run in parallel with other processes.

2.5 Briefly explain why a value chain is useful for analysis purposes.

The usefulness of the value chain for analysis purposes is that it requires the consideration of organisational objectives and strategies due to explicitly incorporating the external environment considerations of suppliers and customers and their contribution to owners' wealth and organisational value. In doing so, it breaks with the financial accounting and the internal operating environment focus of traditional management accounting. It represents a major shift in management accounting from playing a support role to financial accounting.

2.6 Contrast the treatment of pre- and post-production cost under traditional accounting with their treatment when using a life-cycle costing approach.

Under traditional management accounting, pre- and post-production costs are expensed in the period in which they are incurred. In doing so, costs such as those associated with research and development, process improvements relating to new or changed technologies and training and development tend not be 'tracked', or directly traced to the product or service.

In contrast, life-cycle costing attempts to measure the costs of the product or service over its life and assign these costs to it. Life-cycle costing therefore includes both pre- and post-production costs. By adopting a life-cycle costing approach in the planning stages, a number of opportunities are highlighted where costs might be reduced before "production" commences. This is important as potentially 80–90% of costs are locked in during the pre-production stages.

2.7 Explain what target pricing and costing is and identify where in the value chain it is performed.

Target pricing and costing is a customer-oriented market-driven approach that involves determining the market or target price for a good or service, and the cost level that the organisation needs to achieve in order to price the good or service competitively. The organisation starts with what the market is willing to pay and then designs a good or service to meet that target price. It forces an organisation to precisely define their development goals and to be specific about customer requirements, including the required level of quality. Target costing and pricing is generally performed during the planning and design stage of the value chain.

2.8 Describe how an MCS represents a map of how an organisation fits within its business environment and identify what the composition of such an MCS would be.

MCS represents a map of how the organisation sees itself fitting within its business environment to optimise its resource usage and chances of sustained generation of owners' wealth, whether public or private, at an acceptable rate of return and business risk exposure, and thus increase organisation value. The MCS, in simple terms, can therefore be a composite of the following:

- capital investment plan and budgets;
- human resources plan and budgeting;
- marketing and promotion plan and budget;
- research and development plan and budget;
- operating and liquidity plan and budget;
- performance management system; and
- organisational policy, procedures and contractual arrangements.

All of these components of the MCS should have a multi-period focus if the organisation wishes to continue doing business.

2.9 Outline the concepts of life-cycle costing and budgeting and explain how they relate to an organisation's value chain.

Life-cycle costing attempts to measure the costs of the product over its life and across the organisational value chain and to assign these production and non-production costs. Further, *life-cycle budgeting* involves a comparison and projection of products' (services') life-cycle costs and revenues across the life of the product or service and all parts of the value chain. The revenues and production and non-production costs for each year of the expected life are estimated. This allows an assessment of the product's or service's profitability over its entire life. Note that, in practice, the life-cycle budget should consider the time value of money

The relationship of these life-cycle concepts to the value chain is that there are many opportunities for cost reduction to occur before "production" [1] begins, during the research and development and planning and design phases of the value chain. However, once production has begun these opportunities are limited. This will affect the profitability of the product. Therefore, an organisation needs to ensure that it plans and designs to reduce manufacturing, service provision or production, distribution, sales and marketing and other post-purchase costs, but still maintains the quality expected by the customer.

[1] "Production" in value chains refers to the producing of goods or the provision of services.

2.10 Discuss the three key features of Shank and Govindarajan's strategic cost management approach, and explain the roles that value chains and value chain analysis play in a business.

There are three key features in Shank and Govindarajan's strategic cost management approach: an organisational strategy (the strategic plan), value chains or value chain analysis, and managing on a strategy–process–activity basis (or activity-based management).

1. *Organisational strategy* (the strategic plan): there must be clarity about the current strategy and the method by which the company currently achieves a competitive advantage. For example, is the company competing on cost or by differentiation?

2. *Value chain analysis:* the value chain is "that set of value-creating activities, from raw materials right through to final customers". It differs for each organisation. Value chains can be constructed at varying levels and in differing levels of detail. The three common levels are organisational (strategic), process and activity. Value chain analysis should identify key activities and compare the company with its competitors, and highlight the strength of its competitive advantage and look for potential improvements through reduction in cost whilst providing the same customer value or enhanced customer value at the same cost.

3. *Activity-based management – managing on a strategy–process–activity basis:* organisations should manage on a strategy–process–activity basis using activity-based costing (ABC) and activity-based management (ABM). ABM (and other techniques) may be used to gain a better understanding of cost behaviour and to reduce costs by identifying and reducing the cost of (or eliminating) non-value-added activities and improving value-adding ones. Reducing costs will strengthen the firm's strategic position, regardless of whether competing on a cost or a differentiation strategy.

<u>The Role of the Value Chain and Value Chain Analysis in a Business</u>

Utilising SCM, and in particular value chain analysis, can improve organisational performance. Using a value chain approach would allow a business to:

- focus on its processes and activities
- collect information about its processes and activities, especially costs
- signal the interactions and interdependencies between organisational activities and processes over the life-cycle of its goods and services
- consider its relationships with its suppliers and customers
- remain competitive in a changing marketplace.

Employing a value chain approach provides a mechanism by which a business can consider not only its internal operational environment, but also its supplier and customers to capture management decision-information.

Solutions to Problems

2. 11 Value chain analysis

Classify each of the cost items (1 to 9) into one of the value chain business process categories (as given in Figure 2.1).

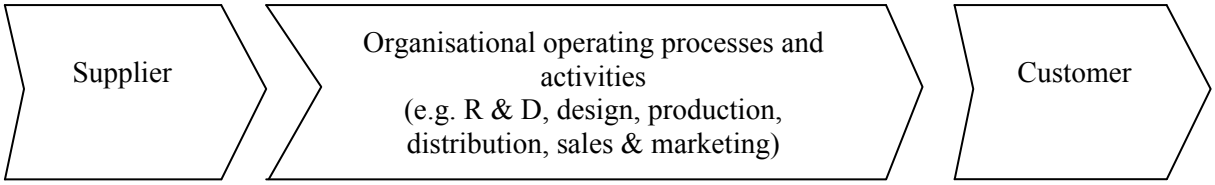
Cost item	Value chain process
1	Planning and design
2	Sales and marketing
3	Sales and marketing
4	Production
5	Research and Development
6	Research and Development
7	Production
8	Distribution
9	Sales and marketing

2.12 Strategy-based value chains

Contrast, with the aid of simple diagrams, the strategic management accounting (SMA) view of the value chain with the strategy-based value chain (SBVC).

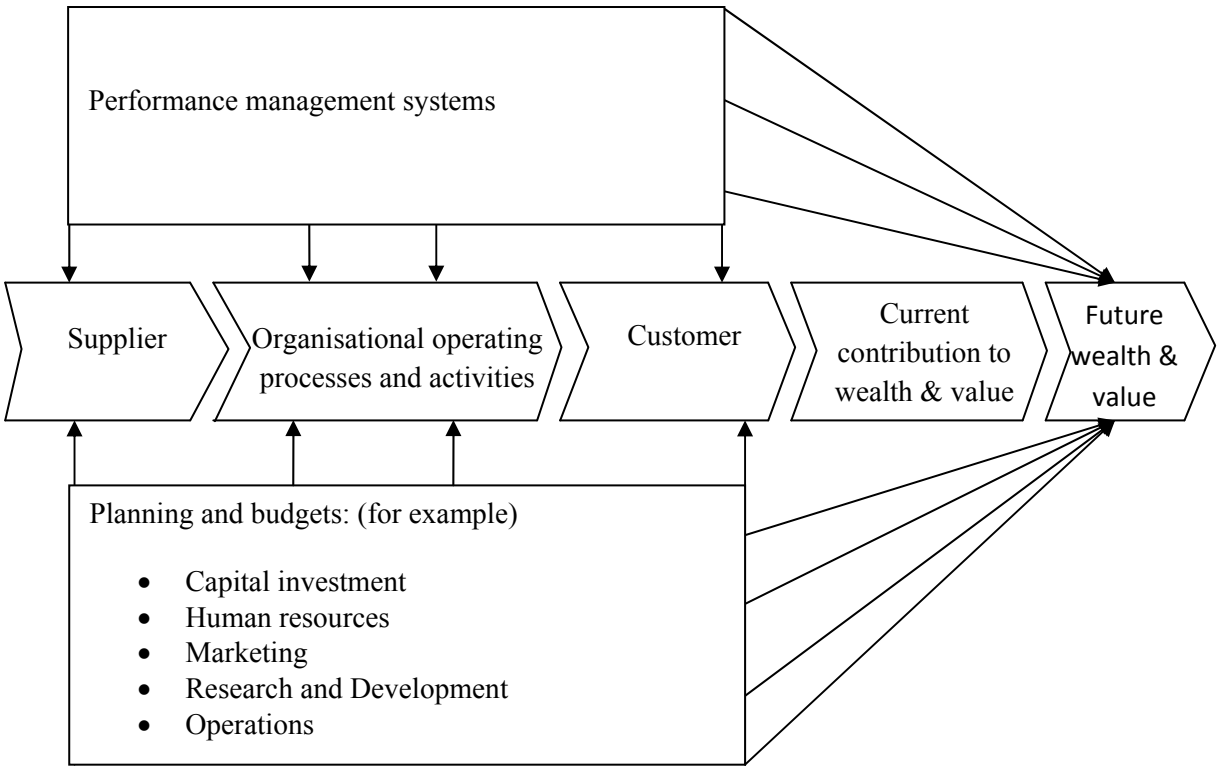
The *SMA value chain* provides a mechanism that requires the consideration of not only the internal operational environment of the organisation but also supplier and customers so as to capture management decision-information.

The SMA value chain is a linear view of organisational processes that concentrates on production processes and the goods and/or services produced. It provides a means of measuring current efficiency and effectiveness in meeting organisational objectives, but does not consider customers and suppliers in any detail. Further, the SMA value chain does not extend to an organisation-sustaining or future view. It forms part of an activity-based management approach. The following is a simple diagram that represents what a SMA value chain may look like. Alternatively, Figure 2.1 could be used to illustrate a SMA value chain.



The *strategy-based value chain (SBVC)* is not completely linear and recognises current and future organisation, supplier and customer value. It incorporates higher-level organisational processes such as budgeting and planning and includes risk considerations. Further, the SBVC considers

other external environmental relationships outside customers and suppliers. To enable it to incorporate this wider environmental view, its diagrammatic representation (as presented below) is more complex than for the SMA value chain.



2.13 Value chain analysis

(a) Explain what strategic management accounting and a value chain are and outline the role they play in a business like Track'n'Repair Autos.

Strategic management accounting or strategic cost management links traditional and new costing ideas to organisational strategy (the strategic plan) and emerging management approaches, using a value chain approach or value chain analysis.

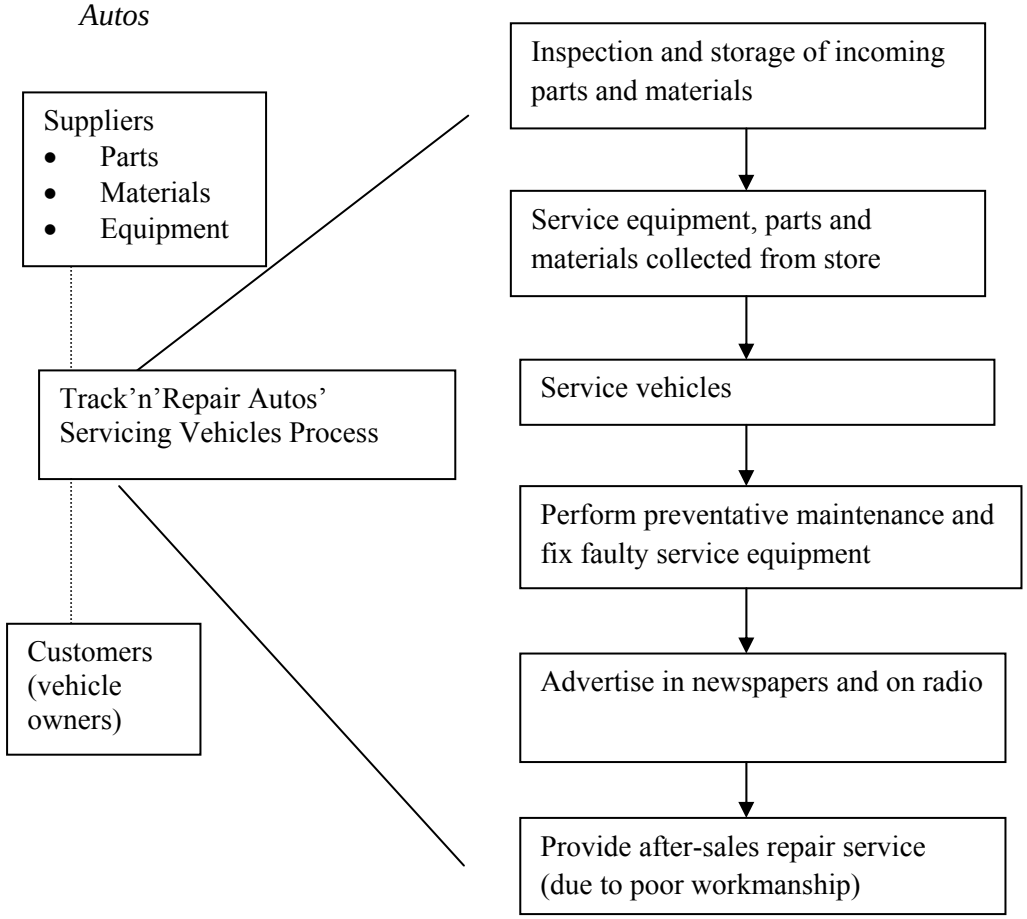
A value chain is a set of value-producing activities that stretches from the organisation's suppliers to its customers. It differs for each organisation. Value chains can be constructed at varying levels and in differing levels of detail. The three common levels are organisational (strategic), process and activity.

Using a SMA/value chain approach would allow Track'n'Repair Autos to:

- focus on its processes and activities, and not organisational units
- collect information about its processes and activities, especially costs
- signal the interactions and interdependencies between organisational activities and processes over the life-cycle of its goods and services
- consider the organisation's relationships with its suppliers and customers.

Employing this SMA and value chain approach provides a mechanism by which Track'n'Repair Autos can consider not only its internal operational environment but also its supplier and customers to capture management decision-information.

(b) Construct a process-level value chain diagram for servicing vehicles at Track'n'Repair Autos



(c) Make a recommendation as to the process(es) within the value chain that Track'n'Repair Autos could improve or eliminate to improve organisational performance and value. Provide reasons for your recommendation.

Track'n'Repair Autos could consider improving or eliminating the following processes (with reasons):

1. Inspection of incoming parts and materials – if TRA had some way of guaranteeing the quality of their suppliers, they could eliminate the need to inspect incoming parts and materials.
2. Fixing faulty service equipment – by spending more time/money on preventative maintenance, equipment will not break down (and be faulty and thus need repair).
3. Providing after-sales repair service by improving quality most likely through skill training, so there is little need for after-service repairs.

2.14 Target costing

Sales (400,000 units × $25)	$10,000,000
Less: desired profit or return on investment (15% × $8,000,000)	$1,200,000
Target cost for 400,000 units	$8,800,000

Target cost per unit = $8,800,000 ÷ 400,000 = $22 per unit

2.15 Target costing

(a) The target cost for the "Garden-nator" package to be competitive would be $28.80.

Calculation:

Target price to remain competitive = $40 – (10% of $40) = $36

Target cost to achieve a 20% profit margin = $36 – (20% x $36) = $28.80.

(b) Now that GreenLawn has a target cost for the "Garden-nator" package, they need to look at ways of reducing their costs to achieve it. Types of cost reduction activities/analysis that could be used internally are :

- activity-based costing/ABM analysis
- functional analysis or value engineering

Alternatively, the owner may like to consider whether a 20 per cent return is feasible in a competitive environment.

2.16 Lifecycle budgeting and target costing

(a) Life-cycle budget for the new chocolate Easter Kiwi for the two pricing options (A and B):

Lifecycle Budget Chocolate Easter Kiwi

	Option A	Option B		
Price per Choclate Kiwi	$ 12.50	$ 14.00		
no. of Kiwis sold (3 yrs)	30,000	24,000		
Lifecycle revenue	$ 375,000	$ 336,000		
			Per unit	***Alternative***
Lifecycle costs			*Option A*	*Option B*
Donation to conservation	$ 6,000.00	$ 4,800.00	$ 0.20	$ 0.20
Research	$ 1,000.00	$ 1,000.00	$ 0.03	$ 0.04
Design	$ 6,250.00	$ 6,250.00	$ 0.21	$ 0.26
Production				
Materials	$ 187,500.00	$ 150,000.00	$ 6.25	$ 6.25
Labour	$ 112,500.00	$ 90,000.00	$ 3.75	$ 3.75
Overhead	$ 30,000.00	$ 24,000.00	$ 1.00	$ 1.00
Production set-up cost	$ 10,000.00	$ 10,000.00	$ 0.33	$ 0.42
Distribution	$ 30,000.00	$ 24,000.00	$ 1.00	$ 1.00
Sales and Marketing	$ 3,750.00	$ 3,360.00	$ 0.13	$ 0.14
total	$ 387,000.00	$ 313,410.00	$ 12.90	$ 13.06
Lifecycle Profit (Loss)	-$ 12,000.00	$ 22,590.00		
Lifecycle cost per unit	$ 12.90	$ 13.06		
lifecycle profit (loss) per unit	-$ 0.40	$ 0.94		

(b) The life-cycle cost per chocolate Easter Kiwi for the two pricing options (A and B):

The life-cycle cost per unit for the two pricing options is:

	Option A	**Option B**
Life-cycle cost per unit	$12.90	$13.06

Comments

Although the difference between the life-cycle cost per unit of option A and option B is small (16c), because of the difference in the price/sales mix of the options, one will result in a profit (option B) and the other a loss (option A). Therefore, you need to charge $14.00 to make a profit. Alternatively, you could perform some form of CVP analysis to find the appropriate price, look at ways of reducing the costs during the product's life-cycle. or conduct some form of customer/competitor analysis to see what price the market would be willing to pay. To do this you could use a target pricing and costing approach as given next.

(c) The target cost for a chocolate Easter Kiwi:

The target cost for a target price of $13.00 with a required profit margin (return on sales) of 6 per cent, is:

Target price	$13.00	
Less required profit	$0.78	(0.06 x 13.00)
Target cost	$12.22	

Comments

The target cost of $12.22 is below the current life-cycle cost per unit of both pricing option A and B. You will therefore need to look at ways of reducing your life-cycle costs or reduce the required profit margin (return on sales) for this product.

(d) Make a recommendation, with reasons, as to what price Kieran should charge per chocolate Easter Kiwi.

As Kieran is still in the design stage, it is recommended that he use a target cost approach and price the chocolate Easter Kiwi at $13.00, as this is what the market is willing to pay, and perform cost reduction activities to reduce the cost per unit to $12.22.

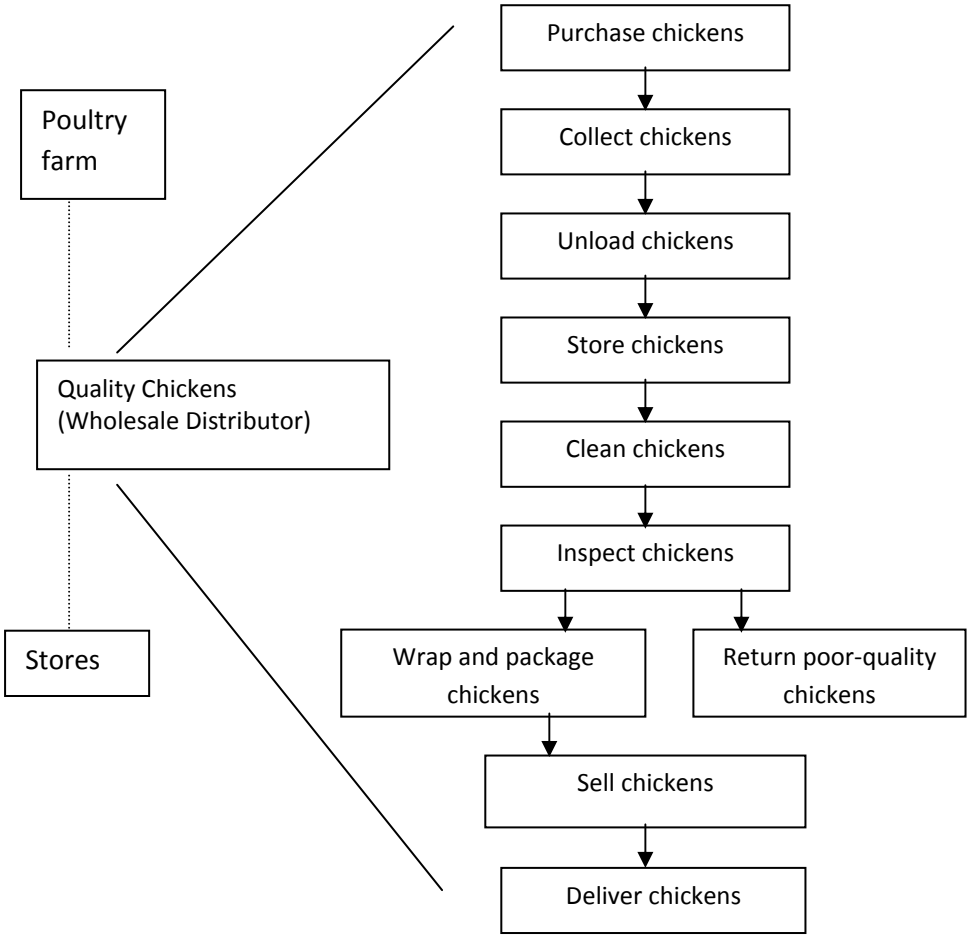
2.17 Value chain analysis and risk

(a) Explain to Feng Su what a value chain is and the role that it plays in a business like Quality Chickens Ltd.

A value chain is a set of value-producing activities that stretches from the organisation's suppliers to its customers. It differs for each organisation. Value chains can be constructed at varying levels and in differing levels of detail. The three common levels are organisational (strategic), process and activity.

The value chain allows the organisation to focus on its processes and activities, and not organisational units. The organisation can use it to collect information about its processes and activities, especially costs. Further, a value chain can signal the interactions and interdependencies between organisational activities and processes over the life-cycle of its goods and services and allow an organisation to consider its relationships with suppliers and customers.

b. Draw a process-level value chain diagram for Quality Chickens Ltd.



(c) Identify and discuss the internal and external environmental risks evident in the Quality Chickens business described above.

The differentiation strategy adopted by Quality Chickens can create risks, especially in a recessionary environment.

External risks include (for example):

- Financial – cash flow, availability of credit.
- Economic – recession, interest rates, changing customer choices.
- Social – changing customer choices, less money, not so worried about quality, versus social conscience regarding animal welfare.
- Political – regulation of the poultry industry.
- Competition/Market – changing customer demands, demographic changes due to economic recession.
- Supplier – quality of supplier products, over-supply of chickens, changing prices.

Internal risks include (for example):

- Resource constraints – less demand, restricted cash flow, and external finance.

- Information deficiency – not the right information to manage the organisation in a constrained environment, not useful for budgeting and planning, etc.
- Employee – overstaffing and associated redundancy etc. issues.

(d) Based on your analysis for (a) to (c) recommend to Feng Su two things that she can do to increase organisational value.

Feng Su could consider the following:

1. Work with their suppliers to ensure that poor-quality chickens are not received. This would reduce inspection costs as well as the costs in the processes prior to inspection.
2. Consider outsourcing the collection of the chickens from the suppliers.
3. Work with the customers to see if improvements can be made relating to the delivery of the chickens.
4. Collect information regarding the business processes and consider ways of improving them. For example, Quality Chickens Limited may wish to use and promote humane animal welfare practices.

Solutions to Case Studies

2.18 Value chain analysis, life-cycle budgeting and target costing

Please find below my analysis of JK Builders' proposed package home business.

(a) The Role of the Value Chain in Your Business

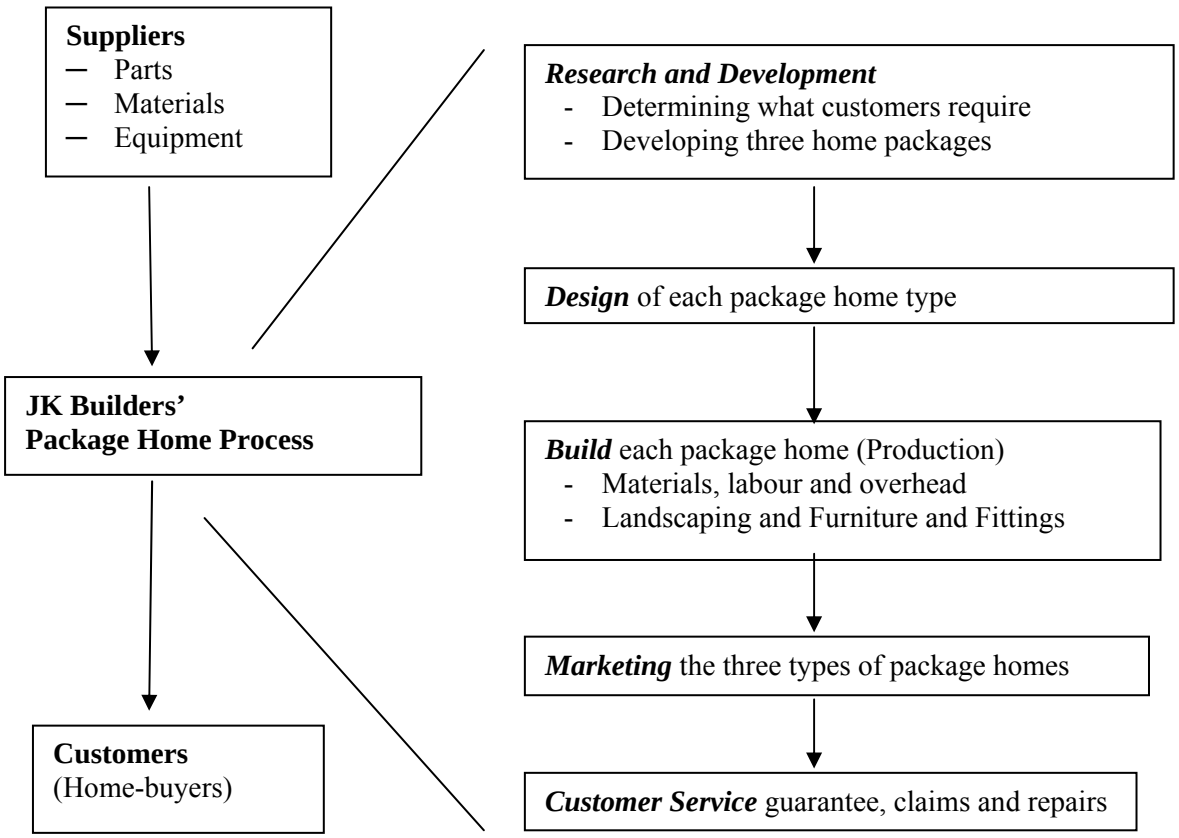
Using a value chain approach would allow JK Builders to:

- Focus on its processes and activities.
- Collect information about its processes and activities, especially costs.
- Signal the interactions and interdependencies between organisational activities and processes over the life-cycle of its goods and services.
- Consider their relationships with its suppliers and customers.
- Remain competitive in a changing building marketplace.

Employing this value chain approach provides a mechanism by which JK Builders can consider not only its internal operational environment, but also its supplier and customers to capture management decision-information.

(b) The Value Chain for Package Homes

The value chain for the package home part of the business is as follows:



Please note that there is no distribution component to the value chain for JK Builders' "package home" business.

(c) Target Cost of the Three Package Types

For each of the three types of package homes, a target cost can be calculated as given in Table 1.

	m^2	Selling price	Required profit (5%)	Target cost
KEA	150	$210,000	$10,500	$199,500
TUI	200	$280,000	$14,000	$266,000
HUIA	300	$420,000	$21,000	$399,000

Table 1: Target cost for each home package type.

This information can be used to design and build a package home that meets customer expectations regarding price, quality and requirements, therefore being competitive in the current business environment. By achieving this target cost, JK Builders will be able to construct the homes and provide the landscaping and furnishing and fitting options at a cost that will keep the company profitable.

(d) Life-cycle Budget for the TUI Home Package

Table 2 presents the life-cycle budget for the total anticipated quantity sold of the TUI home package.

Lifecycle Budget - Tui		
Price per Tui Home		280,000
no. of packages sold (4 yrs)		12
Lifecycle revenue		3360000
Lifecycle costs		
R & D		10000
Building Design		7600
Production		
Building materials		898800
Furnishing & Fittings		244200
Landscaping		120000
Labour		1515600
Other building overhead		393804
Marketing		40000
Customer service		33600
	total	3263604
Lifecycle Profit		96396

Table 2: Life-cycle budget for the TUI home package.

Based on the figures in Table 2, the life-cycle cost per TUI Home package is $271,967 ($3,263,604/12).

This projected cost per TUI unit is greater than the target cost of $266,000 by $5967. JK Builders will therefore not achieve the desired return of 5%. Instead, the return achieved will be 2.87%. Jacob and his partner need to consider whether this return is acceptable in the current business environment. For example, if the environment is recessionary and highly competitive, a lower return of 2.87% may be acceptable or even good, especially if they have no other work. Otherwise, they need to consider how the firm might go about reducing the TUI package home costs, using target costing techniques such as value engineering or functional analysis, and/or activity-based management (ABM) techniques.

This analysis has been repeated for the KEA and HUIA home packages and is presented in the appendix (not required). Further, I recommend the use of activity-based management concepts and techniques, as explained below, to investigate whether the target cost per package can be achieved.

(e) Controlling and Reducing Home Package Costs

The firm needs to look at improving their value-adding processes and eliminating the non-value-adding processes within the value chain so as to reach the target cost for each of the three home packages.

The firm can do this by considering the various parts contained within the value chain and looking for opportunities in relation to suppliers and also the internal value chain activities and processes. For example, they could negotiate long-term supply agreements regarding the price and quality of materials, furnishings and fittings. The firm could also examine workflow, such as the time items spend in storage, moving them, and any inspection of materials performed. They also need to ensure that staff have the necessary skills and experience. Marketing is another area that may provide opportunities for cost reduction. Is the $30,000 per year for 4 years necessary? A large sum may need to be spent in the first year to achieve market penetration, but possibly could decline after that. In addition, the customer service could be improved – 1% of revenue for claims and repairs is non-value-adding, and JK Builders need to investigate why that is occurring.

The firm should also consider how their building overheads are allocated. In the life-cycle budget, the non-manufacturing costs are allocated on an activity basis; R & D on m^2, marketing on a per package type basis and customer service based on a percentage of revenue. No indication is given how building overhead costs are allocated. This could be investigated, but as they are only 12% of total costs it may not be beneficial to allocate on an activity basis.

2.19 Comparing and contrasting product development using value chain approach and target costing

I suggest that students should sketch the value chain, starting with PPL's value chain and then extending it to make it a full customer value chain. Discussion about the points of difference would then centre on (1) the lower cost and greater margins to PPL in years 1 and 2; and (2) higher costs arising from warranty claims in years 3, 4, and 5. The point about possible NPV in both cases is somewhat of a diversion, but it covers off on the possibility that there might be any clear financial differentiator at this early stage. At this point of the analysis you would need to concede that without more-tangible estimates of failure rates and warranty costs, any financial solution to the question of which supplier to use is not possible to determine, and the reality is that non-financial considerations may prove to be the determinants. To make a recommendation you therefore need to investigate further and add more elements to the discussion. It's interesting to note already, however, that the target cost data would imply lower profitability in years 1 and 2 using the New Zealand supplier and higher profitability in later years, but to an as-yet unknown extent. Whilst still within the discussion of the two different value chains, also ask students if they included the suppliers in their value chains – why or why not? Is the supplier relationship a variable that can be managed also?

This then sets the scene for an interesting discussion contrasting the perceived points of view of different corporate 'players'. You could add to the discussion the possibility of a divisional incentive reward scheme to highlight these different positions. You could suggest that a manufacturing manager might head up a cost centre, and so be motivated to use the South American supplier in the first years, gambling that later-year warranty claims might not materialise. An issue that might bother a manufacturing manager is reliability of supply, and quality control of the component from a manufacturing point of view. A marketing manager would be rewarded on a revenue target, and provided that the selling price was the same would likely be indifferent to the choice, but might also have a longer-term concern about reputation if the product starts to fail and damage PPL's reputation of being a quality product provider in subsequent years. The CFO may be under pressure to deliver a profit of certain dimensions every year, and so the higher profit margins in early years from using the South American components may prove to be a powerful motivator. The expectation of higher failure rates in later years is 'out of sight', and hence might be rationalised away as possibly never happening.

The CEO is the usual point of interface between the management team and the board. Strategy should be developed jointly by the board and the management team, and ultimately signed off by the board, who will be held responsible for all outcomes – financial and non-financial – by shareholders. Presuming that the board has considered and endorsed an umbrella strategy of positioning PPL with a 'best value for money' strategy, then the CEO has to assess how the prospect of a product that becomes known for failure in the second half of its expected useful life may affect perceptions of 'best value for money'. Here you should revert to the customer value chain that you sketched earlier. The answer to this part of the problem will be developed by asking questions about how probable is failure in years 3 to 5, and how bad these failures are likely to be. Keep in mind here the incentives of the CEO – if the CEO is on a profit-share reward system, then there is real possibility for short-term profit-gouging at the expense of longer-term reputation and profits. Although you would correctly argue that such an approach is not sustainable in the longer term, the practice of taking short-term incentives and not staying for the longer-term decline is historically quite common. A bonus system with some form of longer-term retention and vesting rules could overcome this sort of short-term behaviour.

This now brings into focus the matter of what additional information Amanda Kee would likely seek to be ready to answer the CEO's need for more information. The first approach would be to attempt to obtain more-definitive estimates of failure rates in the other observed products using these components. Regardless, some modelling around a range of different failure rates and warranty claims of different intensity and cost is essential. As an example, you could model failure rates in years 3, 4, and 5 starting at 5% and increasing by 10% p.a., with a range of possibilities either side. Add to these a range of possible rectification costs, and as a result you can then obtain a distribution of outcomes onto which you may assign statistical probabilities. The life-cycle cost and profit profile can then be selected whilst knowing how sensitive it is to assumptions about failure rates and costs of rectification. The case does not provide data to enable this to be carried out; what is important is that students perceive that lack of definite data does not prevent them from carrying out sensitivity analysis around variables that are likely to be important in achieving corporate outcomes, both financial and non-financial.

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