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## Original Article

# Hearing the hearing-impaired customer: Applying a job-based approach to customer insight discovery in product innovation in the implantable hearing solutions market

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**ABSTRACT** The continuous development of innovative product solutions that profitably address evolving customer needs is a critical success factor in the medical device industry. Market success is dependent on the innovators' understanding of the unmet needs of a number of key customer groups like physicians, payors and patients. The first task in innovation is therefore to develop a detailed understanding of the unmet needs of customers and then focus internal development efforts on a prioritised list of the most important needs identified. Not an easy task, because customers generally think in terms of existing solutions. A customer's frame of reference of what solutions are possible is generally shaped by the solutions that already exist. Conventional market research methods often do not take this innovation-related challenge adequately into account. The job-based approach presented here focuses on tasks or jobs that customers want to get done and on the results they expect. Those jobs and results are identified and quantified through qualitative and quantitative market research. The findings of this research can then be leveraged throughout the total organisation to shape its innovation strategy. Cochlear, a global provider of implantable hearing solutions, applied this method to uncover customer insights from key stakeholders such as surgeons, audiologists and patients (users). The results led to Senior Management, Research and Development, Marketing and the Sales Organisation all having a fact-based and aligned understanding of what really matters to different customer groups.

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**The research was the basis for an integrated innovation strategy that led to a series of short-, mid- and long-term projects.**

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**INTRODUCTION**

The medical device industry is facing growing market pressures resulting from health-care reforms, evolving competitive dynamics, greater price pressure and increasing product development costs. For a medical device company to succeed in such an environment, it requires effective innovation programmes to develop products that successfully respond to those increasing market pressures. Market success depends on identifying and understanding the unmet needs of customers, recognising opportunities, and designing and developing innovative, appropriate solutions, all ahead of the market curve.

Cochlear is a medical device company that provides implantable hearing solutions to address the needs of people with moderate to profound hearing loss. Cochlear pioneered the hearing implant category nearly 30 years ago with the introduction of the multichannel cochlear implant.<sup>1</sup> Today, Cochlear provides a number of implantable hearing solutions that address a range of different types of hearing loss. These types of solutions include: the Nucleus range of cochlear implants, the Hybrid range of electroacoustic implants and the Baha range of bone conduction hearing devices. All systems consist of an implantable component and an externally worn sound processor device.

Like all medical device companies Cochlear faces an ever changing market environment. To secure its strong market position in a dynamic environment, Cochlear was searching for an appropriate market research methodology to help shape its innovation strategy and guide its

EUR 67 million Research and Development (R&D) budget.<sup>2</sup>

As with other medical devices, the implantable hearing solutions market involves a multitude of stakeholders that include medical professionals (such as, in this case, audiologists, ENT physicians, ENT surgeons and therapists) to educators, funding providers and, of course, the end users and their families. This diverse range of stakeholders makes it necessary to adopt a holistic, customer-centric approach to informing innovation programmes to ensure effective stakeholder management.

**IDENTIFYING UNMET NEEDS FOR INNOVATION IS A CHALLENGE**

The practice of seeking customer input to a product innovation programme is not new. However, most methods adopted by companies to elicit customer-informed innovations are inherently flawed, as customers are largely unaware of the most cutting edge technology and they lack the ability to think in a truly unconstrained way about the problems they face. The predominant frame of reference customers use when asked to think of new solutions is the solutions that already exist. Without a detailed knowledge of what is conceptually possible, this frame of reference is very limiting. In many cases it is actually destructive when it comes to guiding new product development. Indeed solution-oriented market research has major limitations in helping establish new product development efforts.<sup>3</sup>

It is unlikely that patients or payors would have suggested the idea of a pacemaker, a coronary stent or a cochlear implant in a world where these devices did not yet exist. They have little medical and technological knowledge, which hinders their ability to come up with groundbreaking ideas or technological improvements.

This creates a dilemma – how can organisations gain the customer insights they need to inform their new product development programmes? When directly asked how to improve an existing solution, customers can only articulate incremental improvements to existing solutions, which may or may not succeed in the marketplace and are certainly unlikely to provide a basis for sustainable competitive advantage.

Many companies focus on identifying the generic needs expressed by customers, such as ‘I want to hear better’. However, a consequence of using generic needs statements is that they can be interpreted in many different ways. As long as this ambiguity exists, the organisation must base costly innovation efforts on their own (imperfect) understanding of the user’s needs. The result could be a solution that only partially meets customer needs or, worse, one that fails altogether – a truly hit and miss approach.

At the start of the project, Cochlear already had an impressive pipeline of innovation projects. Many of those were driven by the extensive experience of Cochlear’s key staff in science, clinical application, R&D and Marketing. Despite this historical success, Cochlear acknowledged that, in order to meet future goals, the organisation required a more comprehensive understanding of customer needs that would effectively guide the innovation programme, and would be used to prioritise projects and align the organisation.

## **SOLUTION-NEUTRAL APPROACH WITH FOCUS ON THE JOB-TO-BE-DONE**

Christensen and Raynor<sup>3</sup> make the point that, if market research concentrates on product attributes, like features and product concepts, or on customer attributes, like demographic and sociographic criteria, it is not possible to accurately predict customers’ acceptance and willingness to buy.

They suggest instead identifying the jobs customers want to accomplish. This job-to-be-done approach is based on a marketing idea from Levitt,<sup>4</sup> who outlined in 1960 why railroad companies were not growing: (The railroad companies) ‘let others take customers away because they assumed themselves to be in the railroad business rather than in the transportation business’. Focusing on the solution (the railroad) instead of the job (to transport objects or people) narrows the perspective for innovation and growth.

The concept of focusing on jobs instead of attributes can also be found in perceptual psychology. A pioneer of this field was J. J. Gibson. Gibson<sup>5</sup> introduced the term ‘affordance’ to describe how users perceive objects in terms of all possible actions and not in terms of the primary features of the object. This indicates that customers evaluate products based on the actions they can potentially perform with them and on the results they can expect to get from them rather than on the bare product features. The theory of affordance has influenced design as well as product development methods in the past 20 years.<sup>6</sup>

Some companies seem to apply the job-based approach implicitly. Apple, for example, introduced the iPad in January 2010, outlining that ‘it has to do some key tasks better than a phone or a laptop’.<sup>7</sup> A few years ago Procter & Gamble introduced the Swiffer system, a combination of throw-away towels and an application device. Procter & Gamble’s

focus was on the job of cleaning a floor instead of looking at the attributes of liquid household cleaner products.<sup>8</sup> Many successful innovations from Sony between 1950 and 1982 were inspired by the job-to-be-done idea; for example, 'to listen to music while not being at home' led to Sony's development of the Walkman.<sup>3</sup>

In practice, the job concept typically consists of one main job, with several sub-jobs branching off it, rather like a tree.<sup>9</sup> In the case of the Cochlear project, the main job was 'to lead a normal life'. Sub-jobs included 'to watch TV', 'to participate in meetings' or 'to go to school'. Branching off these sub-jobs was then a further level of sub-jobs such as, for example 'to follow the lesson'.

When trying to get these jobs done, customers use products or services, commonly referred to as solutions. As one might expect, some solutions deliver a better outcome for customers than others. Linked to this is the fact that customers form expectations about the results they want to achieve, based on their own experience with a product or exchanging experiences with others<sup>10</sup> and it is important to explore and understand what those underlying expectations are. In Cochlear's case, for example, for the sub-job 'to participate in meetings', one of the expectations was 'not getting tired while in a meeting'.

The statements describing jobs, sub-jobs and expectations are recorded using a precise syntax, including a direction of improvement, a metric, like time or amount, and a description of the expected result.<sup>11</sup> In the case of Cochlear, an example would be 'minimise the time it takes to answer a phone call'. The challenge is to phrase the statements as closely as possible to the language naturally used by customers.

The job-based approach is universally applicable to any industry because the customer statements contain no reference

to a solution. For example, in a research project in private banking, customers revealed the important job 'to maintain current standard of living after retirement'. One of the results they expect is 'to have no capital loss as a result of stock market volatility'.<sup>12</sup> Importantly, the wording of these statements is not restrictive – in other words, the customer's articulated need is for a lifestyle outcome, not for a product or service solution.

This approach is one that can be applied to a wide range of research methods, so the next question to be answered is: how does the job-based approach dovetail with other insight discovery methods typically applied in innovation?

In qualitative research there are a large number of different methods for uncovering customer needs: single interviews, focus groups, lead user analysis, observational approaches, to name a few. Each method has advantages and disadvantages. Focus groups, for example, carry the risk of being dominated by opinion leaders. Lead user analyses might lead to overly complex products that overshoot the needs of mainstream customers.<sup>13</sup> Regardless of the method, the concept described here provides a non-restrictive framework, applicable to any method, since it concentrates on the 'job to be done' rather than on which research method to choose.

Quantitative validation methods play an important role later in the innovation process, specifically at the development stage, when it becomes necessary to choose between alternative solutions and decide which solution(s) will benefit from the investment of valuable resources. Typically, the methods used are based on solutions or product attributes. For example, conjoint analysis is a methodology well suited to the measurement of judgements, such as consumer preferences. A respondent is

presented with a set of alternative products or product attributes. The respondent evaluates the alternatives and indicates a preference, supplemented by an explanation as to why they perceive this to be the best choice. However, for the reasons outlined above, respondents frequently find it difficult to assess and evaluate product attributes when the product does not yet exist. For such research, the advantage of the job-based approach is that it allows the needs themselves to be validated, even at an early stage of the innovation process, before it is yet possible to propose solutions.

This makes the job-based approach a particularly powerful method for patient insight discovery because it focuses on the jobs that users and other stakeholders wish to do and on the results they expect, instead of concentrating on the attributes of a potential solution. The concept assumes that users are more qualified to express and validate jobs and results they expect than they are to propose the attributes of a solution that does not yet exist. It is therefore extremely useful for uncovering and prioritising unmet needs. As a result, the R&D and Marketing teams gain insight into user requirements, quantified and in a commonly understood language, at an early stage of the innovation process.

## **HOW DID COCHLEAR APPLY THE JOB-BASED APPROACH?**

As part of Cochlear's product development programme, senior management identified the value a job-based approach could bring to understanding customers' needs. As a result, they initiated a global customer insight discovery project, with the goal of uncovering, understanding and explicitly articulating the unmet needs of key

stakeholders, in order that they could be used to inform the innovation process.

The project ran in three phases:

1. Scoping and design
2. Qualitative insight discovery
3. Quantitative validation and analysis

### **Scoping and design**

The project gained input from more than 700 respondents from over 10 countries across Asia, the United States and Europe. Sub-analyses for competitive users, special health conditions, demographic and sociographic criteria were also defined.

In addition to general scoping questions such as which stakeholders to include, one of the critical elements of this early phase was getting all the internal stakeholders aligned on the methodology and how the information was going to be used. This involvement of key functions from Marketing, R&D and Senior Management from the beginning of the initiative facilitated a high acceptance of the methodology and the importance and adoption of the insights throughout the organisation.

### **Qualitative insight discovery**

For the qualitative insight discovery phase, Cochlear adopted an approach that made the most of several methodologies and helped to compensate for the shortfalls of using only one. They performed single interviews and facilitated focus group discussions in different regions, combined with a laddering technique (a structured interview technique that helps to drill down to uncover personal values and to understand what things are important in an individual's life). Interviews were conducted by a trained external moderator who guided the participants away from any solution-oriented statements and focused them on providing two types of statements: the jobs participants want to

do and the expected results. The interviewing technique also ensured that all participants in the focus group had equal voice.

In this qualitative phase of the project, the goal was to identify as many needs as possible and to cover all steps of the main job associated with the need as completely as possible. Approximately 30 respondents from the target group were interviewed. This number was selected according to the work of Griffin and Hauser, who defined it as the optimal number to provide maximum insight before the laws of diminishing return prevail.<sup>14</sup>

The outcome of the insight discovery phase was a set of 112 jobs and expected result statements that were all phrased in a consistent way.

### Quantitative validation and analysis

The qualitative phase revealed a complete set of needs in the form of jobs and expected results for each of the stakeholders. This information alone, however, did not provide the necessary statistical power upon which Cochlear was willing to base resource allocation decisions. This statistical power came from the quantitative phase, which involved deploying a comprehensive, structured questionnaire to a pre-determined representative sample. Cochlear used an approach suggested by Ulwick.<sup>10</sup> Respondents were asked to rate the statements, first in terms of their importance and, second, in terms of how satisfied the respondent was with existing solutions. Each was ranked on a 5-point scale, as follows. Importance scale: (1) not at all important; (2) somewhat important; (3) important; (4) very important; (5) extremely important. Satisfaction scale: (1) not at all satisfied; (2) somewhat satisfied; (3) satisfied; (4) very satisfied; (5) extremely satisfied.

The importance questions were phrased in a general way, without reference to the hearing solution used. The satisfaction questions were related to the actual hearing solution used. The following example illustrates the question pair:

- How important is it to you to minimise the amount of missed words while watching TV?
- With your current solution, how satisfied are you with your ability to minimise the amount of missed words while watching TV?

An importance and a satisfaction score on a 1–10 ratio scale was then calculated for each statement. The top2box process was used, that is by multiplying by 10 the ratio of the number of respondents who selected one of the top two response categories ('very ...' or 'extremely ...') versus the total number of respondents, as shown in equation 1 below.

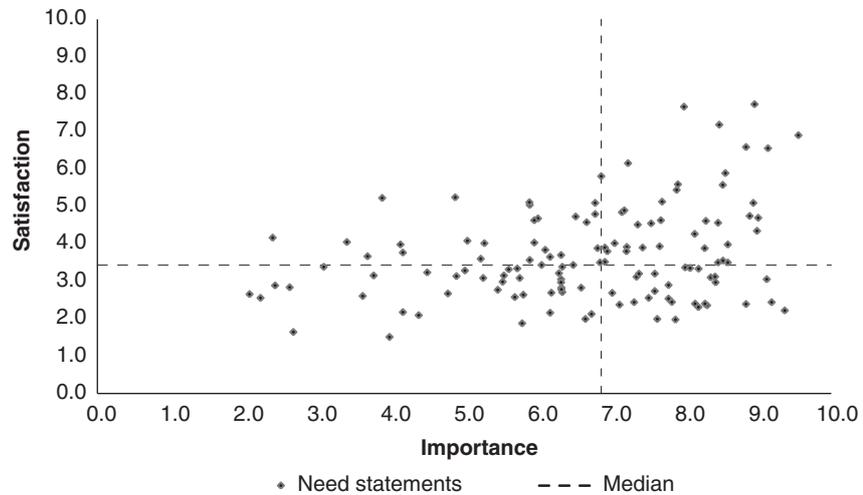
$$\text{Score} = 10 \times \frac{n_{\text{top box}}}{n_{\text{total}}} \quad (1)$$

$n_{\text{top box}}$ : number of respondents selecting one of the top two response categories;

$n_{\text{total}}$ : total number of responders.

The score was calculated independently for importance and satisfaction of each statement. Hence, each statement was attributed an importance and a satisfaction score, which allowed an intuitive graphical representation in a two-dimensional matrix (Figure 1).

A statement with a high importance and a low satisfaction rating represents an under-served need, hence an opportunity for value-adding innovation. Conversely, a statement with a low importance and a high satisfaction rating represents a need that is currently over-served and, hence, an opportunity to reduce value and save costs.



**Figure 1:** Matrix of all user statements rated by importance and satisfaction (illustrative).

The illustrative matrix above reveals that, compared to more mature industries, the market for implantable hearing solutions shows a substantial number of under-served needs. The key question then became how to prioritise the opportunities.

An opportunity score was assigned to each statement to help Cochlear to prioritise, focusing its efforts and investment on the jobs and expected results that offered the highest potential value. The opportunity score was calculated according to an empirically derived formula, which weights importance more highly than satisfaction.<sup>10</sup> The higher the resulting score, the larger the opportunity to create value-adding solutions (see equation 2 below).

$$\text{opp} = \text{imp} + \max(\text{imp} - \text{sat}, 0) \quad (2)$$

*Terminology:*

opp: opportunity score;

imp: importance score;

sat: satisfaction score.

The minimum value of the second term is limited to zero.

The dynamic of this formula is illustrated by three statements from the Cochlear case study in Table 1. Statements one and two have nearly equal importance scores; however, the satisfaction score for statement one is substantially lower than the one for statement two. Therefore, statement one represents a larger opportunity for value-adding innovation than statement two. The scores of the third statement imply a low opportunity for value-adding innovation. Improving the level of satisfaction associated with statement three would have had little impact on the perceived value because importance is low.

In addition to the broad market analysis across all interviewees, more detailed insights were gained when the results were also analysed by demographics, by competition and by circumstances such as usage habits or medical conditions. In addition, Cochlear carried out needs-based segmentation, using statistical clustering techniques; this resulted in the identification of five distinctive clusters of different user types, each with a similar set of unmet needs. The results of this in-depth analysis were crucial to enhance the market understanding.

**Table 1:** Examples for opportunity scores (illustrative)

<i>Statement</i>	<i>Importance</i>	<i>Satisfaction</i>	<i>Opportunity</i>
1. Use the same hearing accessories as normal hearing people, for example headphones (job)	8.4	2.4	13.4
2. Minimise the amount of missed words during a conversation without reading lips (expected result)	8.5	6.5	10.5
3. Dress as normal hearing people do, for example wearing a cap, a helmet (job)	5.5	3.2	7.9

## RESULTS

The results of the patient insight discovery project led to a series of innovations and improvements with short-, mid- and long-term business impact. The products that were guided by the results of the research have recently been launched and are experiencing great market success.

For example, it has been found that parents of cochlear implant users attribute high importance to the job ‘to know when my child is not hearing well’. At the same time, many parents were not satisfied with their existing ability to get this job done. In response, Cochlear’s innovation team designed a Remote Assistant with a colour display. This Remote Assistant monitors the status of the cochlear implant system and uses acoustic and visual indication to make users or parents aware of issues like a depleted sound processor battery.

R&D was able to re-prioritise its development efforts based on irrefutable objective customer data. Marketing revised its communication approach, shifting the emphasis away from technical details and focusing instead on how products can improve the specific results customers are trying to achieve in their lives. Insights from the research were also leveraged by other areas in the organisation that can influence customer expectations, such as Customer Service and Logistics. New service models were developed and organisational changes were made to support the introduction of these new service models.

One of the most important results, however, was aligning the organisation around a common understanding of what is truly important for the customer and focusing organisational activities around meeting these needs.

## CONCLUSIONS

The approach presented in this case study, to discover and validate user needs for innovation purposes, contributes to moving innovation from being largely intuitive towards being a more predictable and efficient process.

This is achieved by two factors. First, the solution-free ‘job-to-be-done’ concept allows quantitative validation of needs early in the innovation process, that is before solutions have been developed. Second, a systematic, transparent process phrases need statements with high accuracy, which ensures wide acceptance across a science and technology-driven industry.

Early quantification of user insights and high acceptance across different functions can help to ensure that the innovation process, from idea generation and evaluation through product development and commercialisation, becomes more customer-focused and can thus deliver innovative solutions that are more likely to succeed in a challenging and competitive market environment. The creative process of idea generation is likely to include ideas that concentrate more on the unmet needs of users or other influencing groups, rather than on technological functionality. The idea evaluation process becomes more

disciplined and rigorous by putting more emphasis on the customer perspective. A new idea can quickly be assessed by appraising its impact on the satisfaction score of the targeted job or expected result. Therefore, the trade-off decisions that are inevitably necessary during early product development are more likely to be made in favour of addressing unmet needs. For commercialisation, marketing propositions can be derived from a clear understanding of how innovative product features directly benefit customers, and communications tools can be created to convey those benefits using language and terminology that is relevant and understood by those customers.

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