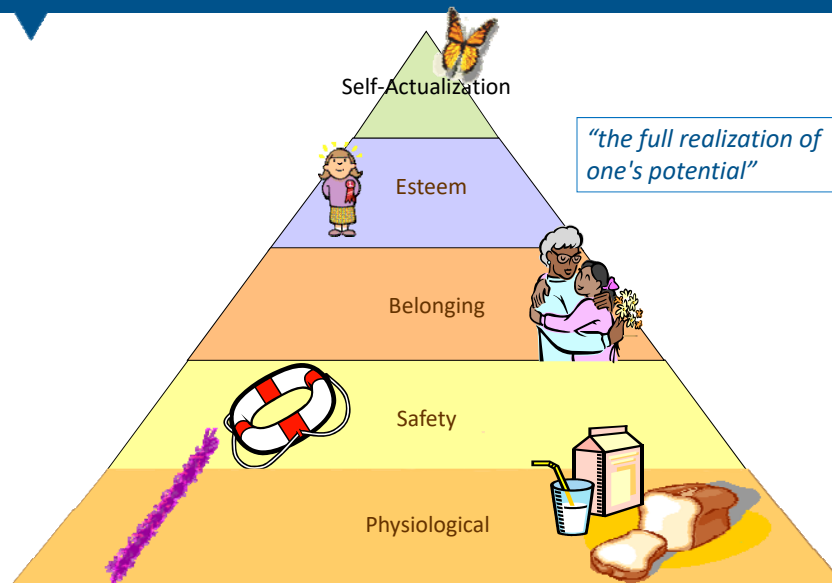


## ENG5002 – Entrepreneurship in Engineering

Value Generation, Productivity and Quality  
Week 08

### Maslow's "Hierarchy of Needs"



## Keys to a successful start-up

- Know your market and your customer
- Effectively manage your Team
  - Interpersonal skills
- Manage your competitive advantage
  - What is your revenue strategy?
  - Where do you create unique value?
- Manage your productivity
  - Manage your cash flow
  - Manage your quality

## Value Creation

- There are many types of value for a startup
- Most important is the extrinsic value:
  - $\$cost < \$price < \$value$  nexus for your customer
  - Value to your stakeholders (your Team, your investors)
  - How will you manage success (exit strategies?)
- There is an intrinsic \$value in your startup not directly related to selling to your customers
  - It's the \$wealth you have generated from your business model – your revenue streams and cash flow
  - It's the intellectual property and branding you have generated
  - It's the knowledge base about your customers and the market you have generated
  - There may also be wider social and environmental value in your startup

### How do you create a revenue stream?

- A revenue stream is the strategy you use to create a cash flow from each customer segment.
  - It's not the same as price – price is tactical
  - Ways to charge vs how much to charge
- Revenue streams
  - **Asset or direct sales** – sale of ownership of a physical product
    - Buying a Snorkl or Nura Headphones, MiniFab or a car or a hamburger, Nanokote
  - **Usage fee strategy** – proportional to the amount used
    - Telstra phone service, posting a parcel, using electricity, Nanokote

### Revenue streams

- **Subscription fee** – fee for continuous access to a service
  - Netflix
- **Renting** - fee for temporary access to a good or service
  - Flats and Houses, car rentals, carpet shampooers, ladders, XM2
- **Licensing** – fee for using IP
  - Microsoft and most other computer software, public broadcasting of music, use of an illustration or picture
- **Intermediation fees** – a “dating” service
  - Real estate agents fees, AirBnB, advertising, Google, PayPal, the Generator, The Actuator

## Pricing tactics

- For any revenue stream you may have a range of pricing tactics
- **Fixed Pricing**
  - $\text{\$cost} + \text{a profit margin} = \text{\$price}$
- Value-based fixed price – you know how much your customer values the product
  - $\text{\$value} - \text{\$cost} = \text{profit margin}$
- Volume-based pricing
  - Buy two get one “free”, 30% discount for a box of 100!
  - Two-year subscription for only an extra \$10, semiconductor chip manufacturers

## Pricing Tactics

- **Dynamic Pricing**
  - **Negotiation**
    - Buying a house
  - **Yield management pricing**
    - Airline fares, concert tickets
  - **Real-time markets**
    - Stock markets, metal or oil exchanges
  - **Auctions**
    - E-bay

## Pricing Tactics

- Value-based pricing is always better than cost+ pricing
- Remember Porter's "five forces" model of competition
- Where does your price take you?
- Are you competitive?
- What will the opposition do?

## Implementing your revenue model

- Understand your market and competition
  - Existing or new market?
  - Monopoly or oligopoly competition?
- Single- or multi-sided market?
  - Single sided – one customer who buys the product
  - Multi-sided – users are not the payers  
e.g., Google uses your search data to generate revenue via ad-words
- Are you going to seek users first (like Google or Facebook) or going to seek revenue first?
  - Start-ups are cash poor so be very careful

## Seeking users through your digital strategies

- Most transactions are internet-based so a digital strategy is important
- Digital Marketing should be integrated into your overall marketing strategy
- Responsive Web Design – how easy is it to navigate?
- Search Engine Optimisation (SEO)
  - Google, Yahoo and Bing displays sites they feel are authoritative and relevant. Relevance is measured by analysing word content and authority is based on the number and quality of other pages linking to the pages they show (links are like votes)  
See <http://www.wordstream.com/quality-score>
  - Check out <https://www.wordstream.com/click-through-rate> to see the effect of good SEO
  - And <http://www.wordstream.com/cost-per-action> to see the cost of acquiring a customers digitally

## Implementing your revenue model

- What assumptions are you making to get your revenue stream? \$10k/month vs \$1M/month require different models
- What is the cost acquiring a customer AND then retaining that customer?
- What does your pricing and revenue stream look like?



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### Where do you create unique value? - Intellectual Property

- IP - A broad term encompassing tangible or intangible products resulting from intellectual or creative effort
  - Inventions, designs, trademarks, artistic or literary works, market information, know-how
  
- **Intellectual Property Rights** – the legal means to protect intellectual property
  - Patents, registered designs, registered trademarks, copyright

### What is a Patent?

- Protects an “invention” related to:
  - E.g., machines, processes, compositions, software, business methods, etc
  
- An invention may:
  - solve a problem
  - provide an alternative
  - mere discoveries are not inventions
  
- Contract between government and the patentee for up to 20 years
  - Monopoly (reward) in return for disclosure
  - Territorial limitations – are your global markets protected?



## Patentability

- To be patentable, an invention must be:
  - Novel
  - Inventive (Standard Patent) or Innovative (Innovation Patent)
  - Not secretly used
  - Useful
  - Patentable subject matter
  
- Disclosure before filing may invalidate a patent
  - via publications (e.g. journal, abstract, grant applications, thesis, web), conference presentations, non-confidential discussions, use of the invention (even use by you of your own invention)

## How to protect your IP?

- Prevention
  - Due consideration before you disclose
  - Provisional patent application
  - Confidentiality agreements (Non-Disclosure Agreements)
  - Limited “non enabling” disclosure (e.g., using IT firewalls, tell people “what you do not how you do it!”)
  - Use witnessed invention notes to demonstrate a priority date for that good idea
- *How important is it to sign a non disclosure agreement with a client to save your intellectual property from being stolen?*
- Remember
  - Ideas are “cheap” – your biggest risk is market risk, not someone stealing your great idea!
  - It’s mainly your business model and the qualities of your Team that will determine your success

## IP for Start-Ups

- IP protection is expensive and you may decide not pursue registered IP rights
  - Start-ups may or may not register their trade marks depending on their exit strategy in mind – perhaps your business is expecting to be acquired by a larger organisation, which already has its own brands
  - Sometimes the brand may play an important role in the value of the start-up - e.g., TradeMe, Xero and 42 Below



- Do an ongoing IP search to make sure you always have “clear air”, especially as your business model will be changing as your ideas evolve

## What is Productivity?

- A measure of the effective use of resources
  - A measure of efficiency that relates the value of outputs relative to the value of the resources used to produce them
  - Numerous inputs or outputs could be measured
- Output
  - sales made, parts produced, customers served, crops grown, or calls answered, \$ earned
- Input
  - labor hours, investment in equipment, material usage, land area, energy consumed, \$ spent

$$\text{Productivity} = \frac{\text{Outputs}}{\text{Inputs}}$$

## Productivity

- Improving productivity can focus on minimising the use of inputs
  - E.g. examining efficient production processes that minimise waste
- OR maximising output
  - Use of resources in the production of goods and services that add the most value.
- Productivity is a 'supply-side' measure of efficiency **that you have control over**
  - You decide the production relationships between your inputs and outputs.
  - You decide if you are producing goods and services that other people want
- If you improve productivity you should obtain greater profits and income

## Partial Measures of Productivity

- They are “partial” because you usually use a combination of inputs for a given output

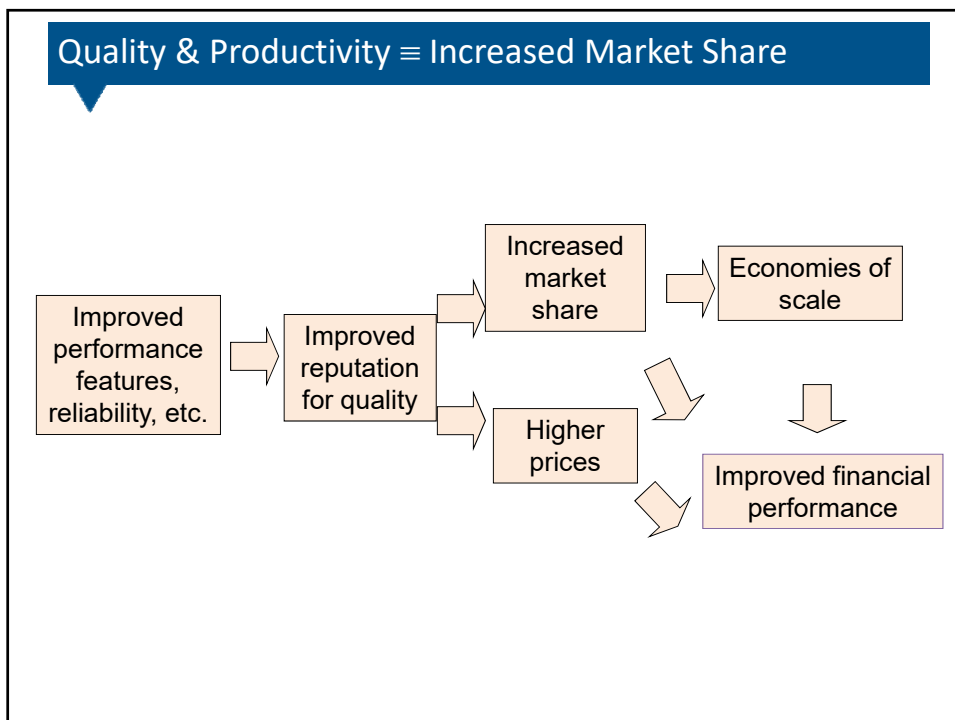
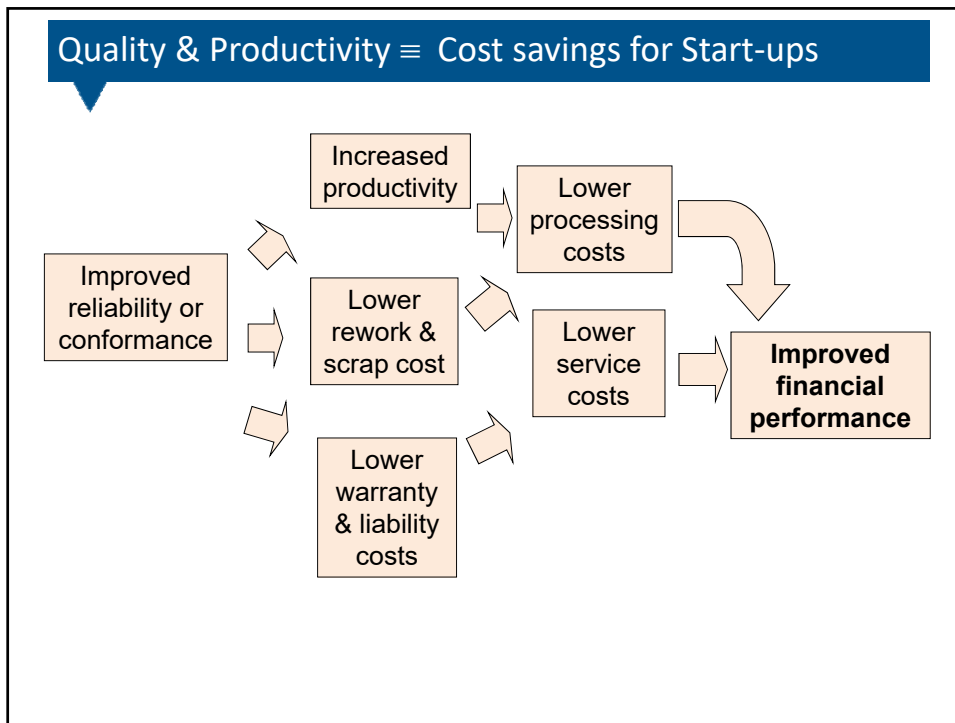
Type	Input	Output
Labor Productivity	Labour (hrs worked)	Added Value (\$)
Machine Productivity	Machine Time (hrs)	Units produced or Value of units produced (\$)
Capital Productivity	Money spent (\$)	Value of units produced (\$) Money earned (\$)
Energy Productivity	Energy used (MJ or kWh)	Units produced
Carbon Efficiency or Intensity	Carbon footprint (Kg of CO <sub>2</sub> used in production)	Units produced or GDP (\$)
Agricultural Productivity	Land Area (ha)	Crop yield (tonnes)
Design Productivity	Better designs	Units produced or Effort used

### Productivity $\neq$ Production Output or Labour Participation

- The Pie Factory
  - You have 5 workers producing 500 pies per 8-hour day (100 pies/worker or 12.5 pies/hr)
  - You hire 4 more inexperienced staff, but they produce only 10 pies/hr or 320 per day
- You now produce 820 pies – greater output
  - But with 9 staff you now only produce 11.4 pies/hr on average
- Is this a bad thing?
  - Not for the 4 new workers – greater labour participation
  - Not for the company if it can sell the extra 320 pies
  - It might be for the customer, because it cost more to produce each pie

### Productivity and Quality

- Companies need to concentrate on both productivity & quality
- Definition of productivity:
  - **Efficiency of output**
- Definition of quality:
  - Consistency with which you product or service meets a specified target or standard
  - **Consistency of output**



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