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# Some examples of how service design is being used by startups and SMEs to apply service science.

*Nick* Coutts*

Sense Innovation Management Services Limited, 7 Bell Yard, London, WC2A 2JR, UK

**Abstract.** Service designers can design the services needed to mitigate the barriers to adoption and use that are created by the introduction of new products, processes, services and methods. The removal of these barriers are frequently revenue opportunities for startups and SMEs. This paper offers answers to the following questions, with some example applications of service science: What is service design? What does a service designer do? Why is service design important? What is service science? How can service design and service science help startups and SMEs? The ideas and examples are based on the author's experience working with IBM's global network of business partners; as a tutor for the masters course in service design at the Royal College of Art, London ; for the masters courses in Global Innovation Design and Innovation Design Engineering at Imperial College London ; the masters in business innovation at the University of Barcelona ; and work with more than 350 startups in nine countries and consulting with SMEs and large organisations.

## 1 What is service design?

The design of systems and processes to provide a holistic service that is empathetic to the needs of the user and the service agent – the person providing the service - is called *service design*. It combines competences in design, management and process engineering to ensure the service has the capacity to meet the needs of the user.[1]

## 2 What does a service designer do?

Using professional empathy and competences in design, including user interface, user experience and human centred design, the service design integrates the human, emotional creative and intelligent behaviours of the user and the provider with the assets used by the service - the systems, data, equipment, space, lighting, signage, climate, acoustics, displays,

* Corresponding author: nick.coutts@sense-ims.com Copies of the templates used in this paper may be obtained from the author.

[1] For more definitions, see Stickdorn and Schneider [1]

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colour schemes and materials - to maximise value, the tangible and intangible benefits to the user, which can include emotional, economic and social benefits, while minimising effort and stress for both the user and the service agent and waste in the use of resources.

## 3 Why is service design important?

How well a service is designed determines the value to the user and the return on the assets used in the service. To maintain the value of the service, the design needs to be responsive to changes in the ecosystem as well as developments in user behaviours and assets needed to provide the service.

## 4 What is service science?

Service science is the application of scientific methods and principles to analyse, design, manage, optimise and innovate services through the lifecycle of the service to optimise value for all stakeholders.

Computer science, business management, engineering, social sciences, information technology and other disciplines are used to integrate customer experience and the underlying processes and technologies that support service provision.

## 5 How can service design and service science help startups and SMEs?

Service design and service science can be used to:

- Reduce the time to acquire and cost of acquisition of new users of products and services.
- Retain users – by switching costs and reducing churn.
- Reduce the cost of retention and support of existing users.
- Manage business risks.
- Reduce waste.
- Increase the lifetime value of customers and assets.
- Increase competitive differentiation of the vendor’s brand, product and service. In many sectors, the only sustainable (i.e. long term) competitive advantage is the user experience, which is determined by the design of the service, as competing on product functions and attributes becomes more difficult.
- Protect margins.
- Remove barriers to purchase, adoption and use of products and services.

The scope of impact makes service design a critical competence for many organisations.

## 6 Examples of applications of service science

How service design can apply elements of service science is described and explained with practical examples below.

### 6.1 Barriers to purchase, adoption and use

The barriers can be: Technical, Political, Organisational, Financial, Regulatory, Emotional.

All barriers can be lowered or removed by some form of service; for example, a training service, a financial service, a business process redesign service.

To avoid barriers, startups and SMEs will often provide a service free of charge in order to acquire a customer because their billing system has not been designed to record the costs and produce invoices for services. The barriers may change as the user's needs change and resources used in service provision are changed, so the service platform needs to be responsive and adaptable to allow billing to be flexible and configurable to the preferences of different user segments.

There are often strong reasons to involve partners in developing and providing capacity for service fulfilment and overcome barriers. To maintain profitability, services can be transferred to a partner to fulfil as the margin falls through the service lifecycle, if the partner's business model allows service provision at a lower cost. Moving services to partners' channels then frees the vendor's capacity to create higher value services, such as enhancement of other aspects of existing services or introduction of new products and services.

### *6.1.1 Example of barriers to adoption and use*

A network of startups, SMEs and large companies – the stakeholder network – shows the barriers of adoption and use between stakeholders. kumu.io [3] was used to create the chart. Network effects are a very significant factor in differentiation and service design can have a big impact on network effects. [4]

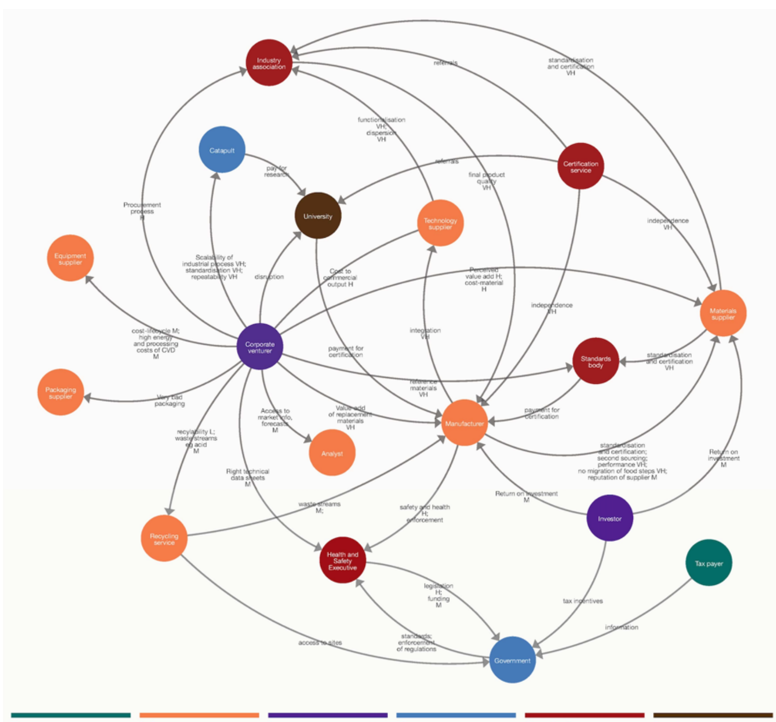


**Fig. 1.** Example of barriers to adoption and use of graphene

The barriers vary by stakeholder type: Taxpayer, Industry, Investor, Government, Standards (regulator), Academic and can reduce or prevent flows of Product, Service, Money, Competences, People, Knowledge other elements.

The height of the barrier varies by stakeholder, from very high to very low; in Figure 2, VH = very high barrier; H = high barrier, M = medium barrier, L = low barrier, VL = very low barrier.

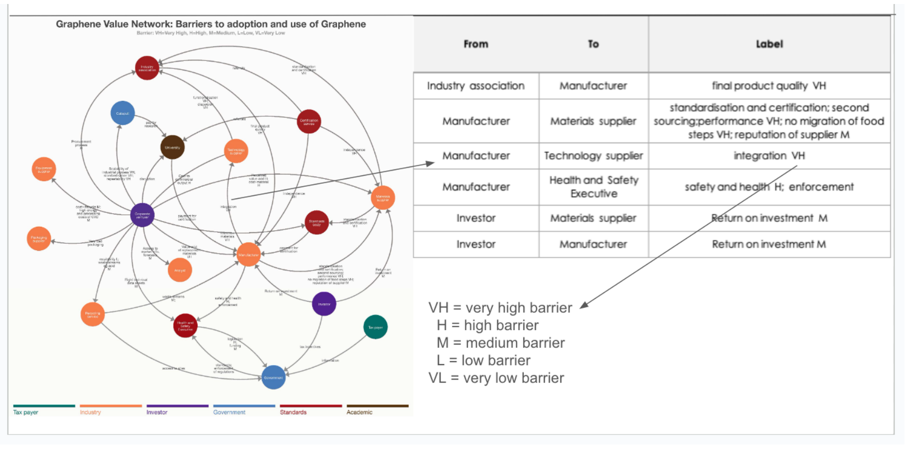


**Fig. 2.** Barriers to adoption and use of graphene by type and by stakeholder

Stakeholders may receive and provide social, economic, and environmental value.

Stakeholders (who are nodes in the network) can be analysed in terms of the value they receive or provide and the propensity to improve the value by removing barriers.

kumu.io provides analysis of the top 10 stakeholders by:

- Degree Centrality - how many neighbours a node has.
- Closeness Centrality - how close a node is to all other nodes.
- Betweenness Centrality - the importance of a node re control over information flow.
- Eigenvector Centrality - the node's importance in the network.
- Indegree - the number of incoming connections of a node.
- Outdegree - the number of outgoing connections of a node.

The flows and barriers can be analysed and validated. If a stakeholder is missing from the network, there is a loss of opportunity to maintain current value, capture new value and mitigate risks.

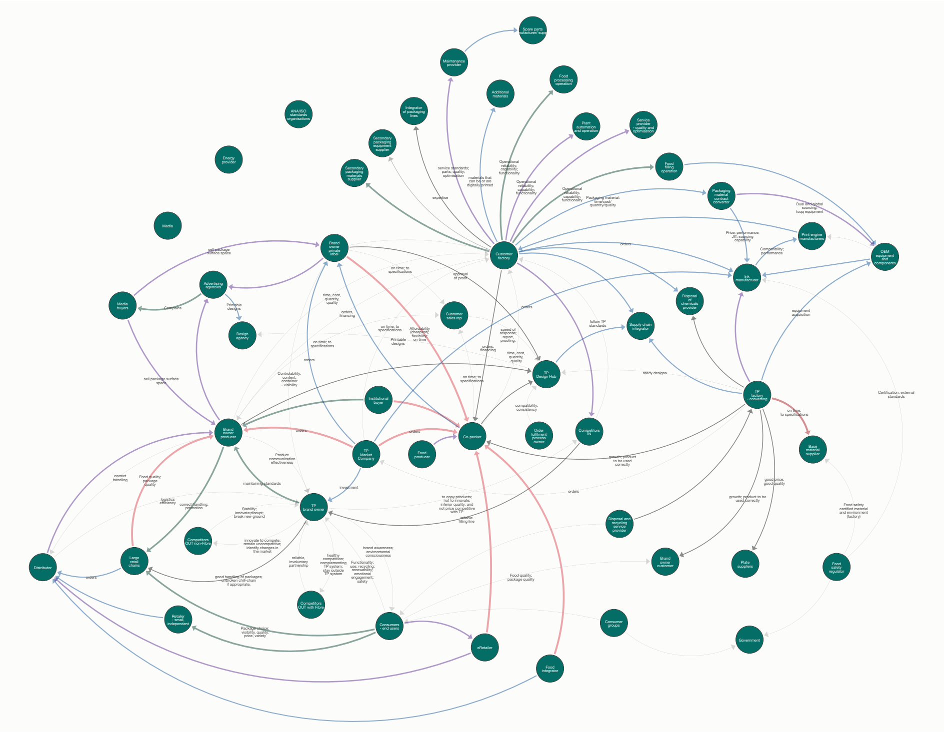

**Fig. 3.** Stakeholder network of SMEs and large companies

This stakeholder map shows how the introduction of digital technology may affect the flow of money between stakeholders. Betweeness Centrality indicates the ten stakeholders are likely to be important for the flow of information about digital technology.

**Table 1.** Betweeness centrality in the stakeholder network of SMEs and large companies (Figure 3)

| Rank | Label | Value |
|---|---|---|
| #1 | Customer factory | 0.226 |
| #2 | Brand owner producer | 0.121 |
| #3 | TP brand owner | 0.104 |
| #4 | Print engine manufacturers | 0.068 |
| #5 | Co-packer | 0.060 |
| #6 | Consumers - end users | 0.050 |
| #7 | Ink manufacturer | 0.030 |
| #8 | Competitors IN | 0.025 |
| #9 | Distributor | 0.024 |
| #10 | Brand owner private label | 0.023 |

0 = low and 1 = high

The role of the service designer is to identify any barriers, by stakeholder and design and test services with the stakeholders who are affected.

To affect and manage the flow of information is a question of service design, to ensure the that stakeholders receive the required information via the right channel at the right time.

The manufacturer should also investigate ways of measuring the effectiveness of the information and the management of the flows.

*The purpose of business is to create and keep a customer."*

Peter Drucker [5]

## 6.2 Customer lifetime value

How do we use service science to do this?

Service designers can reduce costs of acquisition and retention by designing an experience that motivates response and retention. The service experience may need to vary by segment, according to the different preferences of each segment.

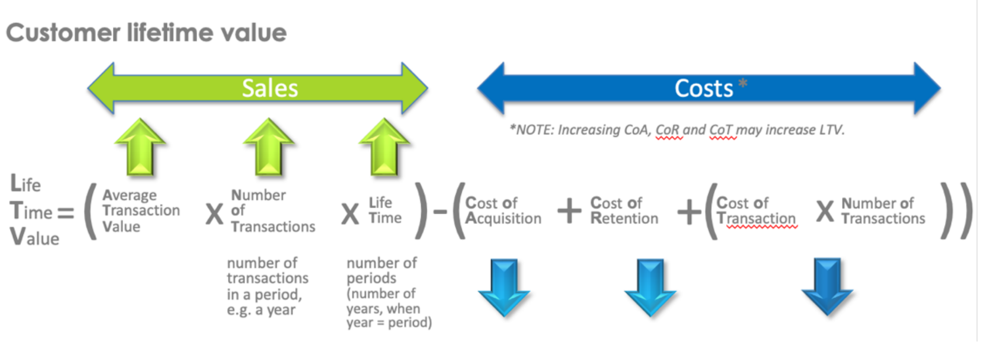


**Fig. 4.** The variables of the equation for customer lifetime value

This equation is fully recursive: it can be aggregated and disaggregated in many ways, from the total market, all customers and all products and services in all geographies, to a single customer for a single product or service.

Any change or design option can be evaluated by its impact on any of the variables that determine customer lifetime value.

**Table 2.** Example data for calculation of customer or partner lifetime value (CLV)

**L**ife **T**ime **V**alue = ( **A**verage **T**ransaction **V**alue X **N**umber of **T**ransactions per month or year X Life Time total number of months or years ) - ( **C**ost of **A**cquisition + **C**ost of **R**etention per year x number of years + ( **C**ost of **T**ransaction X **N**umber of **T**ransactions total number of transactions ))

| Average Transaction Value | Number of Transactions | Life Time | Cost of Acquisition | Cost of Retention | Cost of Transaction |
|---|---|---|---|---|---|
| **Data** | **Data** | **Data** | **Data** | **Data** | **Data** |
| Product sales value | Date of transaction | Date of first purchase | Marketing costs | Marketing costs | Product cost – fully loaded |
| Service sales value | Time of transaction | Date of latest purchase | Sales costs | Sales costs | Service cost – fully loaded |
| Margin, by item | Number of items per Transaction | | Advertising costs~ | Advertising costs | Delivery cost |
| | Product codes – SKU | | Content*costs | Content costs | Fulfilment cost – order processing |
| | Method of payment | | Referral costs | Referral costs | Returns - cost |
| | Currency | | IT systems cost^ | IT systems cost | Packaging cost |
| | Number of chats | | Web site cost | Web site cost | Documentation cost |
| | points used | | Source | Warranty costs | |
| | vouchers used | | Time from contact to purchase | | |
| | Warranty claims | | Channels used | | |
| | | | Personal data profile | | |
| | | | Preferences | | |
| | | | Lead generation cost | | |
| | | | Time from lead to purchase | | |

~ includes PPC, CTR, SEO and all other media costs
* includes cost of content creation, video, podcast, blog, copy, scripts
^ includes CRM costs, contact centre costs, cyber-security costs

The data used to calculate the lifetime value should identify both fixed and variable costs and should cover both tangible and intangible data types.

By applying conditional probability to each data point, it is possible to evaluate the decisions about resource allocation by their potential impact on customer lifetime value.

This approach provides a data driven model or digital twin of the business that can be used to evaluate any action or number of actions for the impact of those actions on revenue or costs and level of uncertainty or risk.

The model can be used to identify all possible actions that could increase revenues and reduce costs. These actions are "real options". The actions listed in Table 2 are examples and do not indicate all possible actions.

The options for actions can be prioritized based on a set of value criteria, eg: RoI, IRR, effort, cost and time to implement, opportunity cost, time to benefit and impact threshold, i.e. time to gain revenue of £1m or reduction of cost, confidence in getting the result, availability of data for the assessment of each option.

One important variable is the rate of adoption and how this affects revenues and costs, especially with respect to the time taken to reach the point of scalability, i.e. the point at which marginal revenues are much greater that marginal costs.

Any dependencies between options can be identified with either the Design Structure Matrix (DSM) using the macro for Excel for partitioning and simulation [6] or a PERT (Program Evaluation and Review Technique) program for Excel when the durations of the activities are known or can be estimated. [7]

**Table 3.** Framework for calculating the customer lifetime value

| **Customer lifetime value and cost of acquisition and retention** | Average transaction value | Number of transactions per period | EXPECTED Lifetime (number of periods) since first invoice | Total expected lifetime revenue | Cost of acquisition | Cost of retention per period | Cost of transaction | Number of transactions per period | EXPECTED Lifetime (number of periods) since first invoice | Total expected lifetime cost | EXPECTED Lifetime value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Period = week, month, year** (look up table) | (Tv | x Tn | x L) | = | - ((( Ca | + (( Cr | + Ct ) | x Tn )) | x L ))) | = | Lv |
| | | | | | | | | | | | |
| **Average transaction value** | £28,370 | 2.0 | 22 | £1,248,271 | £51,760 | £2,798 | £6,680 | 2 | 22 | £407,252 | £841,019 |
| **Confidence** in validity of data (actual or estimate) from confidence table | 3 | 4 | 4 | 3.67 | 2 | 1 | 4 | 4 | 4 | 3.0 | 3.3 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Total number of transactions since customer was acquired. | 15 | | | | | | | | | | |
| Average number of transactions per month since acquisition | 2.0 | | | | | | | | | | |
| Total value of transactions, ie cumulative sales since first purchase | £425,547 | | | | | | | | | | |
| Average value of transaction | £28,370 | | | | | | | | | | |
| Total company sales for the period since acquisition OR the last full year | £5,000,550 | | | | | | | | | | |
| Total company costs for the period since acquisition OR last full year | £3,997,323 | | | | | | | | | | |
| % of total costs allocated to cost of acquisition of new customers in the period excluding fulfilment costs, ie transaction costs. | 37% | | | | | | | | | | |
| % of total costs allocated to cost of retention of existing customers in the period excluding service costs, ie transaction costs | 24% | | | | | | | | | | |
| Sales to this customer in last full year | £175,000 | | | | | | | | | | |
| Share of total company sales for the period OR in last full year for this custome | 3.5% | | | | | | | | | | |
| | | | | | | | | | | | |
| Costs of transactions for all transactions in last full year | £2,438,367 | | | | | | | | | | |
| Total number of transactions in last full year | 365 | | | | | | | | | | |
| Cost per transaction in last full year | £6,680 | | | | | | | | | | |

The framework in Table 2 is an example of the data entry for the stochastic simulation of customer lifetime value using Monte Carlo analysis applied to the equation for customer lifetime value.

The quality of the data used in the simulation will depend on the availability, accuracy, completeness, timeliness and depth of the data and the process by which the data are extracted and maintained. Clarity of definitions for the data is important for accuracy and consistency of data, as costs will vary over lifetime and by volume.

The Profit and Loss account is used for the categories of coast data and the CLV model is adapted to fit the data, to be consistent with the accounting data and the average cost may be highly dependent on the setup costs. Clarity regarding the average or marginal costs is necessary as the marginal costs when the project or business is up and running may be small and can drive scalability, i.e. the point where marginal costs become small, while investment needed to become scalable to bring down marginal cost.

**Table 4.** Results from application of Monte Carlo simulation to the variables of the customer lifetime value

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,991 | 24,256 | 2 | 20 | 970,240 | 40,972 | 1,565 | 6,481 | 2 | 22 | 360,566 | 609,674 |
| 1,992 | 24,501 | 2 | 20 | 980,040 | 50,197 | 2,558 | 6,359 | 2 | 20 | 355,717 | 624,323 |
| 1,993 | 26,095 | 2 | 21 | 1,095,990 | 36,492 | 2,579 | 6,123 | 2 | 21 | 347,817 | 748,173 |
| 1,994 | 24,601 | 2 | 22 | 1,082,444 | 43,505 | 1,756 | 6,349 | 2 | 21 | 347,039 | 735,405 |
| 1,995 | 30,468 | 2 | 24 | 1,462,464 | 64,167 | 3,353 | 7,257 | 2 | 23 | 475,108 | 987,356 |
| 1,996 | 31,324 | 2 | 22 | 1,378,256 | 71,021 | 2,962 | 7,338 | 2 | 24 | 494,333 | 883,923 |
| 1,997 | 27,986 | 2 | 21 | 1,175,412 | 49,654 | 1,773 | 6,617 | 2 | 22 | 379,808 | 795,604 |
| 1,998 | 31,760 | 2 | 23 | 1,460,960 | 67,249 | 2,905 | 7,216 | 2 | 23 | 466,000 | 994,960 |
| 1,999 | 29,342 | 2 | 23 | 1,349,732 | 58,767 | 3,812 | 6,936 | 2 | 24 | 483,183 | 866,549 |
| 2,000 | 28,933 | 2 | 22 | 1,273,052 | 66,298 | 3,360 | 6,895 | 2 | 23 | 460,748 | 812,304 |
| **Simulations** | | | **EXPECTED** | **EXPECTED** | | | | | **EXPECTED** | **EXPECTED** | **EXPECTED** |
| | **Average transaction value** | **Number of transactions per period** | **Lifetime (number of periods) since first invoice** | **Total lifetime revenue** | **Cost of acquisition** | **Cost of retention per period** | **Cost of transaction** | **Number of transactions per period** | **Lifetime (number of periods) since first invoice** | **Total lifetime cost** | **Lifetime value** |
| **Average Values** | 28,273 | 2 | 22 | 1,244,959 | 51,021 | 2,734 | 6,644 | 2 | 22 | 403,652 | 841,307 |
| **Median values** | 27,986 | 2 | 22 | 1,198,824 | 50,231 | 2,686 | 6,650 | 2 | 22 | 375,425 | 829,822 |
| **Mode** | 29,853 | 2 | 21 | 1,369,192 | 42,366 | 3,453 | 6,785 | 2 | 22 | 436,315 | 981,271 |
| **Standard deviation** | 3,130 | - | 1 | 199,765 | 11,395 | 784 | 387 | - | 1 | 58,585 | 152,228 |
| **Standard deviation p** | 3,130 | - | 1 | 199,715 | 11,392 | 784 | 387 | - | 1 | 58,571 | 152,190 |
| **Standard error** | 70 | - | 0 | 4,467 | 255 | 18 | 9 | - | 0 | 1,310 | 3,404 |
| **Minimum value** | 22,719 | 2 | 20 | 909,880 | 31,071 | 1,400 | 6,020 | 2 | 20 | 308,503 | 556,349 |
| **Maximum value** | 34,040 | 2 | 24 | 1,626,720 | 72,423 | 4,194 | 7,347 | 2 | 24 | 514,133 | 1,181,242 |

The average value for each variable is calculated by adding up all of the individual values and dividing this total by the number of observations.

The median value is the "middle" value, i.e. the value for which half of the observations are larger and half are smaller.

The mode is the most common number that appears in the set of data.

The Monte Carlo simulation can be used to evaluate different business models, to develop pricing strategies, prepare scenarios for validation via research and to specify and compare new service concepts.

## 6.3 Example of application of service science: commoditisation

Commoditisation of services – as well as products – occurs when the unit volume, for example one service hour, is increasing faster than revenue per hour, as shown in Figure 5, below. Commoditisation also may occur when revenue per hour falls, relative to the number of hours being fulfilled. The drivers of commoditisation include price competition; the need to increase volume to achieve economies of scale to remain competitive, ease of access to information about competitive offers, reports and reviews from users and users sharing knowledge that reduces the value of the service.

To assess the rate of commoditisation, vectors of unit volume, unit value over time can be derived from invoices and the trends evaluated using the correlation coefficient $r^2$ as an indicator of the probability of the rate of change over time.

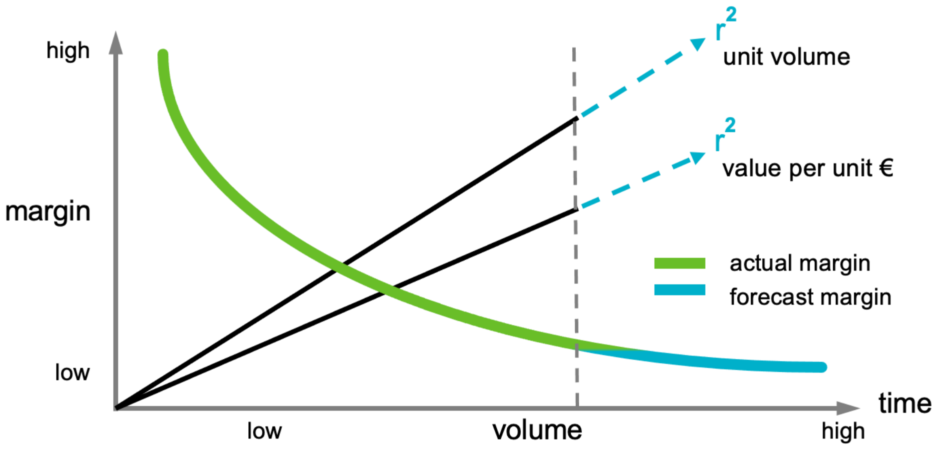


**Fig. 5.** Vectors of the rate of commoditisation

In the example in Figure 6, the rate of change over time shows the forecast of unit volume, value per unit and margin per unit by month.

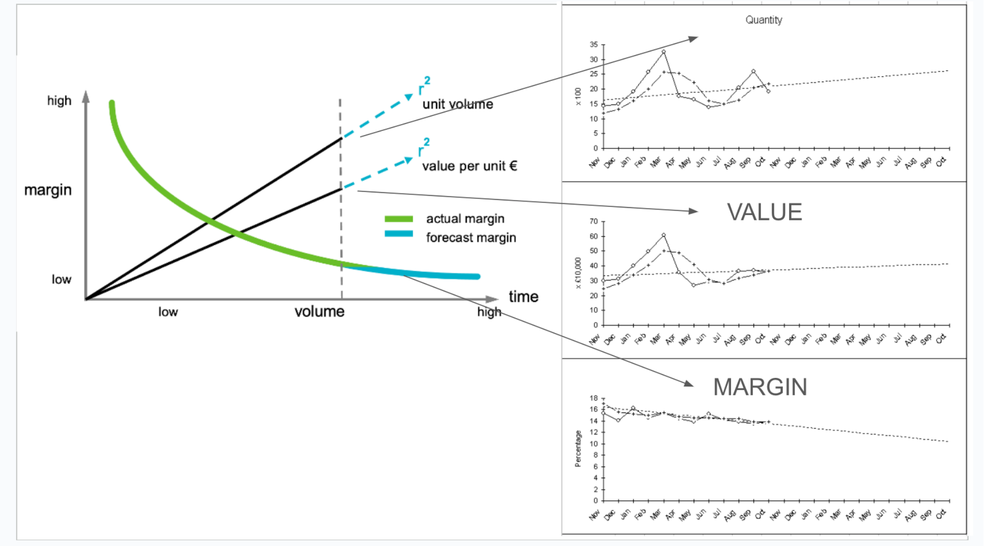


**Fig. 6.** Vectors of trends in unit volume, unit value and margin

While not all services and products will be subject to commoditisation, many business models will have a minimum margin threshold below which the business model may not be sustainable, due to factors such as operating costs and return on capital. One of the results of the globalisation of capital markets is the increased pressure to achieve competitive returns on capital or risk losing access to capital. This competition drives companies to use innovation and automation to maximum unit volume and minimise unit costs.

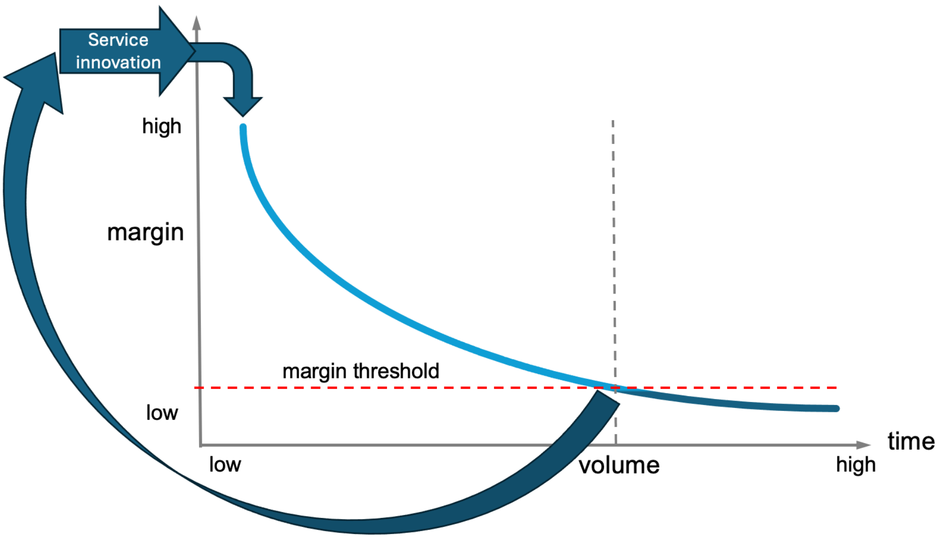


**Fig. 7.** Th e service innovation cycle

One strategy for the management of the service lifecycle is to refresh the service by adding new features that improve the value of the service to the customer and hence protect unit values. Another strategy which requires a constant cycle of service innovation is to replace the service with a new service. A third strategy is to move the service to a lower cost channel, such as a business partner with a lower cost of operation, who can make a profit from reselling the service. These strategies allow the service capacity, which is usually finite in the short term, to be deployed on higher value services.

## 6.4 Routes to market, the customer journey and the buying cycle

Customer preference varies by stage in the buying cycle, by channel and by touchpoint. Each touchpoint has a different cost and impact on the user: a customer or other stakeholder involved in the decision.

The route to market is designed to meet the preferences of the user and user preferences can change continually. When the customer's switching cost is low, e.g. it is easy and quick to find a competitive alternative, it is necessary to make it easy for the user to transact, how, where and when they want, in order to acquire (switch in) and retain (reduce switch out or churn) the customer.

In the example in Figure 8, the customer has 1024 choices: 4 channels (web, call centre, retailer, and mobile channel) by 5 stages in the buying cycle (Aware, Interest, Decide, Act and receive Support). Each touchpoint has a different cost and impact on the user: a customer or other stakeholder, such as a user or specifier, involved in the decision.

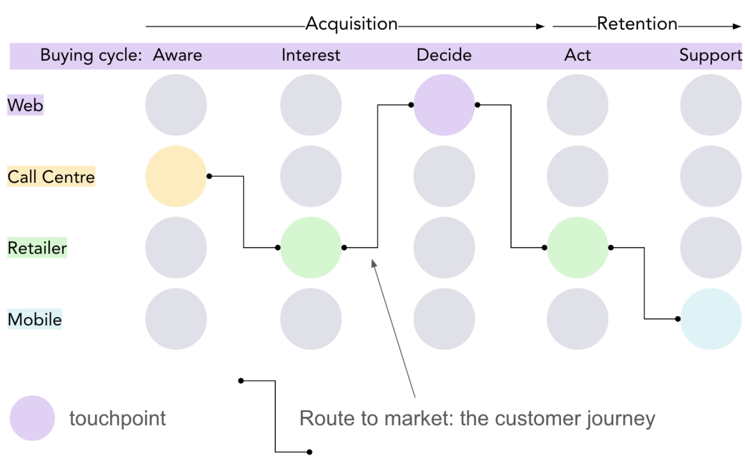


**Fig. 8.** Ro ute to market: the customer journey

As the customer has 1024 choices, the vendor has this number of opportunities for the customer journey to fail, hence the need to design the journey to eliminate or minimise the points of failure, so planning and testing are important.

**Table 5.** Buying cycle – example

| Subscriber | Marketing Qualified Lead | Sales Qualified Lead | Opportunity | | Customer | Evangelist | Other |
|---|---|---|---|---|---|---|---|
| Acquisition | | | | | | Retention | |
| Awareness | Interest | Active Selling 1 | Active Selling 2 | Active Selling 3 | Contract | Installation | Service |
| Online | Request for information | Request for proposal | Request for contract | PO issued | Contract signed | Start | Emergency call out |
| Paid search | Request for a meeting | Request for quote | with finance | Contract issued | Deposit paid | Finish | First service |
| Adwords | Request for a demo | Request for layout | without finance | Finance agreement issued | Installation date agreed | Certificate issued | Field upgrade |
| Email | Find a reseller | Request for finance terms | | Installation date issued | | Changes to contract | Remote upgrade |
| Meeting | | Request for site visit | | | | Quality check | Remote service |
| Events | | Reference site visit | | | | | Service agreement renewal reminder sent |
| Content | | | | | | Satisfaction check | Service agreement renewal signed |
| Social networks | | | | | | | |
| Telemarketing | | | | | | | |
| Other | | | | | | | |
| | Time from awareness to interest: | Time from interest to end of Active Selling stage 1: | Time from end of Active Selling stage 1 to 2: | Time from end of Active Selling stage 2 to 3: | Time from end of Active Selling stage 3 to end of Contract stage: | Time from end of Contract stage 3 to end of Installation stage: | Date of each event: |
| | | Number of products and services: | Number of products and services: | Number of products and services: | Number of products and services: | Variation in products and services: | |
| | | Value of products and services by SKU: | Value of products and services by SKU: | Value of products and services by SKU: | Value of products and services by SKU: | | |

Table 5 shows eight stages in this buying cycle: Awareness, Interest, Active selling 1 - 3, Contract, Installation and Service, with the resources and activities by stage. The challenge is to ensure the most efficient and effective allocation of resources while customer preferences and costs are continually changing. One method to address this challenge is the service blueprint.

## 6.5 The service blueprint of the customer journey and the buying cycle

Service blueprinting is a way of creating and automating the customer journey to ensure that the customer has the experience they require. A Failure Modes Effects and Analysis (FMEA) process can be applied to the service blueprint to identify the points of failure so the design may be adapted to eliminate the failure point or plan the recovery that will be needed if the failure point cannot be removed.

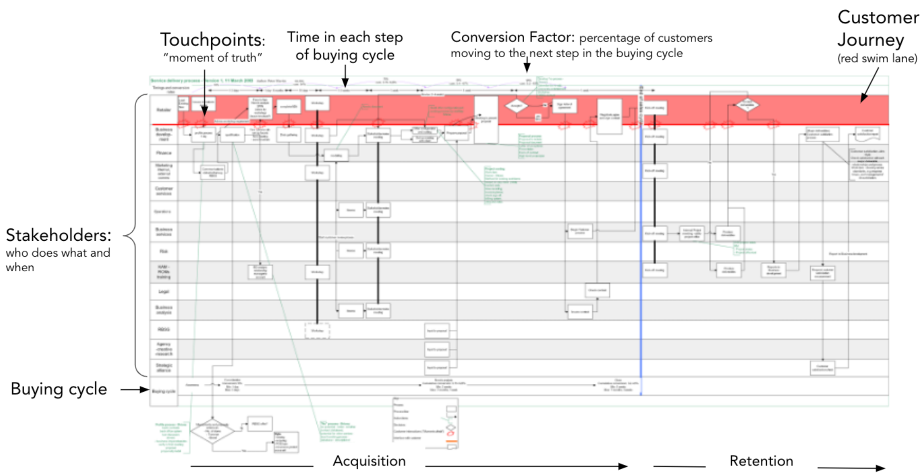


**Fig. 9.** Service blueprint – example 1: retail financial services

The buying cycle has multiple steps that may vary by market, customer, application and other factors. Figure 10 shows the buying cycle for an SME developing an innovative service-led engineering technology, with six steps: Demand generation, Proposal, Contract, Enable, Operate and Evaluate.

| | Cost of acquisition | | | Cost of retention | | |
|---|---|---|---|---|---|---|
| Buying cycle | Demand generation<br>Awareness<br>Interest<br>Opportunity qualification | Proposal<br>Requirements | Contract<br>Decision | Enable<br>Supply<br>Training<br>Testing | Operate<br>Plan<br>Operate<br>Measure<br>Report<br>Maintain | Evaluate<br>Analyse<br>Improve |
| Customer | Capture site visitors<br>Downloads<br>LinkedIn page | | | | | |
| PlasmaTrack | Awareness<br>Marcomms plan<br>Julian: why, how what<br>Commercial agreement with plan<br>Approval process inc presence at meetings | Current state<br>Needs analysis - reporting<br>Configurator<br>RoI model<br>Draft proposals<br>Offers: like for like: units<br>plasma as a service<br>seasonal<br>continual<br>Technical configuration<br>Use plan<br>Gain share?<br>Benefits by stakeholder<br>Spare parts<br>Service level | Draft contract terms<br>Units<br>Services<br><br>Insurance, risk, accreditation, QMS, ISO, Build to order<br>3 months lead<br>Ship module<br>Install/remove<br>Commission<br>Training – approval<br>Gain share<br>Spare parts | Units:<br>Build to order<br>3 months lead<br>Ship module<br>Install/remove<br>Commission<br>Training - approval | Data collection<br>Self diagnostic<br>Predict service point<br>Control centre – partner?<br>Spare parts<br>On site partner | Continual improvement<br>Product<br>Service<br>Roadmap evolution<br>Backward compatibility |
| Porterbrook | Contact existing network<br>2 presentations send<br>Julian to send benefits presentation<br>Julian to send commercial agreement<br>Prepare Why, how and what for 60mph<br>UK on wagon or mpv | | | | | |
| Third party | | | | | | |
| Time – best/worst | | | | | | |

**Fig. 10**. Service blueprint – example 2: engineering innovation

The partner acquisition and management blueprint below in Figure 10.1 has six stages: partner search, interest, qualification, contract, enable, retire. The outcomes for each stage in the process are given.

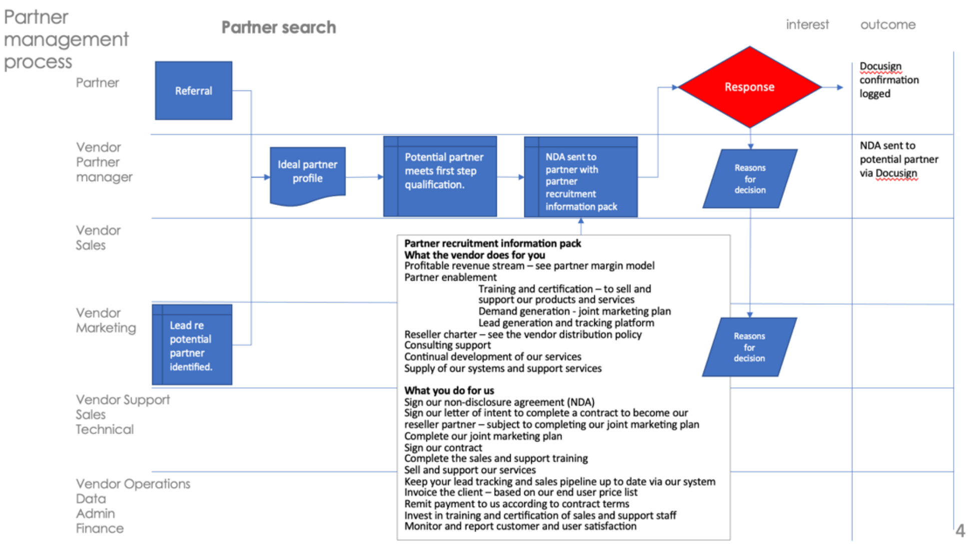


**Fig. 10.1.** Service blueprint – example 3: Partner acquisition and management service blueprint step 1 – Partner search

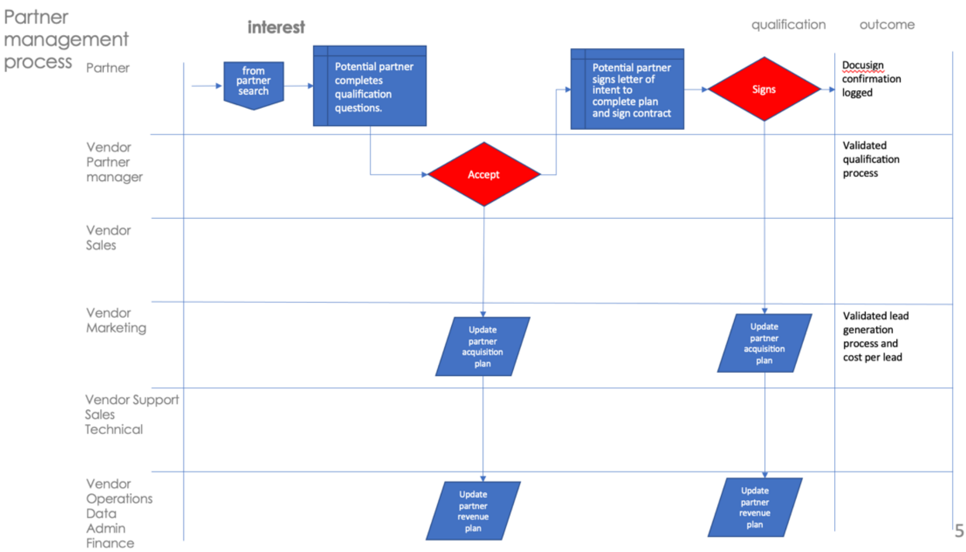


**Fig. 10. 2.** Service blueprint – example 3: Partner acquisition and management service blueprint step 2 - Interest

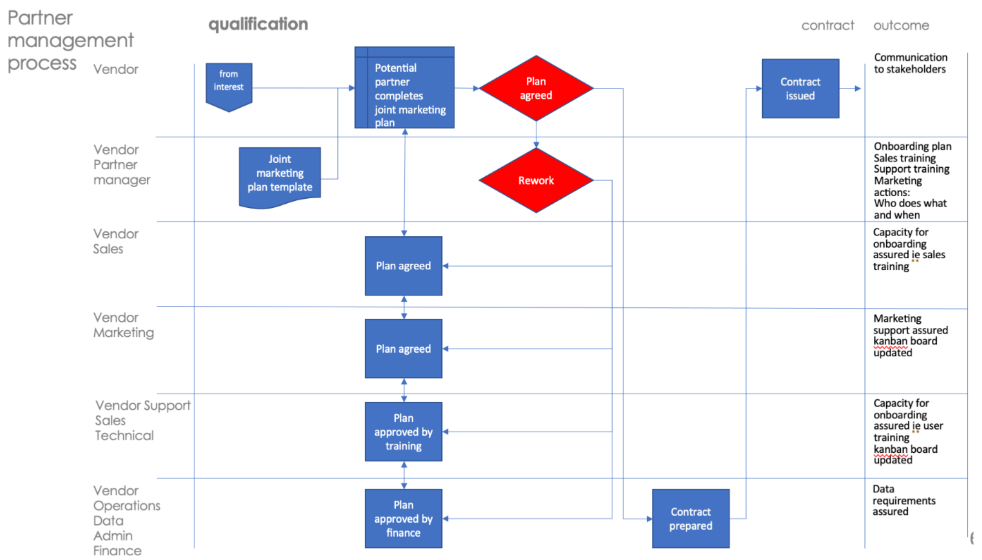


**Fig. 10.3.** Service blueprint – example 3: Partner acquisition and management service blueprint step 3 - qualification

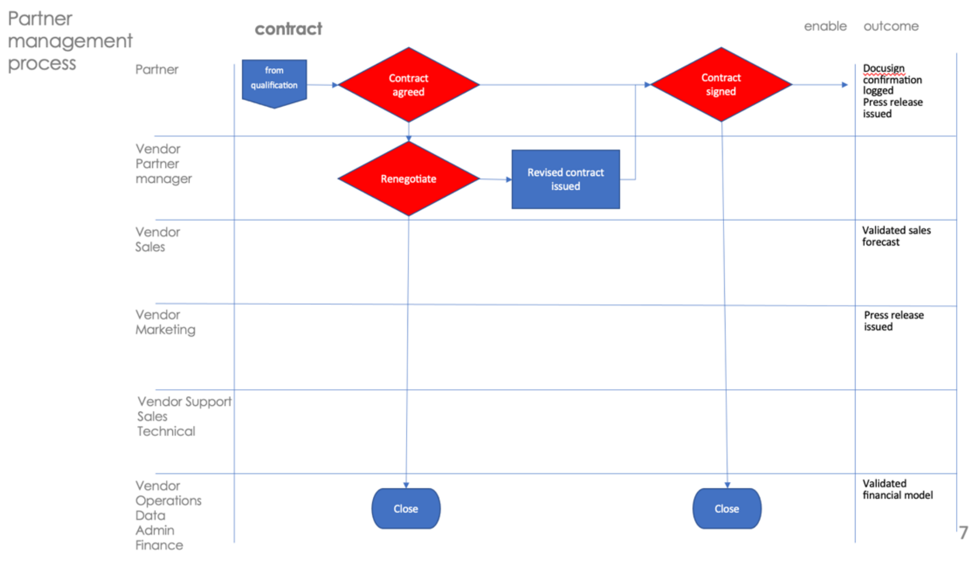


**Fig. 10.4.** Service blueprint – example 3: Partner acquisition and management service blueprint step 4 - Contract

https://doi.org/10.1051/itmconf/20246601002

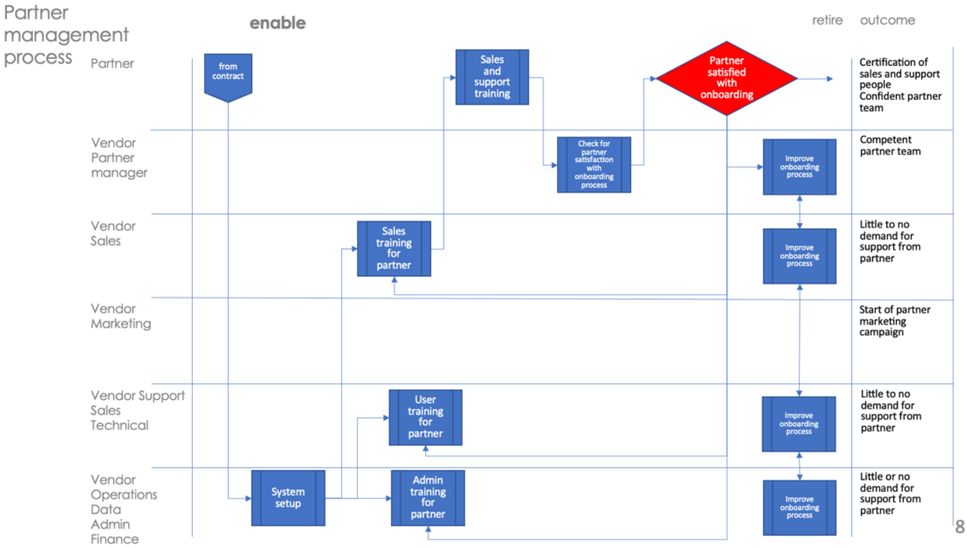


**Fig. 10.5.** Service blueprint – example 3: Partner acquisition and management service blueprint step 5 – Enable

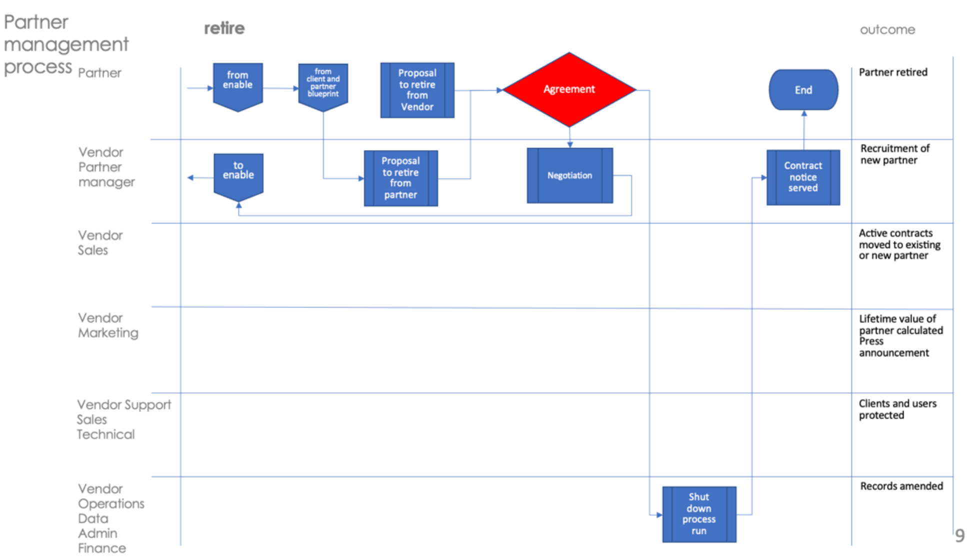


**Fig. 10.6.** Service blueprint – example 3: Partner acquisition and management service blueprint step 6 – Retire

Artificial intelligence (AI) is being applied to the creation of service blueprints. It is now feasible to upload or copy and paste an interview transcript to an AI service such as Journey Mapper GPT [8] – Table 6.

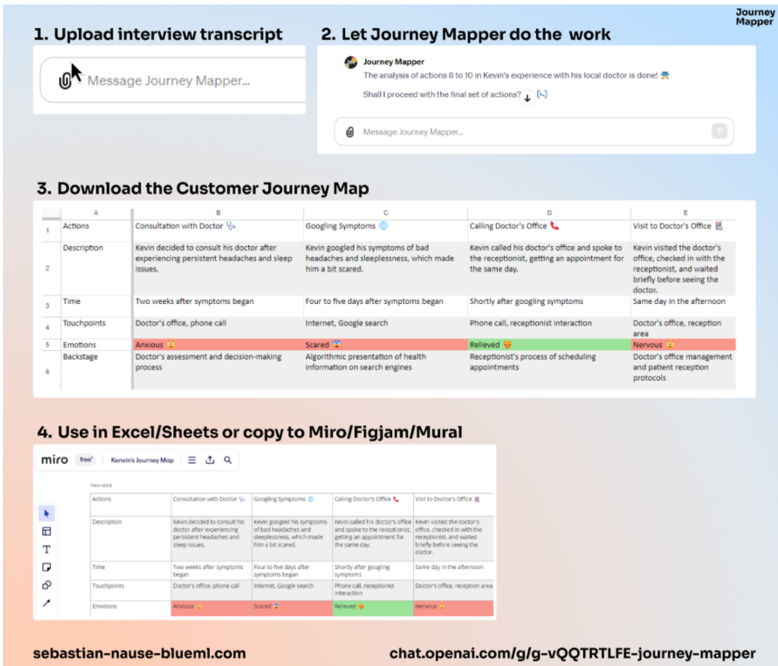


**Table 6.** Journey Mapper screen

The map of the customer journey can be used in Microsoft Excel or Google Sheets or a copy made and pasted to Miro, Mural or other whiteboard.

## 6.6 Routes to Market – optimisation of allocation of resources by route to market

As customer preferences and costs can change continually, the impact of allocating the resources needed for each route to market can be evaluated for planning and for tracking throughout implementation.

The Routes to Market Optimisation Tool (Figure 11) can be used to allocate the resources according to three objectives:

Maximise revenue, i.e. customer acquisition
Maximise profit, or
Minimise the expense to revenue ratio (e/r), i.e. make the most efficient use of cash

In this model, there are six routes to market and the resources are:

Outbound calls
Inbound calls
Mailings
Advertising -
Events – in person meetings and online

Internet – social media
PR – campaigns
Sales force – number of sales people
Management expenses
Other expenses

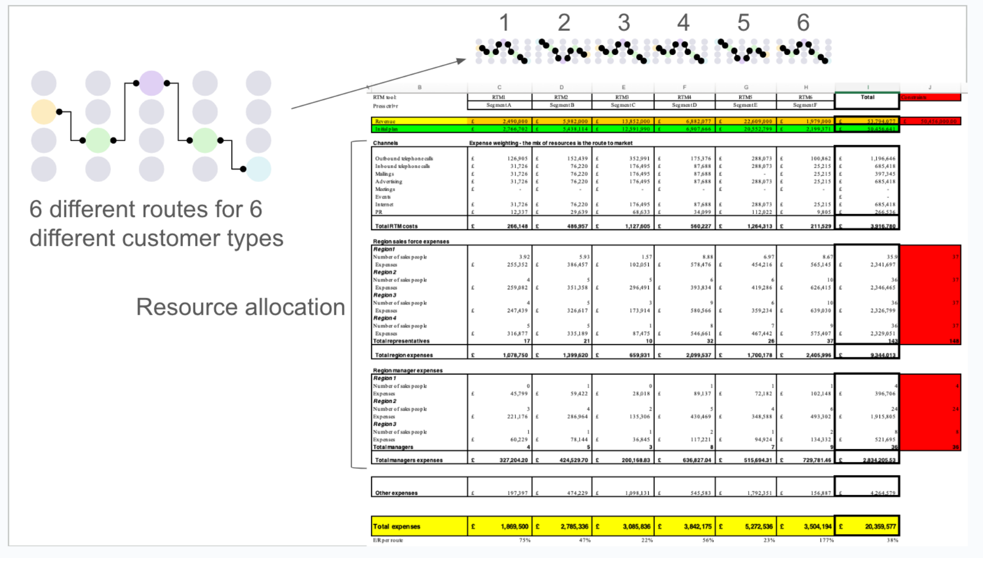


**Fig. 11.** The Route to Market Optimisation Tool

Using macros and the Solver in Microsoft Excel Tools, the allocation of resources can then be optimised, with examples results shown in Tables 7 and 8 below:

**Table 7.** Optimisation Tool result of optimising resource allocation for Revenue Maximisation

**OBJECTIVE:**
**Revenue Maximization**

| Results | Optimal plan | Initial plan | Evolution |
|---|---|---|---|
| Net revenue | £ 53,343,291.84 | £ 50,456,641.33 | 6% |
| Expenses | £ 20,324,708.97 | £ 19,958,363.91 | 2% |
| E/R ratio | 38.1% | 39.6% | -4% |
| Profit contribution | £ 33,018,582.86 | £ 30,498,277.42 | 8% |
| Margin | 61.9% | 60.4% | 2% |

Selecting the objective to maximise revenues results in an increase in Net Revenue of 6% compared to the original plan.

**Table 8.** Optimisation Tool result of optimising resource allocation for Profit Maximisation

**OBJECTIVE:**
**Profit Maximization**

| Results | Optimal plan | Initial plan | Evolution |
|---|---|---|---|
| Net revenue | £ 53,794,077.09 | £ 50,456,641.33 | 7% |
| Expenses | £ 20,359,576.73 | £ 19,958,363.91 | 2% |
| E/R ratio | 37.8% | 39.6% | -4% |
| Profit contribution | £ 33,434,500.36 | £ 30,498,277.42 | 10% |
| Margin | 62.2% | 60.4% | 3% |

Selecting the objective to maximise profit, results in an increase of the Profit Contribution of 10% above the original plan; Net revenue also increases by 7%, 1% more than in the scenario for revenue maximisation and Margin increases by 3%; again 1% more than when optimising for Revenue Maximisation.

## 7 Developing further applications of service science

### 7.1 Automation of processes that support services

The Route to Market model can be continually updated automatically, using process automation tools (e.g. robotic process automation (RPA) tools) with data from internal and external sources and resources adjusted dynamically and objectives changes to maintain the optimal results and explore alternative scenarios.

### 7.2 Towards the digital business model for startups and SMEs

Figure 12 bel ow shows the schema for the digital model of the company that is being developed; this is an evolution of the Routes to Market model. It will show how a change in one component may impact any other component.

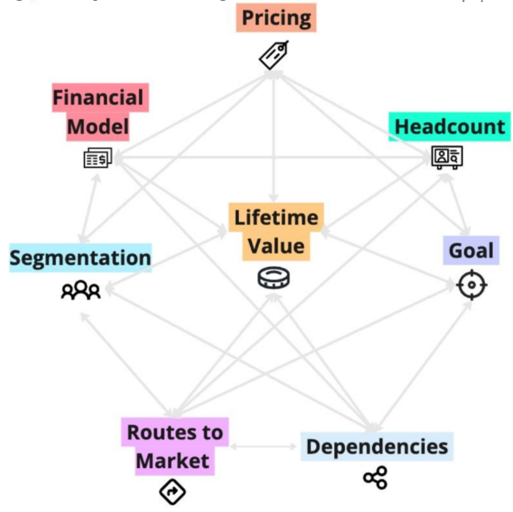


**Fig. 12.** Digital model of the company

## 8 Concluding remarks

Tools, such as the examples described above, populated with data and validated, can help startups and SMEs test alternatives and make decisions based on evidence and avoid assertion and assumption. The tools are frameworks for the knowledge of service designers and service scientists that can be adapted, updated and shared as new data is captured.

For startups and SMEs, ensuring product/market fit is critical for survival. For the fit to be efficient and effective, the barriers to purchase, adoption and use must be removed and competences in service design and service science

42% of startups fail to survive more than twelve months. [9] How well the startups and SMEs design the services that remove the barriers to purchase, adoption and use will determine their survival and the value of the innovations that the companies can create.

Early-stage companies can create employment and improve employability, but only if they survive.

Service design competence is a critical competence that when linked to service science can increase the survival rate of startups and the growth rate of SMEs and hence increase employment and employability and create value for the participants and society as a whole.

Service design and service science require significant competence to deploy effectively. Using AI to make it easy for startups and SMEs to use the tools of service science and service design is the next challenge.

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