

HL IB Business Management



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5.8 Research & Development (R&D)

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Research, Development & Innovation

The Importance of Research and Development

- Research and Development (R&D) involves **scientific and technological research** to identify **new materials, innovate new products** and **improve processes**
 - Its aim is to **improve customer satisfaction** by providing products that meet their changing needs **in a profitable way**
 - R&D can involve the development of prototypes, carrying out product trials and safety testing

Reasons why Research and Development is Important

Reason	Explanation	Example
Competitiveness	<ul style="list-style-type: none"> R&D drives innovation to achieve a competitive edge - or first mover advantage Allows businesses to stay ahead of rivals and be better able to adapt to changing market demands 	<ul style="list-style-type: none"> IT giant IBM has shifted its focus from hardware to high-quality, high-impact innovation in new technologies R&D has led to market leadership in hybrid cloud computing, AI and quantum computing
Market Expansion	<ul style="list-style-type: none"> R&D supports exploration of new markets and opportunities Developing new products or adapting existing ones can appeal to different market segments 	<ul style="list-style-type: none"> Johnson & Johnson, owner of brands such as Neutrogena and Listerine spent £11.87 billion on R&D in 2022 R&D into new therapies and AI technologies has led to significant growth in China and Japan
Improved profits	<ul style="list-style-type: none"> R&D can lead to the discovery of efficient processes Process improvement and development of sustainable materials can reduce production costs Innovative products can be sold at a premium price 	<ul style="list-style-type: none"> R&D - both publicly-funded and conducted by individual manufacturers - has reduced the cost of producing solar panels by almost 99% over the last 40 years Panels are now produced in greater quantities and are higher quality due to improved processes in larger factories



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Intellectual Property	<ul style="list-style-type: none"> R&D often leads to the creation of intellectual property such as patents, trademarks, and copyrights These protections create barriers to entry for competitors 	<ul style="list-style-type: none"> Apple invested over £23 billion in R&D and included over £1.84 trillion in intangible assets in its balance sheet in 2022 These include almost 80,000 patents which protect products from being copied by rivals
Staff Recruitment & Retention	<ul style="list-style-type: none"> Innovative businesses are attractive to highly-skilled professionals Employing top industry talent can improve business competitiveness 	<ul style="list-style-type: none"> Innovative brand Lego Group invites application for its highly sought-after roles by explaining why working for them is more than just fun <ul style="list-style-type: none"> 'It's exciting, inspiring, and filled with creativity. It'll spark your imagination every day'

- Conducting R&D has some **drawbacks**
 - It is often **expensive** as it requires specialist staff, financial resources and facilities to conduct
 - A **high failure rate** - only around one in ten ideas researched achieves market success

 **Examiner Tip**

R&D can also identify **ideas that are not worth pursuing** and therefore save time and resources that could be better spent on other projects

It may therefore be considered integral to an effective lean production approach





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The Importance of Innovation

- Innovation brings **new products** to customers and **new processes** that can lead to greater business efficiency
- It also plays a vital role in economic growth
 - It **drives societies** forward, can **improve quality of life** and can address some of the **world's most significant challenges**

Examples of Innovations that seek to Solve Global Challenges

Innovation	Description
<p>JustOne Africa's Water Filter</p> 	<ul style="list-style-type: none"> ▪ This gravity-operated water filter is distributed by the charity across Kenya ▪ The filter kit provides up to 20 litres of clean water in about 30 minutes ▪ Developed from technology used in kidney dialysis machines, it removes all harmful bacteria and pollutants ▪ This improves health and reduces instances of preventable disease ▪ In turn, levels of school attendance are improved, helping to improve Kenya's long-term economic development
<p>Armco's Carbon Capture Technology</p> 	<ul style="list-style-type: none"> ▪ Armco, one of the world's largest energy and chemicals companies, is developing carbon capture technologies that draw out CO₂ emissions at source or directly from the air ▪ These emissions are then transported away, stored deep underground or turned into useful products ▪ The International Monetary Fund emphasises the importance of this technology for tackling climate change

The Importance of Meeting Unsatisfied Needs

- R&D helps businesses to meet customers' **unsatisfied needs**
 - Market research identifies needs of which customers are already aware
 - Innovative products can meet needs of which customers are not yet aware
 - New processes can improve product quality that satisfy customer needs more fully
- Successfully meeting customer needs is **likely to lead to business success**
 - **Customer loyalty** should grow
 - Loyal customers continue purchasing a brand over time
 - Reduced need to constantly attract new customers
 - **Competitive advantage**
 - Meeting customer needs better than rivals is a key differentiator
 - Customers are more likely to choose a business that consistently meets their needs
 - **Adaptability**
 - Meeting customer needs requires staying alert to changes in trends
 - This positions a business to predict and address future needs

Examiner Tip

R&D spending **does not guarantee** commercial success

- Effective **marketing, distribution and quality** play an important role
- External STEEPLE factors impact on the business environment in which **products compete**



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Intellectual Property Protection

- Intellectual property rights (IPRs) protect **inventions, creative works** and some **specialised processes** from being copied
 - This protection **encourages spending on research and development**
 - Possessing important IPRs can provide a valuable **competitive advantage**

- There are **three main types** of IPRs
 - Copyrights
 - Patents
 - Trademarks

Comparison of Intellectual Property Rights

Type	Explanation	Examples
Copyrights	<ul style="list-style-type: none"> ▪ Copyright grants the creator of an original work exclusive rights to its use and distribution for a limited time ▪ It applies to creative, intellectual and artistic works including books, song lyrics, paintings and film scripts ▪ Protection begins when a piece of work is created <ul style="list-style-type: none"> ▪ It does not need to be formally registered ▪ The © symbol may be applied to the work ▪ Permission needs to be sought from the copyright holder to use the work 	<ul style="list-style-type: none"> ▪ In 2001 Dyson successfully sued Hoover for infringement of their bagless dual cyclone vacuum design ▪ In 2021 M&S agreed to settle its legal action against Aldi for copying the design of its Colin the Caterpillar cake
Patents	<ul style="list-style-type: none"> ▪ Patents give a business or inventor exclusive rights to make, use and sell an invention for a specified period ▪ A detailed description including drawings/diagrams is filed with the government patent office ▪ Patents provide inventors with a legal monopoly for a limited time <ul style="list-style-type: none"> ▪ This allows them to control the use of their inventions and potentially profit from them 	<ul style="list-style-type: none"> ▪ In 2022 Converse won a patent case against fashion designer Steve Madden's similar Winnona Sneaker design ▪ Apple and Samsung have been suing and counter suing each other since April 2011 regarding patents for smartphone technology with billions of dollars of



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		damages claimed and awarded between them
<p>Trademarks</p>	<ul style="list-style-type: none"> ▪ A trademark is a distinctive sign or symbol that is used to distinguish between brands <ul style="list-style-type: none"> ▪ Trademarks include words, names, logos, symbols, slogans and even colours or sounds ▪ The ® symbol may indicate a trademark ▪ Infringement of trademark rights can lead to legal action or the payment of damages ▪ Registering a trademark grants its owner exclusive rights to use that mark for a specific time period <ul style="list-style-type: none"> ▪ Helps prevent customer confusion and builds brand identity ▪ Can be valuable intangible asset 	<ul style="list-style-type: none"> ▪ In 2017 Adidas reached an out of court settlement with clothing retailer Forever 21 after claiming its logo design copied its three-stripe trademark ▪ Louis Vuitton DAK, a fried chicken restaurant in South Korea lost a trademark battle with luxury fashion brand Louis Vuitton due to its named branding being similar to the designer's trademark

 **Examiner Tip**

Although IPRs can provide protection, pursuing breaches can be expensive as court costs can be significant if a court case is lost

Many businesses prefer to settle IPR disputes out of court by arrangements to cease and desist from illegal use of designs, processes or trademarks and/or by agreeing compensation payments

Incremental & Disruptive Innovation

- Innovation can be **incremental** or **disruptive**
 - **Incremental** innovation is the **gradual, small-scale improvement** of products, services or processes over time
 - The design and components of **Proctor & Gamble's Ariel** laundry detergent has changed gradually over time
 - New features and upgrades are added to each new **Apple iPhone** release such as improved camera performance and security features
 - **Disruptive** innovation involves developing a **significant changed** or **entirely new product** which disrupts the existing market
 - **Amazon's Kindle** was the first affordable e-reader which changed the market for books
 - The revolutionary design and function of **Dyson's** bagless cylinder vacuum has led to rapid growth for the business