

DP IB Business Management: HL



Your notes

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



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<p>Improved profits</p>	<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
<p>Intellectual Property</p>	<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
<p>Staff Recruitment & Retention</p>	<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 Tips and Tricks

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



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Examiner Tips and Tricks

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**

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



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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 damages claimed and awarded between them
Trademarks	<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"> ▪ In 2017 Adidas reached an out of court settlement with clothing retailer Forever 21 after claiming its logo design copied its



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| <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 | <p>three-stripe trademark</p> <ul style="list-style-type: none">▪ 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 |
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Examiner Tips and Tricks

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



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