MODULE 7: USING TECHNOLOGY TO HELP YOUR BUSINESS

BIC FOR SME

20/10/2021	Module 7: Using Technology to help Your Business

OBJECTIVE: This Module will help the entrepreneur understand the potential value of IT and Digital Resources. The module will address new digital technologies, Industry 4.0, big data analytics, key trends and information (cyber) security to scientifically optimise business choices. Business oriented digital management such as web, predictive, statistical, marketing and talent analytics will be considered while augmented, virtual and mixed reality will also be considered.

Module 7: Using Technology to help your Business

1. BACKGROUND

From concept to commercialisation, IT can significantly impact business. Whether it is using IT to help research a business opportunity, to developing and refining an innovation or to managing day-to-day activities, technology plays a key role. Insofar as is possible, you, as an entrepreneur will continuously need to consider how IT and Digital Resources can support your business.

Your Trainer should be able to guide and support you in this activity, and this Module, developed as part of the **BIC for SME** project, will help you when investigating and examining important issues to do with the business including:

- New digital technologies,
- Industry 4.0,
- Big data analytics
- Key trends
- Information (cyber) security
- Business oriented digital management such as:
    - web analytics,
    - predictive analytics,
    - statistical analytics,
    - marketing analytics and
    - talent analytics
- Augmented, Virtual and Mixed reality (Immersive Technologies)

Having completed the **BIC for SME** Diagnostic evaluation with your trainer and having identified knowledge gaps in terms of IT and Digital Resources, this module provides a template whereby you can deal with issues noted above.

2. MODULE GOALS (MODULE DIAGNOSTIC, ROADMAP & DELIVERY)

2.1   Module Goals

In Section 3 below, a detailed breakdown of the Module content is provided. However, the broad objectives of this Module are to provide you with knowledge, basic competencies and information on tools to support you in using IT and Digital resources to assess your business idea, developing a practical plan for its establishment and manage it effectively. At the end of the Module you should be able to:

1. Know and understand, at a broad level, the essential elements of new IT technologies and….
2. Understand the importance of data related to business

2.2   Plan the Module Training Process

2.2.1 Undertake a Diagnostic Assessment / Baseline Survey

In order to identify the key aspects around IT and Digital Resources, you should complete the **BIC for SME** Diagnostic Tool for Entrepreneurs with your Trainer / Coach / Mentor. This **BIC for SME** Diagnostic Tool will highlight areas of strength and weakness in terms of your knowledge and competencies in this topic and will provide a Roadmap in terms of the actions to be undertaken to enhance knowledge and competencies. This Roadmap is supported by a visual Concept Map, which provides a visual representation of the Module which will highlight key areas to address. **Note**: The **BIC for SME** Diagnostic Tool and training material is designed to be used with the support of a Trainer / Coach / Mentor but can also be used by entrepreneurs on their own if they wish to do so.

Alternatively, or in support of the **BIC for SME** Diagnostic Tool, you can use a simple problem-analysis tool to diagnose challenges or problem issues involved in the business such as:

*   Fishbone Diagram - The fishbone diagram or Ishikawa diagram is a cause-and-effect diagram that helps entrepreneurs to track down the reasons for imperfections, variations, defects, or failures. The diagram looks just like a fish's skeleton with the challenge or problem at its head and the causes for the problem / related issues feeding into the spine. Once all the causes that underlie the challenge have been identified, entrepreneurs can start looking for solutions to ensure that the problem doesn't become a recurring one.

- Five whys - The primary goal of the technique is to determine the root cause of a defect or problem by repeating the question "Why?". Each answer forms the basis of the next question. The "five" in the name derives from an anecdotal observation on the number of iterations needed to resolve the problem.
- Etc.

2.2.2 Develop a Training Roadmap & Action Plan

Following the initial Diagnostic or Baseline Evaluation, and in order to make the training intervention effective, your Trainer / Mentor / Consultant can:

1. Select the elements of the IT and Digital Resources Module to be covered and set timelines for same.
2. Set the training sequence (i.e. organize topics based on importance (as per the Diagnostic evaluation), impact, interactions, etc.).
3. Select the pedagogy (how the selected elements of the Module are to be covered in terms of practical work, lectures, reading material, exercises, etc., as well as linking them with other relevant **BIC for SME** Modules). It is anticipated that this Module will be mainly provided through frontal lessons, using case analysis and demonstrations to bring concrete examples of to the class about the topic. Trainers may use powerpoint slides, blackboard, video, etc., in their training.
4. Set Action plan and Milestones to be achieved – KPI (see Section 5).
5. Determine Outputs - assess the result achieved (see Section 5).

2.2.3 Delivery of the IT and Digital Resources Module

The delivery of the Module should take approximately 20 Hours (including supported and (primarily) independent learning).

Note: IT and Digital Resources are constantly changing and as the entrepreneur you must constantly review your business and where IT may be able to assist. You must take control of these issues as you must understand all aspects of the business, and how to manage it, in depth.

This Module aims to provide you with knowledge, basic competencies, and information on tools to support you in using IT and Digital resources to assess your business idea, to develop a practical plan for its

establishment and knowledge in how to manage it effectively. At the end of the Module you should be able to:

1. Know and understand, at a broad level, the essential elements of new IT technologies and….
2. Understand the importance of data related to business

You need to understand these issues in a practical sense.

Following your Training / Mentoring / Coaching intervention, you can use the **BIC for SME** Diagnostic Tool for Entrepreneurs and Trainers a second time and assess the progress you have made in terms of enhanced knowledge, competencies and skills.

3. CONTENT OF THE MODULE

3.1: Module Content

This Module looks at a number of IT and Digital Resource issues including:

3.1.1: Key Market Trends and New Digital Technologies, Industry 4.0

3.1.2: Business oriented digital management such as:

- o web analytics,
- o predictive analytics,
- o statistical analytics,
- o marketing analytics and
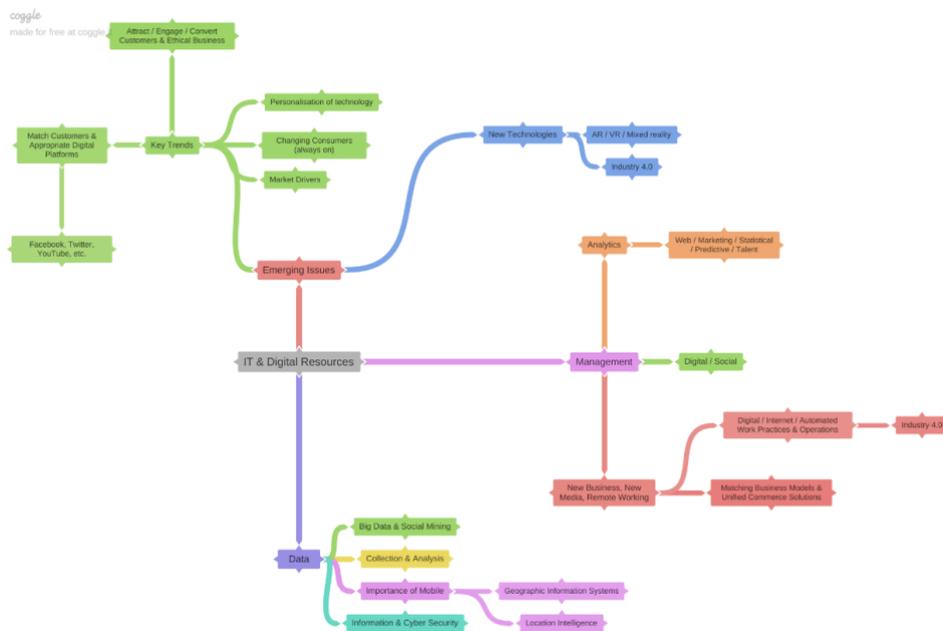- o talent analytics

3.1.3: Big data analytics

3.1.4: Information (cyber) security

3.1.5: Augmented, Virtual and Mixed reality (Immersive Technologies)

An overview of the Module Content is provided below and can also be found in The Diagnostic Tool in the Roadmap Worksheet.

**Fig 7.1: Concept Map for Module 7, IT & Digital Resources**

Note: given the breadth and depth of this topic it is likely that you may need expert advice in some areas.

**Section 3.1.1 Key Market Trends and New Digital Technologies, Industry 4.0**

The traditional customer life-cycle process included a company creating awareness of their products and services, getting prospective customers to consider their offering, making a sale and then building loyalty and perhaps having customers become advocates. However, todays customer life-cycle process has many more facets as demonstrated in the image below.

Fig 7.2: Customer Life-cycle Processes

Traditional customer lifecycle   Digital customer lifecycle
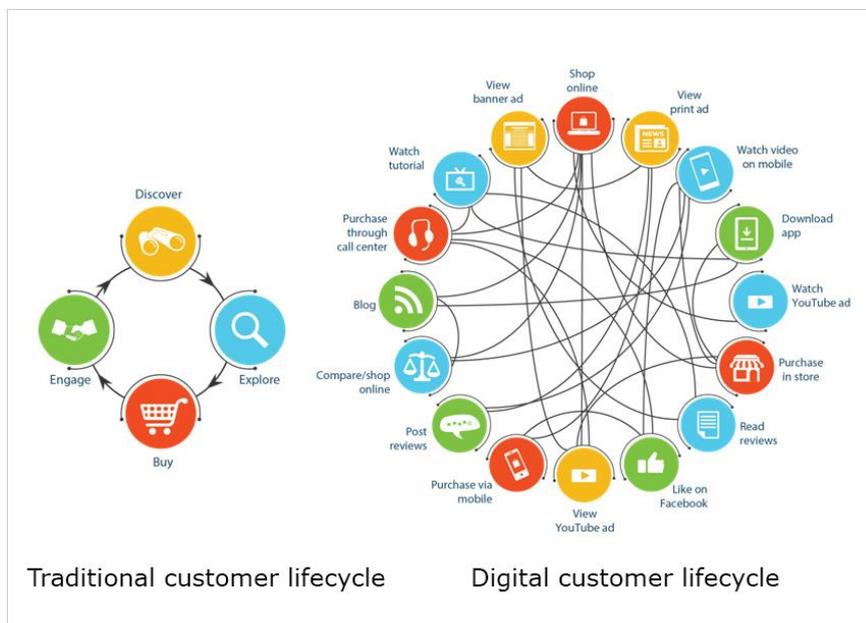
Consider also the IKEA customer journey map:

Fig 7.3: IKEA Customer Journey Map
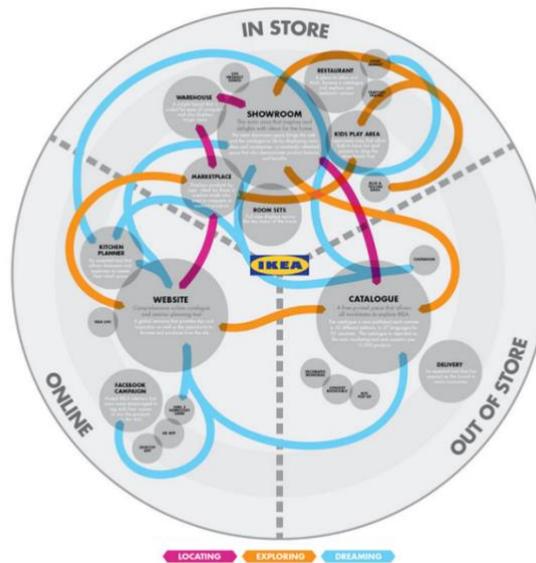
As an entrepreneur you must therefore consider digital marketing and retail as well as ecommerce.

Fig 7.4: Marketing Planning Process

Step 3 in the image above is important, as your consumers can engage with your business or brand in very many ways. You need to know your target audience. Once you have this information you can create accurate target customer profiles or 'personas' so that you can consider and plan your digital marketing mix in order to effectively engage with their customers. Such tech enabled personalisation is key and further examples of personas can be found within this Slideshare presentation on IKEA.

Question:

How can you get to know your target audience?

Answer:

There are a number of ways to gather information and conduct research on your target audience. Some of this can be offline:

- Focus Groups (you can do this yourself or get professional organisations to assist)
- Face-to-Face or Depth Interview

Some of this can be online:

- Surveys (e.g. SurveyMonkey, SoGoSurvey, Typeform, Google Forms, Client Heartbeat, Zoho Survey, Survey Gizmo, Survey Planet)
- Reviews (e.g. Google reviews, TripAdvisor, etc.)
- Hotjar - Hotjar allows you to visualize how users engage with your website. Hotjar uses interactive heatmaps of their clicks and actions, recordings of their sessions, and gathering of their words from survey and feedback polls to help you build a strong, data-backed understanding of what exactly people are using your site for, and how they're using it.
- Treejack - helps you evaluate the findability of topics on your website and identifies where users get 'stuck' or log out. Whether starting from new or improving an existing website, Treejack is a useful tool to get the insights you need to build a strong website.

Question:

Once you know your target market, what are the main components of a Digital Marketing Strategy

Answer:

Key components of a Digital Marketing Strategy include:

- SEO / SEM
- PPC Adwords
- Email
- Display Advertising
- Social Media
- Content Marketing

Question:

Are you aware of Key Market Trends, New Digital Technologies and Industry 4.0?

Answer:

By clicking on the links below you will be able to find more information on Key Market Trends / Themes. The highlighted topics or specific examples will help you better understand key concepts.

Unified Commerce: is defined by IT research firm Gartner as: "The practice of providing flexibility, continuity and consistency across digital and physical channels to deliver a superior customer experience. This consistency includes multiple phases of the customer's buying journey, including when a customer is searching, browsing for, transacting, acquiring and consuming a product or service." Essentially, this is identifying where your customers are and how they (could) engage with your business and ensuring you have a strategy to engage with them at all of those points. E.g. Search on-line for product information, buy on-line and then collect instore (such as Argos).

As an entrepreneur, you need to understand that: 'Customers are Always On'; you need to 'Meet Customers where They're At' and… you need to 'Adapt or Die'.

Fig 7.5: Example of part of a Unified Commerce approach at Dublin Airport

(Travellers can shop from the 'wall' and they can collect on return).

Subscription Business Models: According to Investopedia.com, subscription business models are based on the idea of selling a product or service to receive monthly or yearly recurring subscription revenue. They focus on customer retention more than customer acquisition. In essence, subscription business models focus on the way revenue is made so that a single customer pays multiple payments for prolonged access to a good or service. E.g. www.mymilkman.ie, Amazon Subscribe & Save.

Conscious Consumerism: is driven by consumers making purchase decisions that have a positive social, economic, environmental, and political impact. They do this through the purchase of ethical products or boycotting unethical companies. One example is Rent the Runway.

Delivery on Demand: Basically, this is the ability to place your order and receive your delivery within a few hours. This speed of delivery enables businesses and individuals to get the items they need exactly when they need it. An Irish example includes Buymie.ie and the recent Covid pandemic could see a rise in this type of business.

Voice & Visual: An example is Alexa Voice Shopping, the service from Amazon that allows consumers to quickly place orders with just a voice command. Consumers with an Alexa-enabled product, can simply tell Alexa what they want to buy.

Industry 4.0: has been defined as "a name for the current trend of automation and data exchange in manufacturing technologies, including cyber-physical systems, the Internet of things, cloud computing and cognitive computing and creating the smart factory".

See a Boston Consulting Group article here which outlines nine technologies transforming industrial production. They see some key issues being Horizontal & Vertical Systems Integration, Cybersecurity, Augmented Reality and Big Data & Analytics

3.1.2: Business Oriented Digital Management

Business oriented digital management tools can provide significant benefits to small and medium businesses as well as larger ones. Examples of such tools include:

- **Web analytics** - is the collection, reporting, and analysis of website data. It can provide insights and data that can be used to create a better user experience for website visitors. Understanding customer behaviour is also key to optimizing a website for conversion to sales. (see a Google Small Business Community video on Google Analytics here and a web analytics dashboard example here)

- **Predictive analytics** - amalgamates huge inflows of data with historical records to forecast activity, behaviour and trends in the future. The potential use of predictive analytics is unlimited and can be used for pricing; stock management, revenue prediction, promotions, behaviour analytics, fraud detection, etc. Getapp.com provides comparison sites for various predictive analytics apps here while Predictive Analytics Today provide best practice insights to a number of analytics issues such as: Big Data, Cloud Computing, HR,

- **Statistical analytics** - is the science of collecting data and uncovering patterns and trends. It's really just another way of saying "statistics."

- **Marketing analytics** - is the practice of measuring, managing and analysing marketing performance in order to maximise its effectiveness and optimise return on investment (ROI). Understanding marketing analytics allows entrepreneurs to be more efficient at their jobs and minimise wasted web marketing time and money. See a demonstration video from SAS Analytics here.

- **Talent / HR analytics** - gathers insights into a company's current workforce and potential employees. This allows companies to understand what motivates their workers and potential hires. Furthermore, it provides a better understanding of employee strengths and weaknesses. Such detail is important for adopting strategies that improve performance and productivity. Sometimes people refer to talent analytics as workforce analytics, human capital analytics, or human resource analytics. A brief blog article on Harver.com shows 9 benefits of talent analytics while Microstrategy.com provide more detailed information on HR analytics.

- **Digital Business Models** - A digital business model is a form of creating value based on the development of customer benefits using digital technologies. The aim of the digital solution is to generate a significant advantage for which customers are willing to pay. While it is often referred to in terms of revenue generation, it can be more widely considered to be a way to leverage digital technologies to improve many aspects of an organisation. Some revenue models

include Freemium (a type of business model that offers basic features to users at no cost and charges a premium for supplemental or advanced features), Subscription (based on the idea of selling a product or service to receive monthly or yearly recurring subscription revenue. The focus is on customer retention over customer acquisition. In essence, a single customer pays multiple payments for prolonged access to a good or service instead of a large upfront one), E-commerce (Electronic commerce or e-commerce (sometimes written as eCommerce) is a business model that lets firms and individuals buy and sell things over the internet), and Ad-supported (where firms attract an audience by creating content or attracting interaction and engagement, and then sell access to advertisers).

- **Data-Driven Decision-Making** - (sometimes abbreviated as DDDM) is the process of using data to inform your decision-making process and validate a course of action before committing to it. This could include collecting survey responses to identify products, services, and features their customers would like; conduct user testing to observe how customers are inclined to use their product or services and to identify potential issues that should be resolved prior to a full release; launch a new product or service in a test market in order to test the waters and understand how a product might perform in the market; analyse shifts in demographic data to determine business opportunities or threats. Harvard Business School online provides a lot of interesting reading material on this subject. Whether and how data can be incorporated into the decision-making process will depend on factors such as business goals, the types and quality of data available, etc. While data-driven decision-making has existed in business in one form or another for centuries, it's a truly modern phenomenon.

- **Planning IT** - provides a framework for assessing and improving the practice of information management in organizations. It helps managers to diagnose the situation in their enterprise and generate an appropriate action plan. It requires businesses to plan for, and think strategically about how to distinguish the potential benefits of information technology and information systems.

3.1.3: Big Data Analytics

Beyond digital management and analytics tools there is the concept of Big Data Analytics. This is the often complex process of examining large and varied data sets, or big data, to uncover information such as hidden patterns, unknown correlations, market trends and customer preferences. This information can help organisations make informed business decisions. For example, Future Farming provides some insights as to how Big Data is impacting on agriculture. Driven by specialized analytics systems and software, as well as high-powered computing systems, big data analytics offers various business benefits, including:

- New revenue opportunities

- More effective marketing

- Better customer service

- Improved operational efficiency

- Competitive advantages over rivals

While the above may seem more relevant to big businesses, big data can also be utilised by smaller businesses.

Useful data sources include traditional in-house data (like sales data and customer service logs), social media, browser logs, text analytics, and large, public data sets (such as census data). Twitter and services such as Trendera and Trend Hunter collate trend data and use it to answer specific questions for businesses. Google Trends can offer insights on the popularity of a brand or product, and social media analysis can illustrate popularity (i.e. how often a company is mentioned) and show what customers are saying.

Supply chain or delivery route optimisation is another business process that is benefitting heavily from big data analytics. Here, GPS and sensors are used to track goods or delivery vehicles and optimise routes by integrating Geographic Information Systems such as live traffic data, and so on. See examples of the use of Geographic Information Systems for business and business mapping support tools at esri.com. Also, the Erasmus+ Get Up project offers a learning platform to provide users with the ability to understand complex phenomena through the use of Geomarketing techniques by creating geographic relationships inherent in relevant spatial data. By learning how to use this concept as a management tool, entrepreneurs can attract investment and new business.

In terms of recruitment, companies can now access so much more data that wasn't available before: data from recruitment sites, information from sensors in ID badges, social media data, etc.

Big data analytics in small companies can start by simply using all the big data that we are now surrounded by and that other companies give us access to.

3.1.4: Information (cyber) security

While most high-profile victims of cyber threats have typically been large corporations, small businesses and even individual entrepreneurs cannot feel completely safe. They are targeted because they have more finances than ordinary people do, and less cyber protection than large corporations do. Most small business owners underestimate the threat they are under and do not pay enough attention to cyber protection of their resources.

Question:

What simple steps that you can take to protect your business from cyber-attacks?

Answer:

IrishTechNews.ie gives some simple advice on how to protect your business from cyber threats such as:

- Ensure you have strong passwords.

- Minimise the number of attempts for entering passwords.

- Use 'Password Manager' (but be careful if this is hacked then all your passwords are accessible…).

- Regularly back-up information but be careful with back-up copies (encrypt them or put an additional password on them).

- Update your software (use antivirus software and do regular check-up's).

- Educate your employees about cyber threats and how to avoid them. Document your cyber security policies.

- Secure mobile devices as well as those in the office.

- Use multifactor identification practices.

- Invest in a good firewall.

Some of the basic risks of cyber-attacks on your business include:

- Loss of customer trust
- Loss of revenue
- Day-to-day operations will be stalled
- Loss of intellectual property
- Insurance costs will rise
- Loss or damage to electronic data
- Extra expenses
- Network security and privacy lawsuits
- Extortion losses.

3.1.5: Augmented, Virtual and Mixed reality (Immersive Technologies)

Immersive technologies is an overall term used to cover technologies such as 360-degree filming and augmented and virtual reality. These are used to create unique storytelling experiences that blur the line between the digital world and the physical world. Using these technologies, businesses can communicate to, and entertain customers, with innovative stories about their business and the product or service they deliver.

Immersive technologies have a host of benefits for business. They let users explore products, processes, and services in the context of how they are used, which helps to create a positive engagement with the brand and deliver content that is tailor-made for individual customers. Creating a high brand value automatically generates more business over time and also helps to retain more customers.

In addition, immersive technologies have the potential to create more precise analytics that track customer data more accurately and reliably, on the basis of which entrepreneurs and businesses can frame their campaigns accordingly. Therefore, having the knowledge and ability to use immersive technologies effectively, can ultimately empower smaller businesses to produce higher quality marketing content at lower cost. Furthermore, in using these technologies, businesses can communicate to, and entertain customers with innovative stories about their business and the product or service they deliver.

Examples of Immersive Technologies in practice include <mark>Lowe's</mark> Home Improvement Store which allows you to see how products look in your home before you buy them as well as in-store <mark>navigation</mark> tools. IKEA have similar <mark>apps</mark>. VR examples are available in this <mark>video</mark>.

The **Digi2Market** project, supported by the Interreg Northern Periphery and Artic Programme 2014-2020, provide a <mark>good practice guide</mark> for small business on the development of models of storytelling using immersive technology.

3.2   Useful Material & Templates

Links to **<u>Materials and Further Reading</u>** are provided below:

Topics / Useful Links	
• Unified Commerce	• https://www.softwareadvice.com/resources/what-is-unified-commerce/#:~:text=IT%20research%20firm%20Gartner%20defines,deliver%20a%20superior%20customer%20experience.
• Subscription Business Models	• https://www.investopedia.com/ask/answers/042715/how-do-subscription-business-models-work.asp
• Conscious Consumerism	• https://startups.co.uk/what-is-conscious-consumerism/
• Industry 4.0	• https://www.forbes.com/sites/bernardmarr/2018/09/02/what-is-industry-4-0-heres-a-super-easy-explanation-for-anyone/#3b55c6c69788
• Horizontal & Vertical Systems Integration	• https://www.mbtmag.com/business-intelligence/article/13251083/horizontal-and-vertical-integration-in-industry-40
• Focus Groups	• https://www.shopify.com/encyclopedia/focus-group
• Depth Interviews	• https://www.slideshare.net/MohammadAslamShaiekh/in-depth-interview-idi

• Personas	• https://www.interaction-design.org/literature/article/personas-why-and-how-you-should-use-them#:~:text=Personas%20are%20fictional%20characters%2C%20which,%2C%20experiences%2C%20behaviours%20and%20goals.
• Tech Enabled Personalisation	• https://monetate.com/glossary/personalization/
• Web Analytics	• https://blog.alexa.com/full-glossary-web-analytics-terms-know/
• Predictive Analytics	• https://www.sas.com/en_ie/insights/analytics/predictive-analytics.html
• Statistical Analytics	• https://www.sas.com/en_ie/insights/analytics/statistical-analysis.html
• Marketing analytics	• https://www.sas.com/en_ie/insights/marketing/marketing-analytics.html
• Talent / HR Analytics	• https://www.valamis.com/hub/hr-analytics#:~:text=HR%20analytics%20is%20the%20process,analytics%2C%20or%20even%20workforce%20analytics.
• Big Data Analytics	• https://www.sas.com/en_ie/insights/analytics/big-data-analytics.html
• Geographic Information Systems	• https://www.esri.com/en-us/what-is-gis/overview
• Cybersecurity	• https://www.kaspersky.com/resource-center/definitions/what-is-cyber-security
• Augmented Reality	• https://www.macmillandictionary.com/buzzword/entries/augmented-reality.html
• Virtual Reality	• https://whatis.techtarget.com/definition/virtual-reality
• Mixed Reality	• https://www.forbes.com/sites/solrogers/2018/12/04/what-is-mixed-reality-and-what-does-it-mean-for-enterprise/#49b575e35df9

• Immersive Technologies	• https://advrtas.com/immersive-technology/

Bibliography

	References to used sources of information.
1	Unified Commerce - https://www.softwareadvice.com/resources/what-is-unified-commerce/#:~:text=IT%20research%20firm%20Gartner%20defines,deliver%20a%20superior%20customer%20experience.
2	Subscription Business Models - https://www.investopedia.com/ask/answers/042715/how-do-subscription-business-models-work.asp
3	Conscious Consumerism - https://startups.co.uk/what-is-conscious-consumerism/
4	Industry 4.0 - https://www.forbes.com/sites/bernardmarr/2018/09/02/what-is-industry-4-0-heres-a-super-easy-explanation-for-anyone/#3b55c6c69788
5	Tech Enabled Personalisation - https://monetate.com/glossary/personalization/
6	Web Analytics - https://blog.alexa.com/full-glossary-web-analytics-terms-know/
7	Statistical Analytics - https://www.sas.com/en_ie/insights/analytics/statistical-analysis.html
8	Predictive Analytics - https://www.sas.com/en_ie/insights/analytics/predictive-analytics.html
9	Marketing analytics - https://www.sas.com/en_ie/insights/marketing/marketing-analytics.html
10	Talent / HR Analytics - https://www.valamis.com/hub/hr-analytics#:~:text=HR%20analytics%20is%20the%20process,analytics%2C%20or%20even%20workforce%20analytics.
11	Big Data Analytics - https://www.sas.com/en_ie/insights/analytics/big-data-analytics.html
12	Geographic Information Systems - https://www.esri.com/en-us/what-is-gis/overview
13	Cybersecurity - https://www.kaspersky.com/resource-center/definitions/what-is-cyber-security
14	Augmented Reality - https://www.macmillandictionary.com/buzzword/entries/augmented-reality.html
15	Virtual Reality - https://whatis.techtarget.com/definition/virtual-reality
16	Mixed Reality - https://www.forbes.com/sites/solrogers/2018/12/04/what-is-mixed-reality-and-what-does-it-mean-for-enterprise/#49b575e35df9
17	Immersive Technologies - https://advrtas.com/immersive-technology/

Key Terms

Key Terms	
See a detailed list of web analytics terms at: **https://blog.alexa.com/full-glossary-web-analytics-terms-know/**	
Unified Commerce	The practice of providing flexibility, continuity and consistency across digital and physical channels to deliver a superior customer experience. This consistency includes multiple phases of the customer's buying journey, including when a customer is searching, browsing for, transacting, acquiring and consuming a product or service.
Subscription Business Model	The way revenue is made so that a single customer pays multiple payments for prolonged access to a good or service.
Conscious Consumerism	Purchase decisions that have a positive social, economic, environmental, and political impact.
Industry 4.0	The current trend of automation and data exchange in manufacturing technologies, including cyber-physical systems, the Internet of things, cloud computing and cognitive computing and creating the smart factory
Personas	Fictional characters, created based upon market research in order to represent the different user types that might use a service, product, site, or brand in a similar way.
Tech-enabled Personalisation	Personalization is the practice of creating personal interactions and experiences for existing and prospective customers through the use of digital marketing technologies to grow these customers into your best customers.
Web Analytics	The collection, reporting, and analysis of website data.
Predictive Analytics	Amalgamates huge inflows of data with historical records to forecast activity, behaviour and trends in the future.
Statistical Analytics	The science of collecting data and uncovering patterns and trends.
Marketing Analytics	The practice of measuring, managing and analysing marketing performance in order to maximise its effectiveness and optimise return on investment.

Talent/HR Analytics	Gathers insights into a company's current workforce and potential employees.
Big Data Analytics	The often complex process of examining large and varied data sets, or big data, to uncover information such as hidden patterns, unknown correlations, market trends and customer preferences.
Cybersecurity	Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks.
Augmented Reality	The technology of combining real word images, video, etc. with computer-generated information and/or imagery.
Virtual reality	An artificial environment that is created with software and presented to the user in such a way that the user suspends belief and accepts it as a real environment.
Mixed reality	An advancement of augmented reality (AR) – a "hybrid" environment, interactive virtual objects can be mapped to the physical environment, blending the real and the virtual.
Immersive Technologies	Immersive technologies is an overall term used to cover technologies such as 360-degree filming and augmented and virtual reality, which are used to create unique storytelling experiences that blur the line between the digital world and the physical world.

Case Studies / Good practices / Exercises

A number of examples of good practice and cases have been outlined throughout the module above including:

- Conducting online surveys / customer research - https://www.youtube.com/watch?v=7xdCDJxxoRk (video)

- Tracking your customers online using Hotjar (testimonial videos) and cases

- Finding where customers encounter problems on your website using a Treejack demo

- Web analytics video from Google Small Business Community (video)

- Marketing and Statistical analytics videos are available here

- Demo videos on using Geographic Information Systems to benefit business from esri.com

- Video examples of Immersive Technologies from Lowe's Home Improvement Store and IKEA

- Best Practice Guide for small business on the development of models of storytelling using immersive technology

Self-test Questions

Self-test questions
Multiple choice questions with more than one correct answer. (min. 5)
Question 1: List five ways in which analytics can support entrepreneurs / businesses:
1) Provides insights/data that can be used to create better user experiences for website visitors
2) Amalgamates huge inflows of data with historical records to forecast activity, behaviour & future trends
3) Collects data and uncovers patterns and trends
4) Measure, manage and analyse marketing performance in order to maximise its effectiveness and optimise return on investment
5) Gather insights into a company's current workforce and potential employees.
6) New revenue opportunities.
7) Improved operational efficiency.
8) Competitive advantages over rivals.
Correct Answer: Any 5 of the above
Question 2: Give 5 potential outcomes from cyber security breaches.
1. Loss of customer trust
2. Loss of revenue
3. Day-to-day operations will be stalled
4. Loss of intellectual property
5. Insurance costs will rise
6. Loss or damage to electronic data.
7. Extra expenses.
8. Network security and privacy lawsuits.
Correct Answer: Any 5 of the above
Question 3: List 5 ways to ensure the online security of your business?

1. Ensure you have strong passwords.
2. Minimise the number of attempts for entering passwords.
3. Use 'Password Manager'
4. Regularly back-up information (encrypt back-ups or put additional password on them).
5. Update antivirus software
6. Educate employees about cyber threats and how to avoid them.
7. Document your cyber security policies.
8. Secure mobile devices as well as those in the office.
9. Use multifactor identification practices.
10. Invest in a good firewall.
Correct Answer: Any 5 of the above
Question 4: List 5 ways to gather information and conduct research on your target audience.
1. Focus Group
2. Face-to-face / depth interview
3. Online surveys
4. Online reviews
5. Website tracking tools such as Hotjar or Treejack
Correct Answer: All of the above
Question 5: Match the term with the definition

• **Unified Commerce**	• purchase decisions that have a positive social, economic, environmental, and political impact
• **Subscription Model**	• the way revenue is made so that a single customer pays multiple payments for prolonged access to a good or service
• **Immersive technology**	• The practice of providing flexibility, continuity and consistency across digital and physical channels to deliver a superior customer experience

•	**Industry 4.0**	•	A technology that extends reality or creates a new reality by by overlaying digital images on a user's environment or creating a new reality by completely shutting a user out from the rest of the world and immersing them in a digital environment.
•	**Conscious Consumerism**	•	the current trend of automation and data exchange in manufacturing technologies, including cyber-physical systems, the Internet of things, cloud computing and cognitive computing and creating the smart factory

4. ROADMAP & ACTION PLAN

Having completed the Diagnostic evaluation you will have identified the key issues of concern or knowledge gaps in terms of how IT and Digital Resources can support your business, while your Trainer will have been able to set out a Training Roadmap on relevant issues.

As outlined in Section 2.2.2, the Training roadmap (learning path) is a structured sequence of training activities proposed to teach a topic. While it should be comprehensive, it also needs to be practical, in order to organise the learning over a series of sessions. It will ensure that users do not omit crucial content because lack of time and that they will achieve fluency in key elements of the topic. Steps:

1. Set the goals derived from the **BIC for SME** diagnostic needs check (see Section 2)
2. Set out the Roadmap and Action Plan by selecting the elements of the Module to be covered and timelines (see Section 2)
3. Select pedagogy (how the selected elements of the Module are to be covered in terms of lectures, reading material, exercises, etc.,) (see Section 2)
4. Set sequence: organize topics based on importance (as per the Diagnostic evaluation), impact, interactions, etc.. (see Section 2)
5. Confirm Action plan and Milestones – KPI
6. Output: assess the result achieved

Having understood and practiced how to use the various tools and templates contained in the Module (steps 1 – 4 above), you should be able to identify (ideally with the help of a Trainer / Coach / Mentor) a set of action items including a timeline indicating: what is to be done, by whom, when and how. Examples are provided below:

4.1 Action Plan

What	Who	When	How
Ensure my business is protected from data breaches and cyber risk via the following:	Promoter	2 weeks (ongoing)	Discuss with the Trainer to identify an appropriate service provider.

• Implement strong password policy • Consider use of 'Password manager' • Regularly back-up information with encryption / additional password • Update antivirus software • Educate your employees about cyber threats and how to avoid them. • Secure office AND mobile devices • Use multifactor identification practices • Implement a secure firewall.			
Research new / existing customers via: • Focus Groups • Face-to-Face Interview • Do online surveys • Get online reviews • Track user engage with your website. • Evaluate where users get 'stuck' or log out of your website	Promoter	6-8 weeks	Discuss with the Trainer
Evaluate the benefits of online analytics to your business using: • Web analytics • Predictive Analytics • Statistical Analytics • Marketing Analytics • Talent Analytics • Etc.	Promoter	Etc.	Assess suitable sources with the Trainer.
Etc.			Etc.

The **BIC for SME** Diagnostic / Assessment Tool and Roadmap can provide entrepreneurs with a 'take away' in the form of a handout thereby providing them a practical guideline on tasks to be completed.

4.2 Countermeasures

Not all Action Items will progress as planned. It is important, therefore, that you consider some Countermeasures (if possible).

- Failure to fully implement cyber security measures due to cost - (implement policies around strong passwords, multifactor identification, anti-virus software and basic employee awareness with future plans around incorporating firewalls, in-depth employee training, etc.)

- Failure to research market using online resources - (conduct focus group and depth surveys and develop a plan with timelines for online research)

- Failure to grasp the benefits of online analytics - (engage relevant expertise or mentoring support)

- Etc.

5. FOLLOW-UP & OUTPUTS

As with all plans, it is important that you monitor output achieved against the original Diagnostic evaluation, Roadmap and Action Plan (you can undertake this with the support of your Trainer / Mentor / Consultant):

Task / Objective	Outcome (Date)
Implement cyber & data security measures	Work in progress (WIP)
Establish the customer journey (online & offline)	Done
Use web / marketing analytics to improve marketing activity	WIP
Etc.	

6. APPENDICES

- N/A