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Exploring holistic intuitive idea screening in the light of formal criteria

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ABSTRACT

The aim of the article is to achieve a better understanding of idea screening selection based on intuition in relation to formal specific criteria.

Four experienced experts used two approaches to independently evaluate a set of 83 ideas. The first approach was “gut feeling”, whereby the experts rated each idea on the basis of their intuition,. In the second approach the same ideas were rated instead using three established specific criteria (Originality, User Value, and Producibility). Regression analysis showed that the three criteria explained about 50 percent of the intuitive assessments. Furthermore, one of the experts thought out loud during his intuitive assessment, thus revealing further influencing.

This article contributes by establishing a statistical relationship between assessment based on intuition and assessment based on formal specific criteria. The article also offers two additional candidate criteria, and five tentative affectors, that could provide a further explanation of intuitive assessment. . The conclusion reached in the study is that intuition can be used because it is less resource-dependent than criteria-based assessment; however, there must also be some emphasis on validating the assessor’s domain of expertise, and designing the instructions, if the assessment is to have an incremental or radical twist.

1. INTRODUCTION

Around the world, management concepts such as open innovation and user innovation have paved the way for a steady stream of new ideas originating outside of companies. The deregulation and introduction of global standards in the field of telecommunications is one example of advanced communications technology looking for useful applications (Magnusson, 2009). This development has also led to a stream of new product and service ideas within the industry (Montoya-Weiss and O'Driscoll, 2000). One recent example is the advent of the iPhone and Android markets, which have opened the door to a flood of new user-created applications. Often, the current problem is not the obtaining of new ideas for products or services, but deciding how to assess these. Therefore, how to screen new product and service ideas effectively in order to choose which ones to implement is a major challenge. The innovation and new product development (NPD) literature enables the identification of various approaches, the most common denominator being that these approaches all utilize some type of formal evaluation vis-à-vis specific predefined criteria, e.g. feasibility and originality. During idea screening, time is often a critical factor; for example, increasing the pace of a development process can play a vital role in ensuring that a company is first to market. Utilizing several specific decision criteria in the screening process is often quite time- and resource-consuming. Such a process is a two-round evaluation in which the assessors in the first round must make one rating per criterion. These ratings are aggregated in some way and form the input for a formal screening decision; i.e., a go/no-go decision. Another matter for debate is how to aggregate; i.e., how to aggregate and weight the various criteria (Soukhoroukova et al., 2012).

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However, one alternative to the formal decision process that is discernible from the decision literature is the use of intuition (Hogarth, 2001). Intuitive assessment is based on a quick holistic hunch regarding the idea (Miller and Ireland, 2005), making it less time-consuming than specific criteria-based screening processes. However, questions remain as regards whether or not intuitive assessments can be trusted and as regards what forms the basis of such decisions. As far as we can determine, no prior research has been conducted which compares intuitive assessment with formal specific criteria assessment. The present paper aims to contribute such a comparison, in order to better understand intuitive assessment in the context of product/service idea assessment.

This article contributes to the literature by establishing a statistical relationship between assessments based on intuition and assessments based on formal specific criteria. Based on a regression analysis, two indexes were constructed by weighting the three criteria. The indexes can be used to select the best ideas from either an incremental or a radical perspective. The article also contributes two additional potential candidate criteria, which could provide further explanation of intuitive assessment.

The article starts by reviewing the existing theory regarding idea screening and intuitive decision-making. Based on the literature review, more detailed research questions are elaborated, along with a theoretical framework that describes two different approaches to idea screening: specific criteria decisions and holistic criterion decisions (the latter of which is associated with intuitive decisions). This is followed by research methods and by the results of statistical analyses and qualitative analysis. The statistical results are then discussed, along with managerial implications, limitations, and implications for future research. The paper ends with a concluding summary.

2. THEORETICAL BACKGROUND

2.1. Screening of New Product or Service Ideas

The mainstream approach to the screening of ideas is to employ a rational assessment process using formal specific criteria assessment. This is often illustrated as a filtering process in which all ideas are put into a funnel and then assessed using a number of predefined criteria (e.g. Wheelwright and Clark, 1992).

The screening process is often considered to be a multistage process during which the first screening rather crudely selects the better ideas for further elaboration. Each criterion can be seen as a filter – a go/no-go criterion – that must be passed in order for the idea to be accepted (Rochford, 1991). Criteria can, however, be applied in different ways. Baker and Albaum (1986) identified at least four different models for screening ideas – conjunctive, disjunctive, lexicographic, and linear each being more or less restrictive in terms of rejection; they concluded that a fairly simple model, using a minimum number of criteria, might be useful in the idea screening phase, considering that the appropriate criteria are context-dependent.

The literature contains no discernible uniformly-accepted criteria for idea screening (Balachandra and Friar, 1997). Instead, criteria are chosen with regard to the given context and are dependent on the phase (Baker and Albaum, 1986; Balachandra and Friar, 1997; Carbonell-Foulque et al., 2004; Hart et al., 2003; Hauser and Zettelmeyer, 1997). The following summarizes some of the most important studies from recent decades which have examined the criteria used to assess new products and services, from idea to commercialization.

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Rochford (1991) argued that idea screening is preceded by strategic planning. She differentiated the broad, initial screening criteria; for example, “consistent with company objectives?” and “is the project do-able?” This is effectively the criteria check for strategic fit and producibility. The second round used more refined criteria, including, in addition to the previously mentioned strategic fit and producibility, expected user value, originality, and profitability. Having reviewed over 60 articles, (Balachandra and Friar, 1997) suggested that new products should be evaluated using three different types of factors: e.g., market factors, technology factors and organizational factors. Market factors mainly concern profitability issues, while technology factors include innovativeness and perceived value and organization factors relate to the internal capability of turning the idea into a sellable product. However, the importance of the different types varies with the contextual variables; specifically, whether (1) the innovation is incremental or radical, (2) the technology is low or high, and (3) the market is extant or new (ibid.). Hart et al. (2003) found that technical feasibility was the most frequently used criterion in the idea screening. Other criteria used were market potential and product uniqueness. Hart et al. also found that intuition was used quite frequently at this stage. Carbonell-Foulquie et al. (2004) claim that five factors influence go/no-go decisions: strategic fit, technical feasibility, customer acceptance, financial performance, and market opportunity. The importance of the factors varied depending on the NPD stage at which they were applied. The two most important factors in the first phase (concept testing) were found to be strategic fit and customer acceptance.

To conclude, empirical studies have shown that various criteria are used during idea screening in order to select appropriate ideas for further elaboration. They have also shown that the relevant criteria are dependent on the context. The context of the current study was wireless services. In order to determine the criteria relevant criteria for this context (wireless

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services), Magnusson (2009) used an expert focus group in order to define the selection criteria relevant to mobile telephony services. This resulted in three criteria: Originality, User Value, and Producibility. Our study adopted these as a tentative set of criteria relevant to explaining intuitive assessment. A brief rationale concerning their appropriateness during idea screening follows.

Originality represents novelty and innovativeness. Since much of the value of a company is decided by the future potential of its offerings, the ability to come up with innovative ideas is relevant, especially in an expansive field such as the telecommunications business.

User Value represents the users' perspective on whether or not the implemented service idea will create value for them. Creating value for the user/customer is the focus of all customer offerings and thus a relevant criterion to assess. From the review, one of the incentives for involving users is to gain a better understanding of what brings them value.

Producibility represents the producer's perspective regarding the ease with which the service can be implemented and produced. If an idea is considered impossible, or difficult, to implement it will either be of no or little interest to the company. Thus, producibility is relevant to assess.

To summarize, the three criteria of originality, user-value and producibility jointly represent an idea's innovativeness, its ability to create value for the intended user, and the ease with which it can be implemented.

Within the field of NPD, the predominant approach to evaluating new ideas is based on utilizing different predefined criteria. *Intuition* emerged among the criteria used for idea screening found in the literature review (Hart et al., 2003). Intuition was also acknowledged by Feldman and Page, 1984 in a study of product planning practices at nine large electronics

companies. They found that two of these ideas had been screened intuitively. Intuitive decisions were described as an expert making a subjective evaluation in holistic terms, based on his/her prior knowledge of the context.

In the related field of entrepreneurial studies, intuition has been acknowledged as one practice for entrepreneurial decision-making. This is explained by the large amount of uncertainty and broad scope that entrepreneurs have to deal with (Bird, 1988). More recent research has determined that it is essentially during the earlier stages of the new venture process that intuition is favorable (Kickul et al., 2009). This is also the stage that is most similar to idea screening, i.e. selecting ideas with limited information that are often rather vaguely defined.

We do not think that intuition should be considered as a criterion per se. Instead, in line with Feldman and Page, 1984, intuitive decisions represent an alternative assessment approach to specific criteria decisions, referred to here as the ‘intuition approach’. Attention now turns towards this alternative approach.

2.2. Intuitive decision-making

When making decisions that involve complex and unpredictable situations, one traditional response is to engage in analytical reasoning, thus generating rational decisions (Sadler-Smith and Shefy, 2004). A common assumption is that decisions based on rational analysis are superior to intuitively-based decisions (Behling and Eckel, 1991; Meehl, 1954). However, making a rational decision is difficult when confronting huge or insufficient amounts of information in limited-duration, i.e. complex, situations (Hodgkinson et al., 2009). As a consequence, interest in intuition as an alternative to rational decision-making under such conditions has grown in recent years (Burke and Miller, 1999; Dane and Pratt, 2007;

Hayashi, 2001; Hodgkinson et al., 2009; Khatri and Ng, 2000; Miller and Ireland, 2005; Sadler-Smith and Shefy, 2004; Salas et al., 2010).

Debates examining the merits of intuition are ongoing in several disciplines, e.g. psychology, philosophy and management (see Akinici and Sadler-Smith, 2012 for a comprehensive review). Due to the high level of interest in the area, several different definitions of intuition exist in the literature; however, Dane and Pratt's (2007) definition of intuition, "*affectively charged judgments that arise through rapid nonconscious and holistic associations*", (p 40) has almost achieved consensual status (Akinici and Sadler-Smith, 2012).

Within the field of management, intuitive decision-making was noticed by Chester Barnard as early as the 1930s. Barnard, who had almost 40 years of practical experience from American Telegraph and Telephone (AT&T), discussed intuition and reasoned when and by whom it was relevant to utilize (Akinici and Sadler-Smith, 2012). From academia, Simon (1947), followed on by introducing the notion of "Bounded rationality", which states that the rationality of individuals is limited to the information at hand, the available time, and the cognitive limitations of the human mind. In complex and limited-duration situations, people thus try to simplify the choices on the basis of prior experience when making decisions; according to Simon, intuition could be used to describe this phenomenon. Thus, Simon saw intuition as the ability to recognize patterns, something which helps to simplify the available information.

Pattern recognition later became a cornerstone of Klein's (1998) theories regarding Natural Decision Making (NDM), whereby intuitive decisions are said to be based on prior experience. Even though NDM researchers do not see intuition as infallible, they argue that the experience gained from previous decisions (both successful and non-successful) adds to the overall knowledge and skills base to be used for future decision-making tasks (Akinici &

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Sadler-Smith, 2012). One important goal for the NDM community is to demystify intuition by identifying the cues that experts use to make their decisions (Kahneman and Klein, 2009).

Over the years, several researchers have discussed the complexity of intuitive decision-making. Meehl (1954), for example, theorized (in the context of clinicians making prognoses and treatment decisions regarding patients) that mechanically-based (i.e. rationally-based) decisions would be more efficient and that clinicians would make more mistakes than would a mechanical prediction tool created for the specific decision-making purpose. Following the work of Meehl (see also, Grove et al., 2000), Kahneman and Tversky introduced the term Heuristic and Bias, HB (Kahneman and Tversky, 1973; Tversky, 1974). The theory of HB is described as an experience-based technique that enables individuals to use rule-of-thumb inferences to speed up the process of finding good enough solutions. Tversky and Kahneman (1974, p. 1124) argued that “*people rely on a limited numbers of heuristic principles which reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations*”. Both HB and NDM researchers share the assumption that intuitive decision-making is an automatic, unconscious activity that comes to mind effortlessly (Kahneman and Klein, 2009), yet the HB community does not share the same level of confidence in intuitive decision as do NMD scholars.

When discussing human cognition, researchers from various disciplines argue that information processing is managed in terms of two different systems (dual process theory) which make a distinction between intuitive and rational reasoning (Dijksterhuis and Nordgren, 2006; Epstein, 1994, 2008; Evans, 2008; Evans, 2003; Hammond, 1996; Sloman, 1996; Stanovich and West, 2000). Dual process theory describes how people obtain and use their experience in terms of two different systems. System 1 processes are automatic,

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contextually-dependent, largely unisonous, associative, intuitive and fast. System 2, on the other hand, is contextually independent, analytical, rule-based and explicit, thus making it more tedious and slow in comparison to System 1. According to Epstein (2008), System 1 (referred to as the experiential system) can influence the rational thoughts made in System 2 without System 2 being aware of it, which could affect the decision. Thus, a decision could be biased without the decision-maker being aware of it. The difficultness of decision-makers explicitly knowing when their rational thoughts are being affected by unconscious assumptions is a factor that separates HB and NDM scholars regarding the amount of thrust an intuitive decision should be given (Khaneman and Klein 2009).

Despite uncertainties about the effectiveness of intuition as an opposing alternative to rational decision-making processes, interest in using intuition has, as already said, been growing consistently over the years. The coming paragraphs explore the circumstances allowing intuition to be utilized.

2.2.1. Use of intuition

According to Agor (1986), intuitive decision-making is preferable when encountering one of the following conditions, (1) uncertainty; (2) the absence of precedent; (3) being required to use limited or ambiguous data and information; (4) the existence of equally plausible alternatives, or (5) time pressure. A decision-maker facing one or more of these conditions could thus be said to have a *high complexity* or *loosely structured* decision to manage; according to several researchers, intuitive decisions seem preferable when facing *high complexity* decisions, whereas rational reasoning, on the other hand, works flawlessly when facing *low complexity* (i.e. tightly structured) decisions. (Dijksterhuis et al., 2006; Dijksterhuis and Nordgren, 2006; Mikels et al., 2011; Sadler-Smith and Burke, 2009; Sadler-Smith and Sparrow, 2008). It ought to be emphasized that intuition and rational decision-

making should not be seen as opposites but as complements (Fredrickson, 1985; Sadler-Smith and Shefy, 2004; Sadler-Smith and Sparrow, 2008; Salas et al., 2010). After discussing when intuition could be used, we now turn our attention to the conditions that should be met by decision-makers when relying on their intuition.

2.2.2. *Conditions for intuition*

Even though intuitive decision-making carries potential risks regarding bias, it still has a potential. Sadler-Smith and Shefy (2004) as well as Salas et al. (2010) argue that expert intuition has the potential to contribute towards effective and efficient decision-making. These researchers describe this in terms of *intuition as expertise*, which is a form of pattern recognition whereby experts unintentionally look for cues relating to previous experience. Expert intuition thus depends on the decision-maker's prior knowledge acquired over time from a certain domain. In the literature, there is a strong connection between the ability to utilize intuition and prior experience. Isenberg (1984) argued that "*the higher you go in a company the more important it is that you combine intuition and rationality*" (p. 81). The use of past experience of different situations follows the belief that intuition is based on knowledge that has evolved over time via the experience gained by the decision-maker (see e.g. Hogarth, 2001; Salas et al., 2010).

One empirical example is Burke and Miller's (1999) study of business professionals in the US, in which the common theme is that intuitive skills are obtained from past experience, training, or education. The link between intuition and experience implies that intuitive expertise is only valid within the expert's domain. Shanteau (1992) contends that "*... experts are operationally defined as those who have been recognized within their profession as having the necessary skills and abilities to perform at the highest level*" (p. 255). Furthermore, Kahneman and Klein (2009) conclude that "*true experts, it is said, know when*

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they don't know. However, nonexperts (whether or not they think they are) certainly do not know when they don't know. Subjective confidence is therefore an unreliable indication of the validity of intuitive judgments and decisions” (p. 524). Consequently, intuition should be seen as context- and domain-dependent.

We conclude that rational decision-making seem to be preferable when facing clear and graspable problems while intuition seems to function better in more holistic problem-solving as long as the decision-maker has the relevant knowledge and experience. The literature review shows that the ability to make intuitive decisions evolves over time and, via experience that is absorbed by the decision-maker. Thus, intuitive ability should only be deemed relevant as long as experts make decisions on the basis of experience within their specific domains (see, for example, Sadler-Smith and Shefy (2004), and Salas et al., (2010)).

2.3. Theoretical framework and research questions

Two different approaches for idea screening can thus be discerned from the literature review. The first, referred to here as *specific criteria decisions*, relates to decisions for which judges are asked to indicate an idea's standing on a specific criterion scale compared with other ideas within their field of expertise. The result is a relative value that aims only to serve as a comparable descriptor of a specific property of the idea. This seems to be the mainstream method used by organizations.

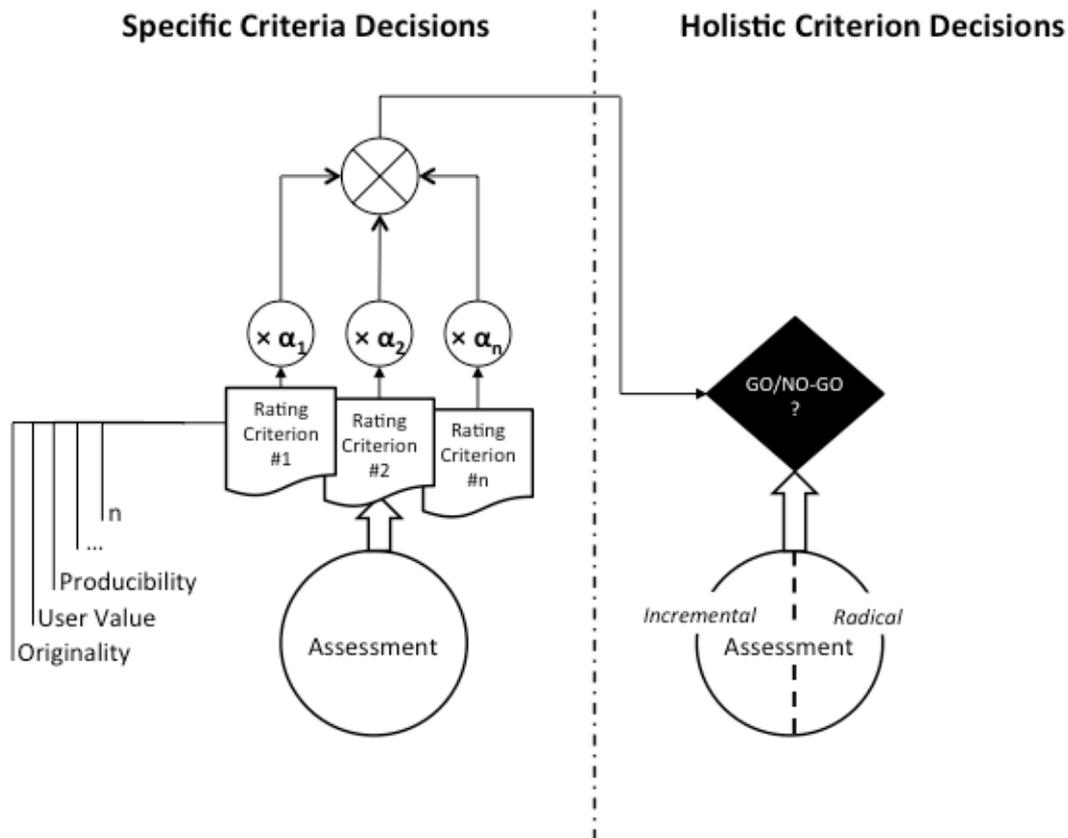
The second approach, associated with intuition, is referred to here as *holistic criterion decisions*. These are decisions for which judges are asked to indicate an idea's standing on a holistic scale with loosely-specified underlying criteria. Thus, it is up to the individual judge to intuitively formulate the relevant criteria to be taken into account during this type of evaluation. Accordingly, the assessor must first decide what aspects are important for success and then assess their relative weight in order to come up with a decision. This creates a much

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more loosely-structured, challenging and complex task which, as the review indicates, will involve intuition (Dijksterhuis et al., 2006; Sadler-Smith and Sparrow, 2008).

To conclude, specific criteria decisions and holistic criterion decisions are clearly two different types of decisions. The first is one, or several, narrow uni-dimensional decision that aims to assess the given characteristics of an idea vis-à-vis given criteria. The holistic criterion decision is a broad multidimensional decision that aims to assess the future performance of an idea. In terms of the decision structure proposed by Sadler-Smith and Sparrow (2008), it can be argued that holistic criterion decisions are good examples of loose decision structures, favoring intuition, while specific criteria decisions with well-defined criteria are closer to tight decision structures, favoring analysis.

The two types of decisions can be regarded as constituting two different idea screening approaches, as illustrated in Figure 1.



The aim of the screening process is to reach a go/no-go decision; the Specific Criteria Decisions approach involves several steps, see the left half of Figure 1. Firstly, the ideas are assessed against a number (1, ..., n) of predefined specific criteria, e.g., originality, user value, producibility, etc. The resulting ratings for each criterion are then weighted using different weighting factors ($\alpha_1, \dots, \alpha_n$) and integrated into a decision. The idea assessments are thus detached from the actual go/no-go screening decision in the sense that the assessment is made in respect of different isolated criteria not taking into account whether the idea should be accepted or rejected. Accordingly, the various criteria could be evaluated by different experts in the specific field of competence. Note that the evaluators do not make any predictions regarding future success. Instead, future success predictions are embedded in a rational decision mechanism that is decided by the different weighting coefficients, α_1, α_2 , etc. (see Figure 1). These coefficients are supposed to be set in an optimal way in order to

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ensure that the “right ideas” are selected for further elaboration. On a systemic level, this can be regarded as a formal rational decision process. However, as noted above, a major problem is assigning appropriate weightings. Furthermore, it is not evident which criteria should be used, introducing the risk of not taking important aspects into account if they are not formulated as criteria.

Holistic criterion decisions (the right half of Figure 1), on the other hand, are made without any subsequent specific criteria assessment, leading to a more rapid idea management process. Holistic criteria are loosely formulated. As illustrated in Figure 1, the criterion may only state that the idea should be suitable as an incremental or radical product/service. The actual meaning and translation of what this implies is left open for the assessor to decide. Accordingly, these decisions are open for various and specific, but not yet defined, criteria to be taken into account. The holistic criterion decisions process is a direct go/no-go decision regarding the individual assessor’s predictions or intuition regarding future success. These decisions are thus more complex than the Specific Criteria Decisions. The literature review showed that the intuitive decisions also are deemed to be based on expert knowledge. However, the present study assumes that even intuitive decisions can be understood using specific criteria. Even though the decision process is described as a quick holistic hunch (Miller and Ireland, 2005), the assessor can be expected to unconsciously use a number of specific criteria during the assessment. The underlying decision processes that take place, in the context of idea screening, are not yet understood.

The present article aims to achieve a better understanding of intuitive assessment in the context of product/service idea assessment. It investigates the relationship between established specific criteria and holistic criterion decisions. The study uses three specific criteria established during previous research (Magnusson, 2009); namely, Originality, User

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Value, and Producibility. In the context of idea screening, the intuitive decision has been operationalized into two holistic criteria, one for selecting incremental ideas and the other for selecting more radical ideas. This corresponds to the dividing of innovations into either incremental or radical (e.g. Crawford and Di Benedetto, 2000). Establishing such a relationship will also be a first step towards establishing how different criteria should be weighted when using formal specific criteria decisions, constituting an “innovation index”. The weightings are expected to be different for incremental ideas than for radical ones. This makes it possible to formulate the following research question:

RQ1: What is the relationship between established specific criteria decision and intuitive (holistic criterion) decision in the context of idea screening for service/product ideas?

Furthermore, this article also investigates the other specific criteria, apart from the three tested, that might be used in the intuitive assessment. This leads to the second research question:

RQ2: What criteria are taken into account in an intuitive decision in the context of idea screening for service/product ideas?

With these questions in mind, we now shift our focus to how the research was designed.

3. METHOD

A study consisting of one quantitative and one qualitative part was designed and performed in order to elaborate the research questions. The quantitative part sought to investigate the match between intuitive assessment and assessment using three formal specific criteria deduced from the literature; i.e., RQ1. The qualitative part explored the unexplained part of

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the intuitive assessment (RQ2) by having one of the judges think aloud while assessing ideas.

This session was audio recorded for subsequent analysis in order to further understand both the procedure used and potential complementary criteria.

3.1. Quantitative study

The aim of this study was to investigate the extent to which the three dimensions of Originality, User-value, and Producibility explain the intuition of expert industry judges when evaluating novel ideas.

3.1.1. Procedure

The ideas used in the study were collected via a web portal operated by a telecommunications company that had invited mobile phone users to offer their input and suggestions for the development of future mobile services. The company was a European-based international telecom operator with more than 28,000 employees and net sales of approximately USD 16 billion in 2010. The web portal was open to the public and allowed anyone to create an account and to present their own ideas and comment on the other users' ideas. Users of the web portal were asked to share their ideas in any state of elaboration. This resulted in a level of detail that ranged from fragments of ideas, based on current needs, to thorough presentations of potential services. The study included a subset of the ideas from the web portal based on the following exclusion and inclusion criteria. Firstly, ideas that were advertisements by third-party developers, rather than novel ideas, were excluded. Secondly, the remaining idea providers were contacted and asked to consent to their ideas being used in the research project; they were also asked to fill in a demographic questionnaire and to provide some information about the context within which the idea was conceived. Only ideas from idea providers responding positively to the invitation were included in the final sample,

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which consisted of 83 ideas contributed by 47 unique idea providers, 37 male and 10 female, mean age = 38.9 (SD=10.5)).

Four experts, three male and one female, mean age = 37.8 (SD=3.9), employed at the telecommunications company in the role of assessing and developing wireless services, were recruited to judge the ideas on two occasions. These four people actually made up the entire staff employed to evaluate incoming ideas at the web portal. All ratings were done using a web-based tool in which the ideas were presented in random order, one at a time. The judges entered their responses, individually and independently, on a visual analogue scale (Butler, 1997). The ratings were done in two rounds, using two different approaches. The first round used an intuitive assessment, while the second used a formal three-criterion assessment approach.

Intuition is supposed to be context-dependent in that the context for which the idea is intended will influence the decision. Therefore, two different scenarios were produced. One scenario stated that the idea to be evaluated was intended for a radical market, so the judges were instructed to promote ideas that stood out as being particularly innovative. The other scenario described a situation in which the idea was intended for an incremental market; here, the judges were instructed to promote ideas that were easy to implement and launch.

Each idea was rated on a scale from 1 to 100, with 1 being the lowest score and 100 being the highest. In addition to rating the ideas, one of the judges was also asked to vocalize his reasoning while a think-aloud protocol was recorded (Ericsson and Simon, 1980).

In the second round, the same judges were asked to use the three formal criteria of Originality, User Value, and Producibility to assess the same ideas. This assessment, too, was

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individually and independently carried out by the judges. See Appendices A and B for a detailed description of the instructions and scenario descriptions.

The judges claimed that the assessment was very realistic in the sense that it was performed in the same manner that they themselves normally used when assessing ideas using formal specific criteria.

Accordingly, all participants performed the intuitive assessment first and did not receive any suggestions regarding what criteria to use. If they implicitly used any criteria, they had to come up with these themselves. Thus, the judges were not affected by the predefined criteria (used in the second round) when making their intuitive decisions.

Furthermore, the time between the intuitive assessment and the formal criteria assessment was more than two weeks. It is unlikely that the assessors would remember how they assessed the ideas the first time (during the holistic evaluation). It should also be noted that the ideas also were randomized during the selections. Accordingly, we consider the risk of any previous exposure biasing the judges to be negligible.

3.2. Qualitative study

The aim of the qualitative study was to further understand and reveal the factors influencing the intuitive decision process. As previously mentioned, one of the experts verbalized his reasoning while evaluating the ideas. This session was recorded and then analyzed by two of the authors in order to identify the aspects that the expert took into account when analyzing the ideas, apart from the three established formal criteria (Originality, User Value and Producibility). A “thematic analysis” (Boyatzis, 1998) was used, in line with the

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recommendations of Braun and Clark (2006), who recommend a six-phase analysis, the final phase of which being the write-up.

4. RESULTS AND ANALYSIS

The result report and analysis is divided into two parts, one for the quantitative study and the other for the qualitative study.

4.1. Quantitative study

4.1.1. Inter-judge reliability

In order to assess whether or not the judges all understood the instructions the same way and whether or not they subsequently evaluated the ideas in a coherent fashion, Krippendorff's Alpha tests (Hayes and Krippendorff, 2007) were conducted on all five scales (Incremental, Radical, Originality, User Value, and Producibility). The Alpha values ranged between .25 and .48 (see Table 1 for values).

The Alpha values of the absolute scores for the five scales (Incremental, Radical, Originality, User Value, and Producibility) did show fair to moderate agreement between the judges with the exception of the incremental values, which only showed slight agreement, see right-hand column of Table 1. The judges were not calibrated before assessing the ideas. Some of the disagreement could thus be caused by the judges having different frames of reference to, for instance, what constitutes 50 in originality. A calibration like this would also have been difficult due to the heterogeneity of the ideas. One way of reducing the effect of the differences, and instead focusing on the judges' relative assessments of the ideas, would be to use the z-transformed values instead; this follows (Amabile, 1996) recommendations when assessing creativity and other dimensions using the 'consensual assessment technique'

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(CAT). The Alpha values for the z-transformed scores for all five scales (Incremental, Radical, Originality, User Value, and Producibility) ranged between .25 and .58 (see Table 1 left-hand column for values). As can be seen, the level of agreement was far better when using the z-transformed scores; accordingly, these scores were used for further analysis.

Table 1: Krippendorffs Alpha for the five scales

Scale	Alpha on Z-values	Alpha on original scores
Originality	.48***	.46***
User Value	.48***	.46***
Producibility	.47***	.28**
Incremental	.28**	.08*
Radical	.25**	.21**

* Slight agreement (.01-.20), ** Fair agreement (.21-.40), ***Moderate agreement (.41-.60) (Landis and Koch, 1977)

4.1.2. Manipulation check: Incremental/Radical

A bivariate correlation analysis was conducted in order to investigate whether the incremental and radical scenarios made judges rate the ideas differently (i.e., whether Incremental and Radical were interpreted as different constructs). This analysis showed that there was no correlation ($r=-.081$, $p=.465$), which means that the scenario-based manipulation worked.

4.1.3. Regression analysis

Two separate multiple regression analyses were performed in order to evaluate the extent to which the Originality, User Value, and Producibility scales explain the judges' intuition regarding Incremental and Radical. The results showed that the scales for User Value and

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Producibility explained 51 percent ($F(2,80)=44.182$, $p<0.001$, adj. $R=.513$) of the variation in Incremental (see Table 2 for details) and that Originality, User Value, and Producibility explained 49 percent ($F(3,79)=27.41$, $p<0.001$, adj. $R=.491$) of the variation in radical (see Table 3 for details).

Table 2: Results of the multiple regression analysis of Incremental (β = Regression coefficients & B = Z-standardized regressions weight).

Predictors	β	B
Constant	0	
User Value	.496	.574***
Producibility	.248	.277**

Note: $n = 83$, model adjusted $R^2 = .51$, ** $p < .01$, *** $< .001$.

Table 3: Results of the multiple regression analysis of Radical (β = Regression coefficients & B = Z-standardized regressions weight).

Predictors	β	B
Constant	0	
Originality	.304	.360**
User Value	.394	.473***
Producibility	-.421	-.487***

Note: $n = 83$, model adjusted $R^2 = .49$, ** $p < .01$, *** $< .001$.

4.2. Qualitative study

4.2.1. Initial coding and theme generation

This part actually comprised the first three of Braun and Clarke's (2006) phases. By listening to the recording, two researchers independently attempted to detect the factors that they believed either directly or indirectly affected the assessment decision being made by the

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expert. This included various criteria, as well as the evaluation process (how ideas were assessed). Both researchers listened to each idea one at a time while making individual notes about the factors they had detected. Once each idea had been replayed, the recording was stopped and the researchers discussed their notes, jointly coding their observations in a common spreadsheet. For each idea, the idea number and time tag in the recording were included for later reference. The researchers often reached consensus in their discussion; if not, both researchers' codes were entered into the spreadsheet. This meant that coding was more inclusive than exclusive. After the initial coding, both researchers analyzed all the codes individually in order to find relationships between the codes which could establish different themes. This resulted in a list of 13 preliminary themes, excluding the 3 that had already been established (Originality, User-value, and Producibility). Each theme was interpreted in order to understand the un-manifested meaning, with the next phase using the interpretations to review and modify the themes. Appendix C lists and describes the 13 initial themes.

4.2.2. Reviewing and refining themes

The analysis proceeded with a review of the candidate (preliminary) themes, corresponding to Phases 4 and 5 in Braun and Clark (2006). The focus of this stage was to better understand what influences experts' intuitive assessments. This analysis resulted in some of the candidate themes being discarded; some were merged together and different levels of themes were created. The analysis resulted in four main themes, which can be described as follows: (1) how the ideas were assessed (assessment procedures), (2) the criteria used to assess the ideas (criteria), (3) factors affecting the criteria assessment of the ideas (affectors), and (4) when the expert could not justify his decisions (the unexplained). The resulting themes are described below.

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Assessment procedures. In order to perform the evaluation, the expert often constructed “mini-scenarios” in order to make use of his experience. These should not be confused with the two scenario descriptions provided by the researchers; i.e., the incremental and radical scenarios. These mini-scenarios usually had a timestamp that indicated whether the idea should be considered for implementation in the near or distant future. Depending on the time frame, the expert then used various assessment criteria. These scenarios were used to reflect on how to actually assess the idea in relation to certain criteria.

Criteria. Five criteria used by the experts were identified. The first three were the ones initially tested in Study 1, namely Originality, User Value, and Producibility. Two other criteria were discerned – Strategic Fit and Profitability – both of which were recognized as criteria from the previous literature review.

Strategic Fit is used to evaluate whether or not a given idea would fit into the business scope of the expert’s organization. If not, this would have a negative effect on the assessment. This sub-theme emanates from the candidate theme context.

Naturally, profitability could be assumed to be the main criterion for all idea evaluation. However, it was rare for profitability to be taken into account directly, at least explicitly, probably due to it being difficult to estimate profitability at this initial stage. It was also clear that there could be alternatives to the explicit monetary profit models. For instance, the implemented service idea could be interesting if it was expected to work as an image-maker for the organization.

Affectors. A number of additional factors (or “affectors”) were identified which influenced the assessment in relation to the five criteria, either by amplifying or de-amplifying the assessment of the idea. These factors were trend, simplicity, legitimacy, cluster, existence,

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and timing, all of which have already been described. Although these cannot be regarded as decision criteria, they still influenced the assessment.

The unexplained. Although one expert did “think out loud”, some of his decisions may have been influenced by intuitive thinking that was not vocalized.

The expert could conceivably have changed his decision behavior due to “thinking out loud”; in other words, his assessments may have been different had he performed the evaluation in silence.

Limitations. Study 2 should be regarded as an initial attempt to further explore the processes occurring when an expert makes intuitive decisions. In this way, the study aims to further understand and reveal the factors influencing the intuitive decision process. Using only one respondent entails limitations regarding the definitiveness and conclusiveness of this study. Nevertheless, it does reveal some interesting (albeit tentative) results that can contribute to further studies in the same vein.

5. DISCUSSION

The study’s main area of interest is to understand more about intuitive decision-making when assessing new product ideas, especially the differences between intuitive (holistic-criterion-based) and specific criteria-based decision-making in the context of NPD. The two main research questions were: (1) What is the relationship between established specific criteria decisions and intuitive (holistic criterion) decisions in the context of idea screening of service/product ideas? (2) What criteria are taken into account regarding intuitive decisions in the context of idea screening of service/product ideas?

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The literature emphasizes the need for experience when making intuitive decisions; accordingly, the present study focuses on professional experts as judges. Two different approaches – intuitive decision-making and specific criteria-based decision-making – were examined for idea selection. In the first approach, the judge freely makes a quick and intuitive assessment of whether or not the idea is worthy of further attention in relation to the holistic criterion (Incremental or Radical contexts). The second approach is more formalized, using three predefined specific criteria to assess the idea.

The intuitive decisions in the study can be linked to the literature stream on expert intuition (Sadler-Smith and Shefy, 2004; Salas et al., 2010), where no specific criteria are provided in order to make the decision. Instead, the experts have to make holistic decisions based on the expected appropriateness of the idea, depending on the context in hand (incremental or radical). Several researchers argue that an experienced expert will unconsciously take different criteria (cues) into consideration and weight these into an intuitive decision (Hogarth, 2001; Klein, 1998; Sadler-Smith and Shefy, 2004; Salas et al., 2010). The current study reveals that unconscious (holistic) thinking could be explained to approximately 50 percent (49 percent and 51 percent in the radical and incremental approaches, respectively) by three different established NPD selection criteria; namely Originality, User Value, and Producibility. The linkage between intuition and criteria-based assessment is considered to be a major contributor to idea management theory.

One problem with specific criteria-based assessment is whether or not, and how, the different criteria should be weighted for the decision (Soukhoroukova et al., 2012); for example, whether Originality should be weighted higher than Producibility. The innovation and decision literature offers little guidance on this issue. Magnusson (2009) proposed two innovation indexes based on the same three criteria used in the present study; i.e., an

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‘incremental_index’ aimed at selecting incremental ideas and a ‘radical_index’ used for radical ideas (Magnusson, 2009). These indexes are based on deductive reasoning and are not empirically grounded. The present paper proposes that the regression models presented in this article (see Tables 2 and 3) represent a first step towards empirically-based indexes; i.e., they can be used as selection indexes for either incremental or radical ideas. This provides, as far as the authors are aware, the first empirically-grounded index in the context of new product/service idea screening. However, more research is required with regard to both the weighting of criteria and identifying which criteria are appropriate to use in such an index. As previously seen, the radical index has a negative weighting of producibility which is the result of the strong negative statistical correlation between originality and producibility. It should be noted that there could, even if they are exceptions, be ideas that are deemed both original and easy to realize; for these exceptions, the current index is not optimal.

Intuitive decisions require the judges to be experienced and that they make their decisions in relation to a context (Hogarth, 2001; Sadler-Smith and Shefy, 2004; Salas et al., 2010). The study confirms that the context – regardless of whether the idea was supposed to be incremental or radical in nature – actually influences the intuitive decisions and, accordingly, how the criteria are weighted. It should thus be emphasized that intuitive assessment must be related to innovation context; i.e., whether the idea should be considered for incremental or radical innovation, because these do differ. For incremental intuitive assessment, the Originality criterion was essentially omitted (see Table 2). An important finding from the study is that the two scenarios – incremental and radical – actually sway the experts’ intuition in different directions. Thus, intuition is a context-dependent construct, not a homogenous concept, like the formal criteria used in this study. This also implies that scenarios can be used to tune the idea selection process towards either more incremental or more radical ideas.

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Another contribution concerns the definition of intuitive decisions in the context of product and service idea screening. The present article endeavors to contribute towards the innovation literature by interpreting what intuitive decision-making could mean in the context of idea screening. The definition of intuition used in this paper originates from Dane and Pratt (2007) who defined intuition as “affectively charged judgments that arise through rapid nonconscious and holistic associations” (p. 40).

The present article has shown that this unconscious and holistic process largely relies on a number of known criteria that are differently weighted depending on the given context. We have depicted it here as a holistic criterion decision – the appropriateness of the idea for a given context – where judges utilize their experience to unconsciously screen ideas. It is clear that this process, on a systemic level, is different from specific criteria decisions, see Figure 1.

The study also makes a contribution in the form of empirically-grounded suggestions regarding complementary criteria for criteria assessment. By applying the “think aloud protocol technique” (Ericsson and Simon, 1980), two more potential criteria were derived (namely Strategic Fit and Profitability), which can be included and tested in more refined regression formulas or innovation indexes. The three criteria used in the study (originality, user-value, producibility) have all been established within the field of creativity research, while the two new criteria (strategic fit, and profitability) are more closely linked to the business perspective of the company. Therefore, the results indicate that more of the business perspective will be taken into account during holistic criterion (intuitive) assessments. It could be argued that this is both good and bad. For incremental ideas, the business potential should be more relevant. On the other hand, it is often difficult to predict the business

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potential of radical ideas. It is also more likely that radical ideas will not fit the current strategy, which could cause them to be rejected.

Five other aspects were found that can influence the decision (trend, simplicity, legitimacy, cluster, and existence); these are referred to here as affectors. These are not criteria but are aspects which, in some way, influence the holistic criterion decision process. It should be noted that these results should be considered tentative due to the use of a single expert evaluator. Nevertheless, the findings are interesting and promising as regards the ability of future investigations to understand underlying cognitive processes when making intuitive decisions or, as they are termed here, holistic criterion decisions.

5.1. Managerial Implications

Intuitive assessment is less time-consuming than formal specific criteria assessment, as only one assessment takes place, see Figure 1. The holistic nature of the assessment also provides the opportunity to include aspects that the company does not think of when designing the assessment criteria. Formal criteria preserve established success indicators, thus hindering creativity. In doing so, intuitive (holistic) thinking can be helpful. However, several issues must be considered when adopting intuitive assessment.

An intuitive assessment will not reveal why an idea receives a certain score, as it is a holistic assessment. Knowing why an idea receives a high or low score might be an important factor. In practice, this could be solved by adding the opportunity for a short free-form text comment that justifies the actual decision; the obvious drawback of this is that some of the speed gained will be lost. On the other hand, this might not be as relevant during initial

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screening because the main objective is to identify and select the ideas that are most suitable for further consideration.

Another problem is the expertise of the judge. According to the theory, intuitive assessment relies on the assessor really being an expert in the field (e.g., Kahneman and Klein, 2009). All of the experts in the present study were homogeneously skilled, leading to consistent assessments. In practice, it is difficult to establish whether or not a judge has sufficient experience to actually be a “qualified intuition-based judge.” This is also an issue for further research.

The findings could also be used to make idea screening more efficient. If experienced experts are used during an initial round of holistic assessment, this can be used to determine the indexes, i.e. weight the criteria for the incremental and radical indexes. Once this is done, it paves the way for the possibility of using several judges in parallel. It is more likely that a company can find several people who are competent to assess at least one of the many criteria. For instance, marketing and sales people would probably be competent to assess user value, while R&D and production people would be apt as regards assessing producibility, etc. Each idea would then be rated according indexes, i.e. the weighted criteria.

The finding that the expert quite often used “mini scenarios” to assess ideas during the think-aloud procedure could be expounded to an actual method. In other words, the judge should try to put ideas into scenarios when evaluating them. This could also be used to instruct idea creators who should not only describe their ideas functionally, but also describe them in a use scenario.

Of importance to managers is the finding that the two scenarios (Incremental and Radical) generated results that were independent of each other; i.e. the ideas were assessed differently

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depending on the scenario presented to the judge. The practical implication of this is that intuitive assessments must always be related to a specific context (for example, Incremental or Radical) and that a great deal of effort should go into the processes of defining the scenarios used, since the results of the assessments might otherwise be totally meaningless.

5.2. Limitations

Among the study's limitations is the fact that only one expert performed the think-aloud protocol. The main reason for this was that real professional experts were used and, due to the rather time-consuming process of thinking out loud, only one participant could be afforded. However, the single judge did provide a great deal of data and further checks were made that the thinking-out-loud judge did conform with the other experts in his intuitive assessment.

Because the context of the study was ideas for wireless services, it is difficult to comment on the generality of the findings vis-à-vis other contexts. However, it is likely that the basic principles of intuitive assessment are common to different contexts.

5.3. Future Research

The study has only investigated intuitive assessment among experts. Based on previous research, it was assumed that experience is a necessary ingredient when performing intuitive assessment. However, it would be of interest for future studies to compare the intuitive assessment of professional experts and laymen. It can be called into question whether or not idea screening can be outsourced to non-experts. Important factors would include the judge's degree of knowledge, which is linked to experience. Here, two types of knowledge would be of interest, namely "use knowledge" and "technology knowledge". Technology knowledge is related to understanding the technical feasibility of the opportunities and limitations of a

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given technology. Use knowledge comprises the potential users' needs and wants, as well as an understanding of how the service creates value for the user (Lüthje, 2004; Magnusson, 2009; von Hippel, 1994). Professional experts can be expected to have more technology knowledge, while laymen, provided they are users within the context in hand, could be expected to be superior in terms of use knowledge.

Furthermore, it would also be of interest to investigate whether there are any differences on the basis of the two scenarios. Laymen may be better able to assess incremental ideas as they could be easier to understand, while radical ideas might demand more expert knowledge.

Future research within this field should establish procedures to validate judges for intuitive (holistic criterion) assessment. There is a gap where researchers can develop certification instruments.

Future research should also investigate the two new criteria – Strategic Fit and Profitability – in order to analyze whether or not they can contribute towards a greater understanding of intuition. This paper also promotes the use of the think-aloud method in order to generate a greater understanding of intuitive assessment.

6. CONCLUSION

Most previous studies of innovation management have been descriptive surveys that have accounted for the different evaluation practices and criteria used by various organizations (e.g. Balachandra and Friar, 1997; Hauser and Zettelmeyer, 1997; Rochford, 1991). Although the innovation literature has mentioned intuition, little is known about its merits as regards assessing new product ideas (Hart et al., 2003).

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The current study has contributed by helping to demystify the concept of intuition in the context of product and service idea screening. Three pre-defined criteria – Originality, User Value, and Producibility – explained almost 50 percent of the intuitive assessments. By means of a regression analysis, two indexes were constructed by weighting the three criteria. These indexes can be used to select the best ideas, either from an incremental or a radical perspective.

The study also identified two new criteria (*Strategic Fit and Profitability*) which the expert used when conducting an intuitive assessment. Furthermore, five affectors were also identified (trend, simplicity, legitimacy, cluster, and existence) which, in some way, influenced the assessment.

The description of the business context – either incremental or radical – was found to be vital regarding the outcome of an intuitive assessment.

The study has brought more knowledge to the field of product and innovation management in the area of idea assessment. The conclusion of the paper is that intuition can be used because it is less resource dependent; however, there must be some emphasis on validating the assessors' domain of expertise and on designing instructions regarding whether the assessment has an incremental or radical twist.

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APPENDIX A: SCENARIO DESCRIPTIONS

Radical Scenario

Imagine you are responsible for making a first rough screening of ideas for new mobile services. Your instructions are to promote ideas that stand out and enable your company to be characterized as having come up with innovative ideas. The purpose of these ideas is comparable to the ideas of so-called concept cars in the automotive industry; the focus is not on short-term profits but rather on creating an attitude.

The ideas you give the highest scores will later be analyzed and evaluated again. Base this initial assessment on your spontaneous gut feeling. As a guideline, really good ideas should receive more than 75 points and really bad ideas should receive fewer than 25 points.

Incremental Scenario

Imagine that you are responsible for making a first rough screening of ideas for new mobile services. Your instructions are to promote ideas that enable the company to make money quickly. The most important thing is not that they are innovative, but that they can be implemented quickly and easily. Therefore, the focus is on short-term profits.

The ideas you give the highest scores will later be analyzed and evaluated again. Base this initial assessment on your spontaneous gut feeling. As a guideline, really good ideas should receive more than 75 points and really bad ideas should receive fewer than 25 points.

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APPENDIX B: DESCRIPTION OF ASSESSMENT CRITERIA

Descriptions of the three criteria (Producibility, User Value, and Originality) and the assessment instructions given to the judges.

Producibility

An underlying assumption in this study is that customers have interesting ideas and suggestions that can be used in product and service development. However, clients rarely have the necessary knowledge or resources to determine whether it is possible to realize an idea. We want you, with your knowledge of technical and administrative possibilities, to assess the producibility of the idea; i.e., whether it would be possible to realize the idea and charge for it, etc.

Your task here is to assess the producibility value of the proposed service.

A low value (left) means that the idea is difficult to produce. A high value (right) means that the idea is easy to produce.

User Value

A fundamental aspect of involving customers in product and service development is to have the customer's preferences, needs, and wishes integrated into the process, thereby harnessing the often unspoken knowledge that a user possesses. In order to achieve a higher user value (value) of a product or service, the customer's perspective is at the centre of this approach.

Your task is to assess the user value of the proposed service.

A low value (left) means that the idea has a low user value. A high value (right) means that the idea has low user value.

Originality

An important factor in the development of new products and services is that they should be

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perceived as creative/innovative, and should therefore “stand out” as attention grabbers. The concepts of creativity and innovation can have many different definitions and interpretations. What we are interested here is the originality; i.e., how unusual, unique, and fresh ideas to the estimated service can be considered.

Instruction to the judges

Your task is to assess the originality of the proposed service.

A low value (left) means that the idea is not original. A high value (right) means that the idea is very original.

The Gut Feeling scenarios (Incremental and Radical) and the assessment instructions were given to the judges.

Appendix C First Coding

	Initial themes	Description	Quotes	Interpretation
1	Marketing	The idea was identified as being interesting from a marketing perspective because it could create interest for the company in general.	<i>"It is a fantastic show off. It is perfect to show vision, what you can do, and why you should have this digital TV."</i>	It was important from a marketing perspective that the service could strengthen the overall image of the company. The purpose could be increased profitability in the long run, but it could also help enhance the company's image as, for instance, being more innovative (originality). Furthermore, the marketing theme also included the possibility to actually package the idea for marketing (producibility).
2	Context	A specific context or target group was taken into account when assessing the idea. Therefore, the expert used the context/target group for his reasoning. This also included an evaluation of whether the context was within the current strategy and business scope for the company; i.e., the strategic fit test.	<i>"... now I am considering the more advanced user's perspective."</i> [specific target group] <i>"... a very narrow service, so I don't know how common it is that you would want to use it."</i> [target group and profitability] <i>"As a home-hackers then fine, take out one and test it cheaply."</i> [strategic fit]	The expert used an imaginary context and/or target group for his reasoning to assess if the ideas business context was addressing an interesting target group. This could be a kind of <i>profitability</i> assessment, but also a check of whether the idea fits the current strategy and business scope; i.e., <i>strategic fit</i> .
3	Mini scenario	The expert here created a "mini-scenario" in order to evaluate the idea. It could either be a use-based or technology-based scenario. Use-based was aimed at better understanding the usage; in other words, helping the expert appraise the user-value. On the other hand, the technology-based scenario facilitated the understanding of technical feasibility.	<i>"When you get GPS coordinates for this, you then get a pop-up alarm. But it will hardly work in the subway because there is no GPS coverage ..."</i>	This can be regarded as an idea evaluation technique. However, in the scenarios, aspects such as the <i>producibility</i> and <i>user value</i> could be evaluated by a kind of thought simulation.
4	Experience	Indicates that the expert explicitly referred to his own experience to assess the idea. This could result in a more positive or more negative assessment depending on the expert's experience.	<i>"... the idea is interesting because we have actually tested a service that does exactly this..."</i>	This theme also seems to be linked to the use situation (Theme 3 above), as many of the scenarios were based on the experts' own experiences. Experience can be seen as a "resource" used in a "thought process."
5	Trend	The expert explicitly made comments regarding whether the service idea was within a trendy field.	<i>"... it feels as if this has been bigger in the past; it doesn't feel like the future."</i> <i>"... I think we are heading towards that direction. I think this will become more common. I think that if you look ahead, this will come as a way to remove all ugly remote controls with a neat solution ..."</i>	Trend should not be confused with Originality; it is actually the opposite. If it is a trend that should be followed, then it is no longer original. At the same time, a trend could have a risk-minimizing effect. It can be assumed that User Value and Profitability are both influenced by trends. This seems to influence the overall decision either positively or negatively.
6	Resource integration	The expert explicitly discussed and reflected on how other actors and resources (not in control of the expert's company) should be integrated in order to implement the idea.	<i>"Here I see obvious IPR [Intellectual Property Rights] problems. Just looking at Boxer and its twin card, you may not even have a subscription to a screen. This is an incredibly rigid market."</i>	Resource integration is essentially a further elaboration of how the idea could be implemented, thus linked to producibility.

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	Initial themes	Description	Quotes	Interpretation
7	Timing	The expert explicitly mentioned that the idea was interesting in either a short or long time frame.	<i>“I think this probably will come, it might even become a standard sometime in the future ...”</i>	Timing is dependent on whether the idea can be implemented with currently available technology, but also dependent on the market maturity. Therefore, an idea could be possible to implement, but the target group may not yet be ready to adopt it. Timing indicates the “window of opportunity.” Incremental ideas should have a short window, whereas radical ideas can be accepted as having a more prospective commercialization.
8	Payment solution	Concerned whether it would be possible to charge for the idea.	<i>“It’s all about how you would charge for it; when you do a small automatic service, it can tick all the time. Or you might get paid when someone loses his mobile.”</i>	If the expert could not identify any obvious payment solution, it would be less interesting for the company. The theme has an impact on <i>producibility</i> and <i>profitability</i> .
9	Intuition	For some of the ideas, the expert explicitly said that he felt the idea was either good or bad, but he could not logically express why he felt so. This theme is referred to as “intuition.”	<i>“This idea had something that was fun in itself. But I don’t really know what it is that appeals to me ...”</i>	This seems to be a unique category. It is what the literature describes as a non-empirical-based decision.
10	Legitimacy	Based on the idea description, the expert for some of the ideas implicitly formed a conception of the idea’s quality. For instance, if the description was illogical or self-contradictory, the expert immediately down-rated the idea.	<i>“... this is very interesting as the story reveals that some kind of economics teacher created it, so I assume that there is some sound economic theory behind it.”</i> [trustworthy idea creator] <i>“This was fun; the story is exactly contrary to the idea.”</i> [illogical]	By reading the idea description, the expert gained an apprehension of the idea creator, which implicitly influenced his assessment of the idea.
11	Cluster	The expert sometimes commented that the same type of idea recurred several times. Even though they did not suggest exactly the same thing, they were related.	<i>“... someone who wants multi remote again.”</i> <i>“... here is yet another version of the mobile wallet. There seems to be a great demand for this type of service.”</i>	Clusters can be detected in a meta-analysis; i.e., all or most of the ideas must be evaluated before one can see patterns or trends, which indicates a cluster of similar ideas. In isolation, these ideas might not be that interesting, but the potential increases when they are seen as a part of a cluster.
12	Simplicity	A recurrent comment from the expert was whether the idea was perceived as simple. Simple could be seen from two different perspectives. One was the usability perspective; i.e., whether the idea would be easy to use. The other simplicity perspective was	<i>“... a gaming idea ... it is of course easy to understand and communicate, so it might work ...”</i> <i>“... this is a common situation, and that this is the service to use in that situation. In this case, it seems a bit complicated.”</i>	Simplicity can be linked to user value as it influences whether the user will be able to understand and use the implemented idea. Furthermore, simplicity has a bearing on the <i>producibility</i> ; i.e., whether the idea is marketable.

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		whether the idea would be easy to actually communicate to the market.		
13	Existing	Indicates that the expert explicitly mentioned that he was aware of the existence of the idea.	<p><i>"... this has been around for many years; no big seller."</i></p> <p><i>"I think this exists."</i></p> <p><i>"This very fun because I actually tried exactly something like the idea describes ..."</i></p>	If an idea is already known, it will likely affect the overall assessment of the originality (negatively) and producibility (positively).