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An Examination of Innovation Idea Selection Factors in Large Organizations

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An Examination of Innovation Idea Selection Factors in Large Organizations

(A Four Essay Dissertation)

by

Troy A. Montgomery

A dissertation in partial fulfillment
of the requirements for the degree of
Doctor of Business Administration
Muma College of Business
University of South Florida

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August 18, 2017

Keywords: Decision Making, New Product, New Service, Idea Selection, Innovation

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# TABLE OF CONTENTS

List of Tables .................................................................................................................. ii

List of Figures .................................................................................................................. iii

Dissertation Introduction ................................................................................................. 1

Chapter One: Article 4 - A Qualitative Examination of Critical Factors Large Organizations Consider when Selecting Innovation Ideas ............................................... 5
  Abstract ......................................................................................................................... 5
  Introduction .................................................................................................................. 6
  Theoretical Background ............................................................................................... 8
    Innovation .................................................................................................................. 9
    Incremental and Radical Innovation ....................................................................... 10
    Idea Selection ........................................................................................................... 11
    Large Organization ................................................................................................. 11
  New Product Failure Rate and Success .................................................................... 12
  Research Methodology and Design .......................................................................... 12
  Results and Discussion .............................................................................................. 16
    Five Systemic Factors ........................................................................................... 17
    Four Implementation Factors ................................................................................. 20
  Managerial Implications ......................................................................................... 28
  Academic Implications ............................................................................................ 30
  Limitations and Future Research ............................................................................ 30
  Conclusion ................................................................................................................ 31
  References ................................................................................................................ 33
  Appendix ................................................................................................................... 36

Appendix: Published Article Permissions ..................................................................... 38

Appendix Part 1: Article 1 PDMA Conference Proceedings (proposal) - An Examination of Innovation Idea Decision Making in Large ........................................................................... 39

Appendix Part 2: Article 2 Muma Business Review – “How much is this worth?” Humana’s Chief Innovation Officer Explains Why This is the Wrong Question ............ 48

Appendix Part 3: Article 3 Muma Business Review – What are the critical factors large organizations consider when selecting innovation ideas? .............................. 56
LIST OF TABLES

Table 1: Dissertation Outline .................................................................1
Table 2: Research Participants .................................................................13
Table 3: Systemic Factors .................................................................18
LIST OF FIGURES

Figure 1: Traditional Dissertation and Collection of Articles .................................................8

Figure 2: Research Process ........................................................................................................16

Figure 3: Findings .......................................................................................................................17

Figure 4: Visual of Summarized Findings ................................................................................31
DISERTATION INTRODUCTION

Dissertation option 2, per the “USF DBA Dissertation Proposal” guidelines, includes a collection of articles/papers. Three of the four papers have been published, with the fourth anticipating publication following completion of this dissertation requirement. The published papers include the extended abstract proposal paper published in the proceedings of the 2016 PDMA Annual Conference, the Muma Business Review (MBR) interview paper and the MBR research question review paper. The fourth paper serves as the product of the previous 3 papers and represents the research proposed in paper 1 from the following table.

Table 1: Dissertation Outline

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Description</th>
<th>Citation</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>“How much is this worth?” Humana’s Chief Innovation Officer Explains Why This is the Wrong Question</td>
<td>10 page qualitative interview with Humana’s CIO, including discussion comparing and contrasting academic literature</td>
<td>Montgomery, T. (2017). “How much is this worth?” Humana’s Chief Innovation Officer explains why this is the wrong question. <em>Muma Business Review, 1(3).</em> 31-38.</td>
<td>Committee approved on Dec 9, 2016 – Article included as is in proposal defense</td>
</tr>
<tr>
<td>3</td>
<td>What are the critical factors large organizations consider when selecting innovation ideas?</td>
<td>MBR Research Question Review, serves as the literature review for the research question</td>
<td>Montgomery, T. (2017). What critical factors do companies consider when selecting innovation ideas? <em>Muma Business Review, 1(7).</em> 69-80.</td>
<td>Committee approved on Dec 9, 2016 – Article included as is in proposal defense</td>
</tr>
<tr>
<td>4</td>
<td>A Qualitative Examination of Critical Factors Large Organizations Consider when Selecting Innovation Ideas</td>
<td>Culmination of the research including 28 interviews of business leaders involved in innovation idea selection</td>
<td>Anticipate submission following dissertation completion</td>
<td>Defense completed on Aug 18, 2017</td>
</tr>
</tbody>
</table>
Paper 1: An Examination of Innovation Idea Decision Making in Large Organizations

This published paper was accepted as an extended abstract into the proceedings of the Product Development Management Association (PDMA) 40th Annual Research Conference held in Atlanta, GA on October 15-16, 2016. The abstract, introduction, methodology, and initial findings were included in the paper as well as the research presentation given on October 16th, 2016. PDMA research is included and tied directly with the Journal of Product Innovation Management which is considered to be a top tier journal in the category of innovation and technology management (Scimago Journal and Country Rank, 2016).

Paper 2: “How much is this worth?” Humana’s Chief Innovation Officer Explains Why this is the Wrong Question.

This published paper utilized the interview template format from the Muma Business Review (MBR) and was part of the pilot study for paper 4. Chris Kay, the Chief Innovation Officer at the $50B health and wellness company Humana, agreed to share his thoughts on selecting innovation ideas during a 90 minute interview. Kay discussed specific strategies Humana employs to bring consumer insights into action via innovative business models, products, and services. He shared examples of recent innovation ideas in development and the method of idea selection and decision making. The paper included excerpts from the interview as well as a discussion comparing and contrasting Kay’s insights to recent published academic and practitioner literature on the topic.
Paper 3: Research Question Review: What are the critical factors large organizations consider when selecting innovation ideas?

This published paper provides a review of the literature for the proposed research question and follows the MBR template format for the research question review. Included is a discussion of applicable constructs and theory including radical and incremental innovation, portfolio theory, contingency theory, and systems theory. The body of the literature research is consolidated into a table that focuses on decision factors in innovation idea selection.

Paper 4: A Qualitative Examination of Critical Factors Large Organizations Consider when Selecting Innovation Ideas

This completed paper is the result of the dissertation proposal discussed in paper 1 and builds off of paper 2 and paper 3. Exploratory, grounded theory research utilized interview data from 28 innovation leaders in large organizations to uncover the key factors large organizations consider when selecting innovation ideas. Through application of the constant comparison of data (Glaser and Strauss, 1967), the research progressed forward in an iterative, structured procedure that included: interviewing individual participants, transcribing the data into a total of 410 pages, generating codes, analyzing and comparing codes among initial participants for resulting concepts and themes, and then interviewing subsequent participants.

The sequence of papers followed a logical path towards the completion of Paper 4 as shown in Figure 1. Paper 1 was utilized as an early step in developing the framework for Paper 4. The acceptance and presentation of Paper 1 at the PDMA research conference provided invaluable feedback from academics in the field of innovation as well as confirmed the
importance of this research topic. Paper 2 provided an example of one of the interviews in the qualitative pilot study building towards Paper 4. Additionally, this paper provided insights into the depth and richness of the 28 different interview participants in Paper 4. Paper 3 provided an in-depth view of the existing literature related to the research question in Paper 4. As interesting findings emerged from the grounded theory study, Paper 3 served as a comparison to the existing literature and provided contrasting or congruent views to theories and constructs already developed.

Figure 1: Traditional Dissertation and Collection of Articles

All four papers provide a consistent topic and approach to answering the primary research question of the dissertation: what are the critical decision making factors large organizations consider when selecting innovation ideas?
CHAPTER 1: ARTICLE 4 – A QUALITATIVE EXAMINATION OF CRITICAL FACTORS LARGE ORGANIZATIONS CONSIDER WHEN SELECTING INNOVATION IDEAS

Abstract

A review of the innovation literature reveals theoretical models and success factors that pertain to the front end of innovation. However these models and factors fail to offer insight into factors large organizations consider when specifically performing the activity of idea selection. To bridge this gap, a grounded theory method was used to extract knowledge on innovation idea selection from 28 senior executives and innovation directors from 10 different, large organizations (defined as annual revenues greater than $1 billion). Analysis of the interview data resulted in the identification of 5 systemic and 4 implementation factors that large organizations consider when selecting innovation ideas. The 5 systemic factors are the critical selection factors that can be utilized by managers in practice. They include organization, customer, financial, strategic, and market/industry factors. The 4 implementation factors reflect novel findings related to the underlying issues with applying the systemic factors in idea selection. The implementation factors include innovation classification, innovation need, innovation support, and innovation alignment. Identifying critical decision making factors contributes to the innovation literature and provides large organizations with a better understanding of the selection phenomenon and enables them to apply selected factors to improve their current approach.
Introduction

According to a recent survey, 93% of CEO’s stated that innovation is critical to their business strategy and long term success (Koetzier and Alon, 2013). However, the failure rate for new product introduction is 46% for the majority of companies and 29% among companies leading in innovation (Castellion and Markham, 2013). A multitude of factors can impact the failure rate of a new product introduction. However, studies show the process of idea selection during the early phase of innovation management significantly impacts the success of the development and launch of a new product or service (Cooper, 1988; Dwyer and Mellor, 1991; Kim and Wilemon, 2002). Numerous factors have been identified as critical to innovation, yet scholars have not agreed on the critical decision making factors managers should consider during idea selection (Smith, et. al, 2008; Cooper, 1994; Carbonell-Foulquié, et. al, 2004). This leads to the central research question: what are the critical decision making factors large organizations consider when selecting innovation ideas?

Practitioners and academics both recognize the problem. For example, a recent American Manager Associate survey of more than 1,300 global managers stated “in most companies there is no obvious strategy for selecting or even evaluating ideas” (Tucker, 2016). Similarly, a recent MIT Sloan Management Review article suggests the “problem for most large organizations isn’t a shortage of ideas… but figuring out how to ferret out the good ones” (Reitzig, 2011). Acknowledging the same concern, the Chief Innovation Officer of a $50 billion global technology company stated that the most critical problem of the innovation process is how to filter, analyze, prioritize and then select the innovation idea (J. Stikeleather, personal communication, November 6, 2015). Academics have also recognized the importance of idea
screening and decision-making related to successfully bringing innovation ideas to market (Hammedi, et. al, 2011; Martinsuo and Poskela, 2011; Kock et. al, 2014; Schmidt and Calantone, 2002). While the necessity for research on identifying the factors large organizations consider for idea selection has been acknowledged, idea screening has more recently been identified as a top innovation research priority for scholars (Barczack, 2014). This qualitative research study uses grounded theory to address this priority.

To identify the critical idea selection factors, a systematic grounded theory approach was applied employing the procedures of Glaser and Strauss (1967). Grounded theory is a qualitative research method intended to generate or discover a theory for a process or an action (Creswell, 2012). This approach provides an exploratory method to study and gather data through interviews with participants who have experienced the innovation idea selection phenomenon. Through application of the constant comparison of data (Glaser and Strauss, 1967), the research progressed forward in an iterative, structured procedure that included: (1) interviewing two to five participants, (2) transcribing the data, (3) generating codes, (4) analyzing and comparing codes among participants for resulting concepts and themes, and (5) interviewing subsequent participants.

The managerial implications of this study are substantial. A 2010 article estimates that the annual number of new product launches are upwards of 250,000 (Wong, 2010). Additionally, the R&D expenditures of 1,000 large global organizations totaled $680 billion in 2015 alone (Jaruzelski, Schwartz, and Staack, 2015). Prior studies explain the importance of innovation within large organizations. A recent analysis from the American Productivity & Quality center shows that, on average, 27.3 percent of company sales over the past three years are generated from new product launches (Kahn, 2013 pg. 3). Furthermore, the top 25 percent of firms have 12
times as much productivity in new product development as the bottom 25 percent (Arthur, 2005). With organizations facing failure rates close to 50%, an application of critical factors that drive modest improvements in the innovation process has the potential to positively impact innovation on an enormous scale.

**Theoretical Background**

The “Front End” of innovation precedes the more formalized process of product development and consists of high level processes that are broken down into the following activities: (1) opportunity identification, (2) idea generation, and (3) early concept planning and formulation (Koen, 2002; Khurana et al., 1998). Two different lines of research provided early conceptual models for the front end of innovation. The first, New Concept Development (NCD) model, details an internal engine, external environment, and 5 activity elements that consist of opportunity identification, opportunity analysis, idea generation, idea analysis, and concept definition (Koen, 2014). In the second line of research, Khurana et al. describes a model that consists of ongoing identification, analysis, and planning phases prior to a decision to move into New Product Development (NPD) execution. Subsequent work has continued to build off of these early findings (Kock et al., 2015; Martinuso and Poskela, 2011). Academics have described the front end of innovation as explorative in nature and contributing to a validated product concept (Martinuso and Poskela, 2011). Research on the front end of innovation has provided insights and factors as a whole, but does these factors are not broken down to the specific activity of idea selection (Kahn, 2013). Idea selection is acknowledged as important to the front end success and contributing to the successful development and launch of a new product or service (Cooper, 1988; Dwyer and Mellor, 1991; Kim and Wilemon, 2002). This research contributes to
the extant literature on the front end of innovation by seeking to identify the critical factors large organizations consider during idea selection. Additionally, it bridges an existing gap between the academic models and the reality of how ideas are selected by large organizations in practice. Unlike the heavily researched later phases of the innovation process, the front end of the innovation process is less understood (Kock et al., 2015). This research aims to provide insights into a less researched area as well as identify gaps between academicians and practitioners using an exploratory qualitative approach.

In order to better frame the discussion and analysis of the data from participants in this qualitative study, it is important to define a number of constructs. The following provides a brief overview to the most critical constructs discussed.

**Innovation**

Literature across various disciplines describe the term innovation in different ways. A recent article provided a review of close to 60 definitions of innovation collected from various research. (Baregheh et al., 2009) The article provided the following definition:

>“Innovation is the multi-stage process whereby organizations transform ideas into new/improved product, service, or processes in order to advance, compete and differentiate themselves successfully in their marketplace” (Baregheh et al., 2009, p. 1334).

Innovation is defined first as a multi-stage process. The front end models serves as the early stages followed by the well-researched new product development stages. The resulting product, service, or process is then intended to benefit the organization by providing competition or
differentiation within the marketplace. In order to ensure participants were aligned with the researcher, this definition was provided during each interview introduction.

**Incremental and Radical Innovation**

It is widely accepted that there are two general types of innovation in organizations, incremental and radical. Incremental innovation defines improvement within a given frame of solution “doing better than what we already do”. Incremental innovation creates less uncertainty and typically does not require a high level of technical expertise to implement (also referred to as sustaining innovation). In other words, incremental innovations are minor changes to existing products or services (Rodgers, 2010; Ritala and Hermelinna-Laukkanen, 2013).

A second, more complex, type of innovation is referred to as radical innovation. Radical innovation consists of a larger change or doing what we did not do before. (Norman and Verganti, 2013). Academics have used many terms such as discontinuous, emerging technology, and disruptive innovation to further describe radical innovation (Robbins and O'Gorman, 2015). Radical innovation creates a high degree of uncertainty and represents a new paradigm for carrying out some task. Radical innovation requires a departure from existing capabilities in the firm resulting in new products and services (Rodgers, 2010; Ritala and Hermelinna-Laukkanen, 2013). Often practitioners interchange terms such as discontinuous, transformational, or transformative innovation for radical innovation. The following provides a succinct definition to apply to radical innovation for this study. “A radical innovation is a product, process, or service with either unprecedented performance features or familiar features that offer significant improvements in performance or cost that transform existing markets or create new ones”. (Leifer et al., 2001, p. 102)
**Idea Selection**

The innovation is defined as a multistage process. The front end of innovation, also referred to as the fuzzy front end, is where ideas are generated, prioritized, evaluated, and potential concepts and future projects are planned and developed (Brentani and Reid, 2012; Kock et al., 2014). This research is concerned with idea selection prior to any structured new product development (NPD) (Koen et al., 2014). In other words, the focus of this study is on selection of ideas that have been generated, rather than on developed products, services, or process. Development of a product or service happens downstream in the innovation process, closer to the actual market launch.

**Large Organization**

Large organizations are typically defined by the number of employees and the annual revenues. Gartner, the IT research and advisory firm, delineates a large organization as having more than 1,000 employees or more than $1 billion in annual revenues (“What is SMB”, 2016). Innovation in a large organization is a very different process than innovating in a startup or small company. The sheer number of employees adds to the complexity and bureaucracy. Larger organizations are likely to have multiple business units with a variety of processes, products, and service lines. An organization with high annual revenues must have one or more established products or services. It may prove more challenging for large organizations to make a change to established product/services, especially when considering the complexity of implementing and executing such a change.
New Product Failure Rate and Success

Research over the past 60 years varies in reporting an estimated failure rate for new products. A recent study analyzed empirical evidence based on existing literature and concluded that the product failure rate for most companies is approximately 46%, where failure is defined as “the percent of new products actually introduced to the market and then fail to meet commercial objectives of the business unit that launched the product” (Castellion and Markham, 2013). For purposes of this study, interview participants were asked for examples of innovation launches their organization considered a success or failure. It is important to note that definitions of success vary across organizations. Participants were asked to use their organizations definition of success and were not pressed in the interview to use a consistent definition.

Research Methodology and Design

Data were collected through individual interviews of 28 participants from 10 different large organizations, each lasting between 45 and 90 minutes. A theoretical sampling approach was followed utilizing data gathered from a pilot study that included 5 c-level executives to identify potential interview candidates for the research (Eisenhardt, 1989). The 28 individual participants all had recent experience in selecting early stage innovation ideas as part of a large organization, where organizations generating approximately $1 billion or more in annual revenue are considered large for purposes of this study (“What is SMB”, 2016). Interview preference was given to senior or executive level leaders within the large organizations innovation group. Interviews with innovation leaders served as the primary source of data. The participant list, with
titles shown in Table 2, consisted of experienced c-level executives and senior executives with an average of more than 24 years of experience. The 10 large organizations, listed in Table 3, included a list of global companies comprised of a top 10 ranked Fortune global innovation organization, multiple finalists for the Outstanding Corporate Innovation Award from PDMA, a 2017 Fortune World’s most admired company, and multiple nationally recognized product innovation award winners.

<table>
<thead>
<tr>
<th>Participant Titles</th>
<th>Average Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Executives (18)</td>
<td></td>
</tr>
<tr>
<td>Chief Innovation Officer</td>
<td></td>
</tr>
<tr>
<td>Chief Technology Officer</td>
<td></td>
</tr>
<tr>
<td>Chief Information Officer (2)</td>
<td></td>
</tr>
<tr>
<td>Chief Medical Officer</td>
<td></td>
</tr>
<tr>
<td>Chief of Staff Innovation</td>
<td>26 years</td>
</tr>
<tr>
<td>Senior VP of R&amp;D / Innovation (4)</td>
<td></td>
</tr>
<tr>
<td>VP of Strategy / Innovation (8)</td>
<td></td>
</tr>
<tr>
<td>Directors (10)</td>
<td></td>
</tr>
<tr>
<td>Director of Innovation (7)</td>
<td>20 Years</td>
</tr>
<tr>
<td>Director of Product Mgmt.</td>
<td></td>
</tr>
<tr>
<td>Senior Engineering Manager</td>
<td></td>
</tr>
<tr>
<td>Senior Product Manager</td>
<td></td>
</tr>
</tbody>
</table>

| 28 Total Participants 24 Avg. Years of Experience |

Table 2: Participant Large Organizations

<table>
<thead>
<tr>
<th>Organization</th>
<th>Industry</th>
<th>Annual Revenue</th>
<th>No. Employees</th>
<th>No. Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org1</td>
<td>Financial Services</td>
<td>$1B to $10B</td>
<td>2,000 to 10,000</td>
<td>3</td>
</tr>
<tr>
<td>Org2</td>
<td>Healthcare</td>
<td>$1B to $10B</td>
<td>Greater than 10,000</td>
<td>4</td>
</tr>
<tr>
<td>Org3</td>
<td>Healthcare</td>
<td>Greater than $10B</td>
<td>Greater than 10,000</td>
<td>2</td>
</tr>
<tr>
<td>Org4</td>
<td>Healthcare</td>
<td>Greater than $10B</td>
<td>Greater than 10,000</td>
<td>1</td>
</tr>
<tr>
<td>Org5</td>
<td>Pharmaceuticals</td>
<td>Greater than $10B</td>
<td>Greater than 10,000</td>
<td>1</td>
</tr>
<tr>
<td>Org6</td>
<td>Consumer Goods</td>
<td>Greater than $10B</td>
<td>Greater than 10,000</td>
<td>4</td>
</tr>
<tr>
<td>Org7</td>
<td>Consumer Goods</td>
<td>Greater than $10B</td>
<td>Greater than 10,000</td>
<td>3</td>
</tr>
<tr>
<td>Org8</td>
<td>Industrial / Engineering</td>
<td>Greater than $10B</td>
<td>Greater than 10,000</td>
<td>3</td>
</tr>
<tr>
<td>Org9</td>
<td>Industrial / Engineering</td>
<td>$1B to $10B</td>
<td>Greater than 10,000</td>
<td>5</td>
</tr>
<tr>
<td>Org10</td>
<td>Technology</td>
<td>$1B to $10B</td>
<td>2,000 to 10,000</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10 Organizations</th>
<th>Avg. Revenue</th>
<th>Avg. No of Emp.</th>
<th>28 Participants</th>
</tr>
</thead>
</table>

A semi-structured interview script (see Appendix, Exhibit A) with a series of open ended questions was utilized to complement the grounded theory methodology by allowing for emergent themes to surface through dialogue. The interview script was finalized after concluding a pilot study with 5 c-suite decision makers (not included in Table 2 or Table 3) from large organizations. Multiple iterations of the script were completed in close partnership with a qualitative research expert.
All 28 interviews were held between November, 2016 and March, 2017. Each interview was recorded and transcribed in order to facilitate an efficient coding process. A concerted effort was made for each interview to occur in person. Where travel or scheduling conflicts arose, video teleconference interviews were held using Skype, FaceTime, or telephonic conference calls. To begin the interview, each participant was asked to share their background as well as describe their current or past position as it relates to innovation idea selection. The interview continued with open ended questions asking the participant to describe a recent innovation his or her large organization considered a success. Participants were asked about the specific factors that the organization considered when selecting that innovation idea. Probing questions helped to identify the critical factors which are defined as having a significant impact on the organizations decision to continue forward with an idea in the innovation process. Asking for a recent example minimized the risk that participants share what they believed organizations should consider versus what they believed the organization actually considered. The line of questions were repeated for a second successful innovation idea as well as for two different unsuccessful innovation ideas. Asking for two successful and two unsuccessful examples allowed for a more robust data gathering method for identifying critical factors. Additionally, the question design allowed for a comparison between factors tied to successful examples in contrast to unsuccessful examples. It is important to reiterate that definitions of success vary across organizations. Participants were asked to use their organizations definition of success and were not pressed in the interview to use one consistent definition.

The analysis of data used the proven techniques for grounded theory developed by Glaser and Strauss (1967). Figure 2 provides details on the research analysis process. Most notable is the constant comparison approach to compare and contrast the data throughout the data gathering
process (Glaser and Strauss, 1967). Individually conducted interviews occurred in sets of two to five participants and were then transcribed, coded, and analyzed before the next set of interviews were conducted. Each analysis included development and documentation of codes, categories, memos and concepts organized in tables and eventually into a categorized list of 5 systemic factors and 4 implementation factors.

Inter-coder reliability refers to the stability of responses from multiple coders of data sets (Creswell, 2012). In order to check coding reliability the first set of 3 interviews were coded by both the author and a researcher with grounded theory experience including experience in coding textual data. By including this early in the analysis the author ensured inter-coder reliability by agreeing upon a developed qualitative codebook of the major codes (Creswell, 2012). Additionally, the author stood to gain valuable insights and discussion of findings of the first 3 interviews as well as a selected sample of subsequent transcripts.

![Figure 2: Research Process](image)

Over 420 single spaced pages were coded line by line after iterations of listening to each interview and multiple thorough reviews of each transcript resulting in more than 1,700 codes. It
became apparent that no new themes were emerging once the final 4 interviews from the 10th organization were transcribed, coded, and analyzed. Therefore, it was determined that theoretical saturation had been reached at 28 participants and no further interviews were conducted (Glaser and Strauss, 1967). Recent studies agree that 20 to 30 interviews can prove sufficient in reaching theoretical saturation (Malshe and Biemans, 2014; Parry and Kawakami, 2017).

Results and Discussion

Results were designated into two classifications. The first classification, the 5 systemic factors, were uncovered iteratively throughout the coding process. Codes from multiple interview data shaped consistent definitions of a category through use of in vivo codes. The categories that related to participant explicit discussion of what organizations considered in innovation idea selection were considered sub factors. Sub factors were then further analyzed and grouped based on internal or external organizational impacts and resulted in the 5 systemic factors. These sub factors and factors are described in a table format that includes the critical factors organizations consider when selecting innovation ideas. The systemic factors are generally understood and provide managers with a valuable tool when identifying factors to consider. The second classification, the 4 implementation factors, reflect novel findings related to the systemic factors and are discussed in depth through use of participant quotes. The 4 implementation factors were identified as underlying issues with applying the systemic factors in idea selection.
RQ: What are the critical decision making factors large organizations consider when selecting innovation ideas?

Five systemic factors.

The coding process revealed a number of clear, emerging, factors that large organizations consider when selecting innovation ideas. The 5 systemic factors are made up of 25 sub factors. Each sub factor was identified based on evidence that includes the number of times the sub factor was discussed in relation to a recent organization innovation, the emphasis of importance of the sub factor from participants, and the number of participants across the study who mentioned the sub factor as it related to a recent innovation. Sub factors were then categorized into the 5 systemic factors: Organization, Customer, Financial, Strategic, and Market/Industry. The following table provides the sub factors that make up each factor, a brief definition of the sub factors, and supporting quotes pulled from the research.
It is important to note that the factors documented are not meant to be an all-encompassing inventory, but a list of the critical factors large organizations consider. By nature of the interview questions each participant was asked for the critical factors large organization considered when making a decision on an idea as opposed to all factors. While it is accepted that scholarly literature has identified a number of the factors, this research serves to confirm those findings, include additional depth through identification of sub factors, and provide a systemic list of factors specific to innovation idea selection in large organizations.

<table>
<thead>
<tr>
<th>Table 4: Systemic Factors</th>
<th>Definition</th>
<th>Supporting Evidence (Participant Quote)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial Factor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue/Profit</td>
<td>Revenue and/or profit generated by the innovation.</td>
<td>&quot;Number 1 most important is revenue... really big revenue, not small revenue&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short Term Value</td>
<td>A focus on short term financial gains to quickly generate revenue or profit.</td>
<td>&quot;Half of our projects are focused on how quickly and how much money we can make&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;We fail to take some high value/high effort jobs because we are very strongly measured on performance&quot;</td>
</tr>
<tr>
<td>Payback/ROI</td>
<td>The amount of time to payback an investment or the expected return on an investment.</td>
<td>&quot;There’s a financial cost to implement, the financial return on the investment, how long the payback will take...&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;...criteria of it had a solid return on investment&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;... must have paid for the investment cost in about a year&quot;</td>
</tr>
<tr>
<td>Long Term Value</td>
<td>A focus on longer term financial gains, which may mean a short term loss but will result in sustained gains over time.</td>
<td>&quot;We are looking for long-term investments or long-term returns... over a five year horizon&quot;</td>
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<td></td>
<td></td>
<td>&quot;It’s not about how much more of the product we sell, but it’s especially how many consumers stay with the brand, because that is where the real money is over the next few years&quot;</td>
</tr>
<tr>
<td>Cost to Consumer</td>
<td>Cost consumers incur (i.e. retail price of good or service).</td>
<td>&quot;We found out that our old customers are not willing to pay the extra price&quot;</td>
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<tr>
<td></td>
<td></td>
<td>&quot;...the cost of the product&quot;</td>
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<td></td>
<td></td>
<td>&quot;Is this actually affordable...&quot;</td>
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<tr>
<td><strong>Organization Factor</strong></td>
<td></td>
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<tr>
<td>Speed to Market</td>
<td>The amount of time it takes for an org to take an idea to market.</td>
<td>&quot;How quickly do you execute? What is your time to market? So that you, tendency-wise, try to select projects you know how to execute&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;some of the criteria are the ones that we thought we could implement or get implemented, in a shorter period of time&quot;</td>
</tr>
<tr>
<td>Extensibility</td>
<td>The ability for an innovation to be utilized in adjacent technologies, products, or services.</td>
<td>&quot;This becomes an opportunity to explore and develop these underlying capabilities that can then be leveraged across the enterprise for almost any different kind of initiative.&quot;</td>
</tr>
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<td></td>
<td></td>
<td>&quot;Can we leverage our expertise as an [] company to make this product in a new and better way?&quot;</td>
</tr>
<tr>
<td><strong>Factor and Sub Factors</strong></td>
<td><strong>Definition</strong></td>
<td><strong>Supporting Evidence (Participant Quote)</strong></td>
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<tr>
<td>---------------------------</td>
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<tr>
<td><strong>Feasibility</strong></td>
<td>The ability for the organization to execute all activities necessary to successfully bring the idea to market.</td>
<td>either we have to have the channels or we have to have sort of a line of sight on how we're going to build the capabilities including the talent and everything else that you need”&lt;br&gt;&quot;this is a good fit for the kinds of resources that we have...&quot;</td>
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</table>
| **Technical Ability**     | Availability of the right technology, or the ability to get the necessary technology, to bring an idea to market. | "We have technology in-house already."
"We must have a line of sight to be able to have the technology to do it." |
| **Human Capital**         | Availability of the right people, or the ability to get the people with the necessary skillset, to bring an idea to market. | "Some of these would require skillsets we just didn’t have and as much as we’d like to go hire someone today, it’s not an option"
"…which ones did they feel like we were already appropriately staffed to work” |
| **Associate Impacts**     | The positive/negative impact the idea has on associates. | "It was the impact it would have ... and what we thought it would do in terms of associate engagement"
"...economic benefit, the associate engagement, and client satisfaction” |
| **Credibility of Org**    | Consideration if the market or industry views the org as a credible source of generating a particular product or service. | "Are we a credible resource to meet that need? Because the other thing we’ve had lots of failures from as an organization is ‘is it a validated need’, but we're not credible in meeting that need.”
"you look at what you’re known for as a company” |
| **Resource Constraints**  | A constraint, most commonly monetary funds and/or human capital that organizations must rationalize. | "[We look at]... who the customers are, what the value proposition is, and what resources would it really take to do this.”
"We don’t start a project until we have the resources to work on it.” |
| **Customer Factor**       | A problem or a need, defined by the customer that is currently not satisfied by existing products or services from the company or market. | “…really trying to move more towards being driven from the onset by the consumer, and the consumer need”
“First asking the question of is this a valid customer need?” |
| **Customer Need/Problem** | The interaction and relationship the customer forms with the product or service. How the customer uses the innovation. | “people like the way it feels and handles…”
"Why I would characterize it as a failure is that it falls short of the intuition and the consistent great experience as a product itself. Sometimes it works really well and sometimes it doesn’t.” |
| **Customer Experience**   | An increased likelihood that the customer will remain willing to purchase and utilize future innovations from this company. | “It might not necessarily make us a ton of money but keep them a loyal customer forever”
“... the other half are focused strictly on creating customer loyalty and keeping customers with us” |
| **Customer Loyalty**      | What the competition is currently doing. This may drive proactive or reactive strategies. | "When competitors come in and do something very different in your existing category, we have to react”
“It was what some of our competitors were doing, and we should be offering it too” |
| **Patent/Protection**     | Will the idea lead to a product or service that could be protected via a patent? | "Typically, we would also have a criteria around IP, so can we protect [ourselves] from competition”
"...we did a bunch of patent work around what we accomplished so it was sustainable" |
| **Marketing Story**       | The product or service fits a narrative that improves the probability consumers will have a greater attachment. | "Is there a good story either about the technology how it came to be or can we create a great story about what that technology can deliver to the consumer?”
“There’s no way that we can put them all out there and be really good at everything and still tell a clear story to our consumer.” |
<table>
<thead>
<tr>
<th>Factor and Sub Factors</th>
<th>Definition</th>
<th>Supporting Evidence (Participant Quote)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiation</td>
<td>Is this product or service differentiated from existing or competitor products or services?</td>
<td>“No other competitor had that, and this is absolutely top of mind”&lt;br&gt;“How sustainable is your competitive differentiator?”</td>
</tr>
<tr>
<td>Commercialization</td>
<td>The ability for the company to develop a commercially viable product that can be sold in a market.</td>
<td>“A great idea doesn’t mean it makes money”&lt;br&gt;“we did so much work pushing the edge of the technology but it was such a tiny niche”</td>
</tr>
<tr>
<td>Scalability</td>
<td>The ability for the company to create a product or service for the masses of potential customers demanding it.</td>
<td>“...we don’t have the luxury of just doing small volume, cool little niche stuff. It’s got to be a concept that we can make it at scale and efficiently”&lt;br&gt;“...the company can’t make them fast enough, they make them all by hand... we can’t scale this.”</td>
</tr>
<tr>
<td>Market Trends</td>
<td>Impact of the current industry environment including changes, new developments, and increasing or decreasing demand.</td>
<td>“What are the drivers in the market”&lt;br&gt;“The industry was moving in that direction”</td>
</tr>
<tr>
<td>Strategic Factor</td>
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<tr>
<td>Strategic Alignment</td>
<td>The idea supports the current or future strategy of the overall company or individual business unit.</td>
<td>“you have to make sure that this aligns with either the category strategy or the corporate strategy.”&lt;br&gt;“how does this fit into [company] future strategy overall going forward”</td>
</tr>
<tr>
<td>Core Business Alignment</td>
<td>The idea fits in the existing operations of the business.</td>
<td>“...innovated around vertically integrated business opportunities.”&lt;br&gt;“fits the kind of business we’re in”</td>
</tr>
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**Four Implementation Factors.**

In addition to the systemic factors, a number of underlying factors emerged from the coding analysis. The following discussion builds on aspects of the systemic factors, but in each case includes a novel finding underlying across multiple participant interviews.

IF1 - Innovation Classification: The type of innovation, radical or incremental, fundamentally shifts the weighting of central decision considerations. Data emerged indicating that a group of 10 interview participants shared consistent views regarding the importance, or weighting, of the systemic factors and sub factors. The weighting depended on first categorizing the type of innovation as radical or incremental. The group of 10 participants arose based on interview responses and the depth of discussion throughout the interview. All 10 participants fell
in the senior executive category (see Table 2) while also having experience working in an innovation specific group within a large organizations. In other words, they were in a position that was solely focused on innovation, as opposed to a role that would have additional responsibilities related to ongoing operations. The other 18 participants were either in the director category (see Table 2) or aligned within the ongoing operations organizational structure, such as the Chief Information Officer. This brought up yet another interesting finding (see the following IF4) that large organizations with leaders in the existing org structure and/or operations as innovation decision makers find it difficult to support radical innovation.

Thirty-three percent of the innovation examples shared in this study were considered cases of radical innovation, which is a relatively high number. Some practitioner researchers consider the “golden ratio” of radical innovation ideas to be in the range of 2% to 15%, depending on the industry, as well as other organizational factors (Tuff and Nadji, 2012). Participants sharing innovation examples in this study may have recalled radical examples at a higher volume since they tend to be more significant, complex and larger in scale than incremental innovation. Therefore, they may have been more likely to recall and discuss radical innovation examples.

The group of 10 senior executives recognized a distinct difference in making decisions on innovation ideas and emphasized non-financial factors. Whereas other participants tended to emphasize the financial factors for idea selection and rarely distinguished between incremental or radical innovation types. The following provides some of the example quotes from the 10 senior executives stressing the non-financial factors:

“Customers are a non-starter. If you don’t have them, don’t even start investing in innovation... for companies like us that are established, you’re going to kill every single idea if you don’t have a pipeline into the market” – Chief Technology Officer (Industrial/Engineering)
“The first one is solve; does it solve a problem? And I think that’s probably the most important one. In innovation, it’s easy to get enamored by new things that are coming to you – ‘Take a look at this. This is a cool thing.’ And it becomes a solution in search of a problem rather than having a clear focus on who is your consumer, what problem do they have and how do I solve it for them? So the first one is solve” – VP of Innovation (Consumer Goods)

On the other hand, the other participants were more concerned with factors that directly impact the bottom line in the near term. The following quotes provide a sample of just some of the emphasis on financial factors and the need to quickly realize benefits:

“We talk all the time about stuff we have a hard time moving forward because it doesn’t fit well into our financial metrics” – Director of Innovation (Industrial / Engineering)

“The business dollars and cents have to make sense. It needs to typically have a certain number of year’s payback” – Sr. Product Manager (Consumer Goods)

“It fit the criteria of having a solid return on investment” – Director of Product Management (Financial Services)

“The hard part is if you are a product manager who has a tight budget already, how do you resource something like this that isn’t going to pay dividends for 12 to 18 months?” – Director of Innovation (Industrial / Engineering)

“Selection criteria was based on dollars and the fact that the organization thought we could get it done pretty quickly”- Director of Innovation (Industrial / Engineering)

“Sometimes we fail to take some of these high value/high effort jobs on because we are very strongly measured on performance”- Director of Product Innovation (Industrial / Engineering)

The 10 senior executives bring a different perspective to radical innovation. The other 18 participants in the study all have innovation decision making experience, yet they generally apply a higher weight to financial factors early in the innovation decision making process. This is an important finding, especially for large organizations where decision makers may not have executive experience in an innovation focused group. Organization decision makers may end up
passing on high potential radical ideas early in the process due to applying significant weight to financial factors.

IF2 - Innovation Need: A clear need or well defined problem rooted in research increases the likelihood of approval. More than 90% of the participants shared that their organization believed an idea must be rooted in research with a clearly defined problem or unmet need in mind. This factor is a precursor to successful ideation and can be seen as a critical input or characteristic of an idea. Participants discussed this factor as a less formalized criterion when selecting innovation ideas, but one that is vitally important. Many participants went as far as stating that the focus of decision making isn’t about the idea, it is about the problem or need that is being solved.

“I could ask and poll thousands of people at [company] for their quote-unquote ideas, and may or may not get a reasonable innovation that addresses a customer need that actually does something useful. It's not so much about the ideas, it's about fundamentally understanding the problem... When people talk about an innovation funnel, I actually try to push through the concept of an innovation nozzle. An innovation nozzle means it’s actually quite narrow in the front...” – VP of Strategy / Innovation (Healthcare)

The nozzle, mentioned in the previous quote is a very interesting concept, especially since a number of innovation models focus on an innovation funnel (Cooper and Edgett, 2009; Flynn et al., 2003). The funnel whittles down a significant amount of ideas to a chosen few that will then move forward in the innovation process. In contrast, this research participant challenged the concept of an innovation funnel by stating organizations first need to focus on the problem. Without a pre-defined problem, the participants agreed that the likelihood to develop a successful innovation will be considerably lower.

This implementation factor has close ties to the systemic customer factor. Most of the research and problem identification relies on input from the customer to determine if a problem or a need truly exists. This finding further confirms, specifically as related to idea selection that a
market and customer focus should be included throughout the new product development process (Griffin and Hauser, 1996; Carbonell-Foulquié et al, 2004). The nozzle on the front of the innovation funnel is created based on the marketing function of grounding future ideas in customer feedback and unmet needs.

“That starts with defining what the customer job to be done is, and we ideate around that.” – Director of Innovation (Pharmaceuticals)

Additionally, when recounting failed innovation launches, 70% of all participants shared an example where they attributed the lack of customer involvement or customer research as a primary cause for failure. Customer involvement in the early stage of ideation, according to participants in this study, is what drives the problem or job that needs to be done.

IF3 - Innovation Support: Two ways to garner the required support for an idea are inter-organizational buy-in and key decision maker backing. Greater than 67% of participants discussed the difficulty and the importance of gaining buy-in of an idea from the organization and/or key decision makers. Participants identified 3 ways to develop inter-organizational buy-in and key decision maker backing:

1) Position authority – the idea generator or idea evangelist is in a position of organizational authority

2) The idea generator or idea evangelist stays fully engaged and remains persistent

3) Idea generator or idea evangelist involves a lead customer(s) to rally support

An idea generator is the individual, or group of people, that conceive and form the initial idea. The idea evangelist is the person working to convince people to believe in the idea using passion, dedication, guts and, cunning (Kawasaki, 1992).

Due to the novelty of an innovation, it is difficult for people to conceptualize an idea during the early stages. Radical innovations are especially difficult to conceptualize, and
therefore difficult to gain buy-in from employees who are not intimately involved with the early phase of generating the idea. Participants identified three ways to gain buy-in. First is gaining acceptance from someone with position authority, such as a key leader or key leaders within the organization. The following quote indicates the necessary buy-in of a series of leaders in positions of authority.

“Then I got it in front of the really senior executives in the organization so that they could react to it and make a decision. That is ultimately how we ended up moving forward with it.” – Chief Innovation Officer (Financial Services)

This finding seems intuitive. Gaining buy-in from someone of positional authority increases the chances for an idea to gain acceptance. However, this mode of buy-in may not lead to success. In fact, seven examples were shared where this mode of buy-in contributed to idea selection were unsuccessful innovation examples. Two different participants shared the following quotes related to unsuccessful innovation examples.

“The CEO just made the decision to go ahead and take what resources were needed to get this done. It became [the CEO’s] pet project and similarly everybody in the company knew that it was his pet project.” - VP of Strategy / Innovation (Technology)

“Leaders at the top of the organization don’t fully buy in and so the rest of the organization doesn’t buy in” – Chief Information Officer (Healthcare)

A second buy-in approach is created through the engagement and persistence of an individual that developed or is intimately involved with creating the idea. Two different senior executives shared the persistence of the idea generator in the context of successful innovation examples. In both cases one individual was fully engaged with an idea and personally committed to seeing it through. In the second case the idea generator was willing to risk their job.

“We’ve had people try to change [the service] over the years and they just couldn’t seem to break through... The person that submitted the idea said for two years he tried to get people to listen to him and nobody would listen to him.” - Chief Innovation Officer (Financial Services)
“What was interesting in this case is the designer, the engineer involved in the work, staked his career on it. He said, ‘If I do nothing else at [this company], this is what I want to do.’” – Chief of Staff Innovation (Consumer Good)

Out of the six times this factor was discussed among participants, all six cases were attributed to an example that the organization considered successful.

A third way to gain buy-in is through utilizing a lead customer. One company’s innovation strategy included identifying a customer, referred to as a lead customer, with credibility in the market that would be willing to work through the innovation process as a partner. In a few cases this included financial investments when the organization leadership was not willing to support the idea in early phases. As the idea progressed in the process and showed promise with the lead customer, the organization decision makers eventually supported the initiative and increased funding, but not until the lead customer helped prove the idea giving it credibility.

“…there was a small group who believed in that one, but that was not management and not the whole organization, so the only way we could proceed with our ideas was to get customer funding” - Director of Product Innovation (Industrial / Engineering)

“You have to have a lead user. You have to get somebody engaged that’s willing to take the risk with you – that this is a good idea and ‘I’m going to hang myself out there a little bit’ and ‘I see enough value or enough potential with what [Company] is working on that I’m going to work with them on it.’” – SVP of R&D / Innovation (Industrial / Engineering)

IF4 - Innovation Alignment: Ideas that align with existing organization structure and/or operations have an increased likelihood of approval. More than 67% of participants addressed the issue of alignment with the existing organization structure and existing operations. There is inherently a built-in source of friction and tension when a new innovation is not perceived as fitting what already exists. Organizational ambidexterity is a theory related to innovation that addresses the two disparate activities of exploiting the existing operations machinery while
simultaneously exploring new opportunities through innovation (Andriopoulos, C., and Lewis, 2009). This theme surfaced in responses from participants including 2 different schools of thought. One school of thought believes involving existing operations and existing organization structure early in the innovation process is beneficial.

“There's no way to get something big done in this organization without pulling teams together early.” – SVP of R&D / Innovation (Consumer Goods)

A second school of thought believes keeping ideas within a smaller innovation team early in the process is preferred. The following quote refers to a “collision” between ongoing operations and the innovation team.

“Somewhere in that [process] chain, they're going to collide. The earlier they collide, the less likely any idea is going to make it anywhere.” – Chief Innovation Officer (Financial Services)

Analysis of this factor offers two differing schools of thought regarding how to involve the organization’s ongoing operations into the innovation idea selection process. Participants in this study did not give a clear indication of which method is preferred. However, the group of 10 senior innovation executives clearly shared their organization’s tendency to hold ideas back from operation leaders until a concept, prototype, or more representative conceptualization with research and data was available to support approval of the idea. In other words, the tendency of more senior leaders is to shelter ideas for a longer period of time before involving outside leaders.

Across participants an emerging theme that intersects a number of systemic sub factors was identified to help mitigate the tension in the Innovation Alignment factor (IF4). The concept of a “platform” surfaced in 9 different participant interviews. “Platform development is defined and treated as development with the aim of creating a foundation, the platform, for the subsequent development of derivative products” (Sköld and Karlsson, 2013).
“In a platform you have some fundamental building blocks where everything that you do is based on that approach... The key to a platform is that you have to decide what you are going to standardize and what you are going to customize.” Chief Technology Officer (Industrial / Engineering)

A platform, in other words, can be an innovative product, technology, or process that either builds on top of core existing products or provides the foundation for future products. Platforms push organizations to think broader than a single innovation.

“So when we talk about platforms, most of the time in companies when they’re trying to build something new, they’ll have an initiative and they’ll build the underlying capability which is like a point solution and whatever technology or process or system is that you’ve built to support the customer experience that you’re delivering is only apropos to that experience. When we build stuff now I’m not thinking about building a [specific product]. I’m thinking about building a new way of figuring out how to target our customers. I’m thinking about a new way to engage our customers.” – SVP R&D / Innovation (Healthcare)

A platform approach was also discussed as a way to minimize the friction and tension between innovation teams and ongoing operations teams. By gaining organizational alignment and buy in to a particular platform, innovation teams are then able to increase the approval probability of future incremental and radical innovations that are tied to that platform.

“Having that structure, that clarity and that buy in at the most senior levels like, ‘These are the three platforms. These are the capabilities that we’re going to build and these are initiative that we’re going try to drive to build those capabilities,’ then that becomes the first filter around how we go after the ideas.” – SVP R&D / Innovation (Healthcare)

Referring to Table 2, a platform can therefore be viewed as cutting across multiple sub factors including extensibility, feasibility, technical ability, scalability, and strategic alignment.

**Managerial Implications**

The findings of this study are directly applicable to practitioners seeking the factors large organizations consider when selecting innovation ideas. Practitioners will be well served to closely review the systemic factors (table 4) to ensure they are aware of the 25 sub factors that
surfaced from the analysis of this research. In particular they should take notice of the sub factor “customer need/problem”. In the discussion of innovation need (IF2), more than 90% of participants shared their organization believed an idea must be rooted in research with a clearly defined problem or unmet need. Additionally, when recounting failed innovation launches, 70% of the examples shared were attributed to a lack of customer involvement or customer research as a primary cause of failure. Practitioners should consider the implications of moving forward with innovation ideas that do not have a clear customer need or problem that needs to be solved. Practitioners must consider the necessary time, effort, and focus required to address this factor during the front end of innovation in large organizations.

Furthermore, as described in the innovation classification factor discussion (IF1), organization decision makers risk passing on high potential radical innovation ideas early in the innovation process due to applying significant weight to financial factors. If the organization is pushing for a radical innovation approach, they should be aware of decision making bias for executives who aren’t working exclusively in a role that is concentrated on innovation. In other words, executives who are not in an innovation role tend to apply a greater weight to financial factors and favor incremental innovation projects during innovation idea selection. The implications to ignoring IF1 include an organization that consistently launches minor (incremental) product and service improvements and is unwilling to invest in higher risk innovations that have higher potential. Investing in incremental change can be a strategic decision. However, management should be aware they are applying this strategy as opposed to it occurring unintentionally.
Academic Implications

Despite continued research on innovation over the last decade (Kahn, 2013), the failure rate has not improved over time (Castellion and Markham, 2013). Academics acknowledge the need to advance the understanding of innovation idea selection (Barczak, 2014). This study makes a contribution to the innovation literature in two ways. First, the five systemic factors (Table 4) provide specific factors large organizations consider when selecting innovation ideas while the current literature discusses the importance of idea selection in the front end of innovation, but does not provide insight into key factors specific to innovation idea selection (Koen et al., 2014). Second, the implementation factors confirm and augment the knowledge from the extant literature specific to large organization innovation selection considerations.

Limitations and Future Research

This research has a number of limitations. First, this qualitative study consisted of a sample size of 28 interview participants, which may be considered small in comparison to some quantitative studies. However, recent articles confirm theoretical saturation can be achieved with 20-30 interviews (Malshe and Biemans, 2014; Parry and Kawakami, 2017). A second limitation is that the findings are based on data from participants of 10 large U.S. organizations with more than $1 billion in annual revenue. Therefore, these findings may be different for organizations that fall outside of these parameters. Third, participants were interviewed using three different modes: (1) in person, (2) video conferencing technology, and (3) telephonic only conferencing. While there were no apparent differences in the information provided by participants, there is potential for participants to react differently in each of the three settings. Finally, findings from this research cannot confirm what factors large organizations should consider when selecting
innovation ideas, but what factors they currently consider. A number of inferences can be made due to asking participants for successful and unsuccessful innovation examples. However, the definition of success was not defined by the researcher, but by how the participant’s organizations define innovation success.

Future research would extend this qualitative research to develop a mix methods study to determine what large organizations should consider when selecting innovation ideas. A second opportunity is to further examine the difference between the 10 senior executive participants and remaining 18 participants discussed in regards to the Innovation Classification factor (IF1). These 10 executives focused more on non-financial selection factors when making decisions on radical innovation ideas early in the process. Uncovering the characteristics of the 10 executives and providing insight on what drives their decisions can be an important research endeavor. The implications of this study will aid organizations in identifying decision makers who are dissimilar to the 10 executives and therefore may be more likely to pass up high potential radical ideas early in the process due to applying significant weigh to financial factors.

**Conclusion**

Factors impacting the front end of innovation are vital to the overall success of the innovation process and have received considerable attention in academic and practitioner articles. However, factors that impact the specific activity of idea selection in large organizations have received less attention. This research utilized the proven methods of grounded theory to address the central question: what are the critical factors large organizations consider when selecting innovation ideas?
Interview data from 28 senior level executives and directors, with collectively an average of more than 24 years of experience, were transcribed, analyzed, and categorized. The findings resulted in identification of 25 sub factors that make up the 5 systemic factors that include Organization, Customer, Financial, Strategic, and Market/Industry factors. The 4 implementation factors include Innovation Classification, Innovation Need, Innovation Support, and Innovation Alignment. Figure 4, adapted from Montgomery (2017), was developed to provide a visual of the findings that integrate the systemic and implementation idea selection factors into the overall innovation process within an organization. Managers in large organizations will be able to determine the applicable critical factors to apply by using the consolidated view. The 5 systemic factors and 4 implementation factors provide a unique executive insight, or “view from the top”, into the critical factors large organizations consider when selecting innovative ideas.
References


Appendix

Abridged Semi-Structured Interview Script

Introduction:

The interview began with a scripted introduction, review of confidentiality and informed consent, scope of research, and general demographic questions including current position and experience. Next the researcher provided a definition of innovation to help set context for the questions.

“Innovation is the multi-stage process whereby organizations transform ideas into new/improved product, service, or processes in order to advance, compete and differentiate themselves successfully in their marketplace” (Baregheh et al., 2009).

The core questions then asked participants to recount 4 recent innovation examples.

Successful Innovation Questions:

1. Think about a recent innovation idea your organization selected which was considered “successful”....

   ▪ Why was it considered successful?
   ▪ Tell me about the selection process of this particular innovation idea.
   ▪ Tell me about the evaluation of the idea – Probe on factors, evaluation, and prioritization
   ▪ Why did the organization select this idea to move forward in the process?

2. Repeat #1 for a 2nd example of a “successful innovation”
Unsuccessful Innovation Questions:

3. Think about a recent innovation idea your organization selected which was considered “unsuccessful”....

- Why did the organization consider it unsuccessful?
- Tell me about the organization selection process of this particular innovation idea.
- Tell me about the organization evaluation of the idea
- Why did the organization select this idea to move forward in the process?

4. Repeat #3 for a 2nd example of an “unsuccessful” innovation.
APPENDIX: PUBLISHED ARTICLE PERMISSIONS

Note to reader:

The following articles have been previously published and re-printed in their entirety in this dissertation. Please note the following (including citations):

Appendix Part 1: Article 1 PDMA Conference Proceedings (proposal) - An Examination of Innovation Idea Decision Making in Large

- Extended abstract paper for PDMA conference where author maintains copyrights and proceedings were shared with author’s permission.

Appendix Part 2: Article 2 Muma Business Review – “How much is this worth?” Humana’s Chief Innovation Officer Explains Why This is the Wrong Question?

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Appendix Part 3: Article 3 Muma Business Review – What are the critical factors large organizations consider when selecting innovation ideas?

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An Examination of Innovation Idea Decision Making in Large Organizations
Troy A. Montgomery

Abstract

This study examines the critical decision making factors large organizations consider when selecting innovation ideas. A recent review of the academic literature failed to reveal a straightforward conceptual model offering leaders of large organizations insight into how to best select innovation ideas. As a result, an opportunity exists to discover untapped knowledge from Chief Innovation Officers, executives, and other business leaders who are currently experiencing the innovation idea selection process in large organizations. This study will look to address this opportunity by using the qualitative method grounded theory, to compare data from senior level innovation leaders in large organizations in order to develop a conceptual model that explains the phenomenon. Identifying critical decision making factors organizations use in innovation idea selection will provide leaders with a better understanding of the phenomenon and enable them to apply a new conceptual model to improve their current approach.

Introduction

According to a recent survey, 93% of CEO’s stated that innovation is critical to their business strategy and long term success (Koetzier and Alon, 2013). However, the failure rate for new product introduction is 49% for the majority of companies; and 29% among leading innovation companies (Castellion and Markham, 2013). It is acknowledged that a multitude of
factors can impact the failure rate of a new product introduction. However, studies show the process of idea selection during the early phase of innovation management significantly impacts the success of the development and launch of a new product or service (Cooper, 1988; Dwyer and Mellor, 1991; Kim and Wilemon, 2002). There is little agreement among scholars as to the critical decision making factors managers should consider during idea selection (Smith et al., 2008). This leads to the central research question; what are the critical decision making factors large organizations consider when selecting innovation ideas?

Practitioners and scholars both recognize the problem. A recent American Manager Associate survey of more than 1,300 global managers stated “in most companies there is no obvious strategy for selecting or even evaluating ideas” (Tucker). Similarly a recent MIT Sloan Management Review article suggests the “problem for most large organizations isn’t a shortage of ideas… but figuring out how to ferret out the good ones” (Reitzig, 2011). Acknowledging the same problem, the Chief Innovation Officer of a $50 billion global technology company stated that the most critical problem of the innovation process is how to filter, analyze, prioritize and then select the innovation idea (J. Stikeleather, personal communication, November 6, 2015). To eliminate any doubt as to the depth of the problem, academics also recognize the importance of idea screening and decision-making related to successfully bringing innovation ideas to market (Hammed, et al., 2011; Martinsuo and Poskela, 2011; Kock et al., 2014; Schmidt and Calantone, 2002).

The previous citations from practitioners and scholars alike highlight the necessity for further research on how organizations select innovation ideas. The following summary will introduce a proposed qualitative research study that will address this need.
Methodology & Proposed Study

Grounded theory is a qualitative research method intended to generate or discover a theory for a process or an action (Creswell, 2012). It provides an exploratory method to study and gather data from participants who have experienced the phenomenon. There is an opportunity to develop a conceptual model that describes the factors large organizations consider when selecting innovation ideas. In order to develop that model a systematic grounded theory approach will be applied employing the procedures of Strauss and Corbin (Creswell, 2012).

Interviews with innovation leaders will be the primary source of data. The targeted participants are senior level decision-makers involved in the selection of innovation ideas. Interviews will focus on decision makers from large organizations, with more than $1 billion in annual revenue, but will include a number of innovation decision makers from smaller organizations to provide a contrasting view point.

A pilot study was conducted to gather preliminary data to inform the broader study and refine the interview questions. Pilot participants included two Chief Innovation Officers of $50 billion organizations, one CEO of a medical equipment company, one Chief Information Officer of a regional hospital, and a former CEO of multiple publicly traded companies.

An interview script, available in the appendix, was developed and later refined to provide a semi-structured interview for each pilot participant. The interviews were recorded and audio transcriptions completed for coding analysis. The data will be coded using the strategies of open coding, axial coding, and selective coding. Open coding is applied to identify major categories, axial coding is applied to develop the core phenomenon and model, and selective coding is applied to develop propositions to a new conceptual model (Creswell 2012).
**Expected Contributions**

Early pilot study findings indicate that the innovation idea selection process depends on the type of innovation and has fundamentally different decision factors within organizations and across industries. Radical (also known as disruptive) innovation includes large scale change and is typically market changing. Incremental innovation involves change on a smaller scale. This includes innovation on existing products or services that may change a feature or improve a product or service. (Bessant, et al., 2010; Schmidt, et al., 2009)

Additional research is necessary to determine which factors are generally accepted across a sample of leaders in large and contrasting smaller sized organizations. Based on early findings it seems that the set of factors will be fundamentally different for radical innovation ideas versus incremental innovation ideas. The managerial implications of this study are substantial. A 2010 article estimates that the annual number of new product launches are north of 250,000 (Wong, 2010). Additionally, the R&D spend of 1,000 large global organizations total a whopping $680B in 2015 alone (Jaruzelski, et al, 2015). With organizations facing failure rates close to 50% a conceptual model which drives modest improvements in the innovation process has the potential to positively impact innovation on a world wide scale.
Author Bio

Troy Montgomery is a performance improvement specialist focused on identifying opportunities, solving problems, and working with leaders to implement solutions for change. Troy is currently a consultant at Humana and previously served as a management consultant with a global operations consulting firm, SSA&Company, based in New York, NY. He started his career as an engineer and manager at GE before spending more than 3 years as an internal consultant at Bank of America.

Troy graduated with honors from the University of Notre Dame with a BS in Mechanical Engineering. He graduated top of his MBA class at the University of Georgia and expects to earn his Doctorate degree in Business Administration (DBA) from the University of South Florida in December, 2017. Troy is a certified Six Sigma Black Belt and Project Management Professional (PMP).
References


Appendix: Interview Script

Background in brief:
(Not discussed with participants)
Utilizing a conceptual framework adapted from the book Diffusion of Innovations by Everett Rogers:

![Diffusion of Innovations Framework](image)

I will examine the critical decision making factors large organizations consider when selecting innovation ideas.

Note: The below questions are intentionally general in order to reduce bias. Introducing the framework or research question listed above has the potential to skew the language, thoughts, and ideas of the innovation leaders interviewed. Providing a minimum amount of open ended questions will uncover what is actually occurring in organizations today versus what participants believe should occur.

Qualifying Participants - Participants should meet the following criteria:
- Current or recent past business leaders that have experienced making decisions (as individual or team) on innovation ideas related to products or services in a large organization
- Leaders should be part of a Fortune 1,000 sized organization (revenues >$1.5B)
- A select few leaders will come from smaller sized organizations to provide contrast
- Preference is toward Chief Innovation Officer or Innovation related teams and positions

To be discussed with participants:

Introduction: I’m conducting a study on innovation idea selection in large organizations like <company name>. Based on your leadership position and involvement in innovations at <company name>, I’d like to learn more about your recent experience around innovation idea decision making.

Confidentiality: Anything that you say in this interview will be kept confidential unless you explicitly instruct me that it can be disclosed in reports I develop over the course of this research. If you have a standard non-disclosure form that you use, I will be happy to sign it.
Scope (Innovation Definition):
Note:
Merriam-Webster: 1. The introduction of something new 2. A new idea, method, or device

Business Dictionary states: The process of translating an idea or invention into a good or service that creates value or for which customers will pay. To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves deliberate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into useful products. In business, innovation often results when ideas are applied by the company in order to further satisfy the needs and expectations of the customers.

(Bessant, et al., 2010) Distinguishes between 2 different types of innovation:
- Radical (Disruptive) – change with significant impact on market or economy
- Incremental (Sustaining) – upgrade or change to existing product/service

As we engage in this discussion, I would ask that you focus on specific instances where you needed to make a decision on an idea for a future innovation (new product/service, new method, new source, new market, or new business model).

Questions:

General:
- In a minute or less tell me about your current position with <company name> including how long you have been in this role?
- How does your current role relate to new product/service innovation idea decision making?
- Have you had roles in the past where you or your team determined which innovation ideas would move forward towards a future launch?

Successful Innovation Launch:
- Think about the most recent innovation idea you were involved in selecting which your company considered “successful”....
  - Why was it considered a success?
  - Reflecting back on the related selection process, tell me about that experience?
  - Tell me about your experience evaluating the idea
    - Probe: What factors did you take into account when evaluating the ideas?
    - Probe: Why did the evaluation proceed in this manner?
  - Tell me about your experience prioritizing the idea
    - Probe: What factors did you take into account when prioritizing the ideas?
    - Probe: Why did the prioritization proceed in this manner?
  - Why was the innovation idea selected to move forward in the process?
- Think about another recent innovation idea you were involved in selecting which your company considered “successful”....
  - Why was it considered a success?
  - Reflecting back on the related selection process, tell me about that experience?
• **Tell me about your experience evaluating the idea**
  o Probe: What factors did you take into account when evaluating the ideas?
  o Probe: Why did the evaluation proceed in this manner?

• **Tell me about your experience prioritizing the idea**
  o Probe: What factors did you take into account when prioritizing the ideas?
  o Probe: Why did the prioritization proceed in this manner?

• **Why was the innovation idea selected to move forward in the process?**

**Failed Innovation:**
• **Think about the most recent innovation idea you were involved in selecting which your company considered a “failure”**
  o Why was it considered a failure?
  o Reflecting back on the related selection process, tell me about that experience?
  o Tell me about your experience evaluating the idea
    o Probe: What factors did you take into account when evaluating the ideas?
    o Probe: Why did the evaluation proceed in this manner?
  o Tell me about your experience prioritizing the idea
    o Probe: What factors did you take into account when prioritizing the ideas?
    o Probe: Why did the prioritization proceed in this manner?
  o Why was the innovation idea selected to move forward in the process?

• **Think about another recent innovation idea you were involved in selecting which your company considered a “failure”**
  o Why was it considered a failure?
  o Reflecting back on the related selection process, tell me about that experience?
  o Tell me about your experience evaluating the idea
    o Probe: What factors did you take into account when evaluating the ideas?
    o Probe: Why did the evaluation proceed in this manner?
  o Tell me about your experience prioritizing the idea
    o Probe: What factors did you take into account when prioritizing the ideas?
    o Probe: Why did the prioritization proceed in this manner?
  o Why was the innovation idea selected to move forward in the process?

**Metrics:**
• What metrics, if any, does your company use to measure innovation idea selection?
• What metrics, if any, does your company use to determine the success/failure of an innovation launch (product or service launch)?
• Some companies choose to take a portfolio approach to selecting innovation ideas. Do you categorize innovation ideas into different “types”? If so what are the categories and how do you define them?

**Additional Questions to consider (optional):**
• **What do you believe is the most important factor to consider in innovation idea decision making?** Why?
• What do you think could be improved in innovation idea decision making?
• How are innovation idea decisions governed within <company name>?
• How would you describe <company name> success in innovation idea decision making?
“How much is this worth?”
Humana’s Chief Innovation Officer Explains Why This is the Wrong Question

By
Troy Montgomery

“The first, and most often wrong, question is, ‘How much is this worth?’”

Chris Kay, the Chief Innovation Officer at the $50B health and wellness company Humana, shared his perspective on the criteria in selecting innovation ideas. Business leaders have a tendency to examine how much an innovation is worth in the early phases of innovation, but Kay argued organizations should focus measurements on customer desirability.

During a one hour interview Kay discussed a number of interesting innovation topics including why asking “How much is this worth?” is the wrong question to ask early in the innovation process. Kay confirmed that the majority of value is created in understanding the customer experience and innovating around it. At Humana early metrics concentrate on experiential measures of member health. Experiential measures are driven by research and based on customer insights and unmet needs.

Kay also discussed the importance of Co-creation, an innovation approach where Humana partners with smaller startup companies on new ideas. Humana’s innovation team seeks the best and brightest venture capital backed start-ups to form partnerships. Creating a shared view of success allows both the partner and Humana to capture knowledge, build value, and learn from failures. Decisions on these disruptive innovation ideas are typically made by a team of external partners, advisors, and leaders outside of Humana’s established lines of business.

Innovation at Humana also occurs internal to the organization. Humana is a diverse health and wellness company with lines of business including health insurance, health data analytics, pharmacy, and healthcare service providers. Kay highlights the importance of working across horizontal lines of business in such a large organization to minimize the effects of innovating in silos. Working off of horizontal platforms allows the company to take advantage of diverse resources to gain synergies when pursuing innovation ideas. Innovation across horizontals also increases transparency and allows Humana to build a portfolio of innovation ideas.

Keywords: Humana, Innovation, Disruptive Innovation, Co-creation, Chief Innovation Officer

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**Interview with Chris Kay**

**Introduction**

“The first, and most often wrong, question is, ‘How much is this worth?’” Chris Kay, the Chief Innovation Officer at the $50B health and wellness company Humana, shared his perspective on selecting innovation ideas.

Executives leading organizations continuously seek new and innovative ideas in hopes that the products and services developed will improve company financials and increase shareholder value. It seems natural to ask for financial projections on early stage innovation ideas. Kay shared a counterintuitive thought. Decisions on innovations at Humana should first focus on desirability from the customer. Once desirability is established, an idea should be tested for viability and then feasibility before scaling a new product or service for market launch.

Earlier this year Kay agreed to share his thoughts on innovation during a one hour interview. The questions sought to uncover how innovation leaders should select ideas. Kay discussed specific strategies Humana employs to bring consumer insights into action via innovative business models, products, and services. He shared examples of recent innovation ideas in development, including the method of idea selection and how decisions are made.

**Chris Kay**

Chris Kay is Senior Vice President and Chief Innovation Officer at Humana, a Fortune 100 health and wellness company. In this role, he works closely with internal business leaders, as well as outside partners, to design, test, and operationalize game-changing innovations. Kay is a keen innovator with a passion for creating new businesses in large global organizations and for launching products and services that enhance the consumer experience.

He most recently served as Managing Director and CEO of Citi Ventures, Citigroup’s global corporate venturing arm. Prior to joining Citi in 2007, Kay held several leadership positions at Target over a 12-year period, ranging from leader of large merchandising departments to store operations and property development. Kay holds a J.D., magna cum laude, from the University of Minnesota and a B.A. in French and Economics from the University of Wisconsin-Madison.

**The Interview with Chris Kay**

**Q1: How do you define innovation?**

It’s an empty term because it’s so often used, like the term “consumer experience.” I think the fundamental definition of innovation is “insights to action.” Insights are rooted in unmet needs of consumers. Action is about leveraging innovation to develop solutions to those needs in a disciplined, structured, and creative way. Innovation equals insight to action.

**Q2: What excites you about working on innovations?**

I grew up as a guy running businesses. In my formative years, at Target, I worked with incredible designers and I got to invent. I got to see how inventiveness and creativity were not only a core competency, but actually drove business results. I’ve always been a person that is inspired by transforming the business while you run it. The role of chief innovation officer is a hard role because the job is not only to have a team that can accelerate the pipeline of innovation, but also to help change the dialogue and stitch together the strategy to take it in one direction. I love it. It’s an important time to be innovating and Healthcare is ripe for it. The amount of friction that is present in Healthcare provides a huge amount of potential for disruptive innovation.

**Q3: Tell me about what leads up to selecting an innovation idea?**

It’s really important to frame this around the type of innovation we’re talking about. The majority of big companies struggle with the taxonomy. Core, or sustaining, innovation is all about being the best in class every day. Adjacent innovation is about extending your capabilities into new markets or new customers. Disruptive innovation is about creating a new customer experience or new business model.

What’s really interesting is that the majority of dollars in innovation are spent on process and product innovation. That’s why there are so many different flavors of Pantene on the shelf. The majority of value is created in innovating around customer experience. Humana is moving from a company bending the trend on health care costs to a health care company which is bending the trend on health. We are helping people avoid trips to the ER or to Urgent Care. That’s good for the consumer, that’s good for Humana; it drives cost out of the system.

That shift towards health introduces some interesting questions. To innovate around health you need a view into the health journey of the customer. We approach health innovation by starting with ethnography research on people with chronic conditions. We ask ourselves a lot of questions. What is it like for a person who’s on the path or newly diagnosed with diabetes? What is the interaction like at the doctor’s office? Do they leave that doctor’s office with bricks
on their shoulders that they didn’t have walking in? Are they aware of their current condition? How are they going to manage their lifestyle and take care of themselves? How are they going to create ongoing sustainable change? We use those questions because every person that’s diagnosed with a chronic condition experiences those barriers. What do I need to change in my life and how do I sustain that change? How do I get access to the community of resources I need? It was by seeking answers to these questions, using customer driven insights that we began to understand some of the real barriers to health for people with chronic conditions.

Q4: That helps set the context to drive innovation at Humana. Is there a specific innovation that’s either underway or that has already been implemented that you can share?

Let me talk about some of the diabetes pilots we’re doing. We started to look at our members that have metabolic syndrome; they are moving quickly towards diabetes. 10% of our members are moving towards diabetes every year. Once they are diagnosed, 15% progress from low severity to medium severity. This is a pandemic; it’s just rolling through. We started trying to answer the question: How can we help members on the path towards diabetes and how can we do that at some level of scale?

We’re not talking about what we do to the clinical system, but what we can do differently to engage members in real time. We did a lot of solutioning and concept development, and we came to a couple of insights. First, this is rooted in behavior change. We know they are talking to their doctor and that they’re talking to their friends about behavior change. We built a number of concepts that we stitched together and went out to talk to consumers. At the same time we used our Humana team in Silicon Valley to find out what emerging entrepreneurs are doing in the space. I’ll call them digital, first line therapeutics for chronic conditions, which are just now emerging. It’s a big area of innovation with a lot of venture capital funding.

We came upon a very early stage company called Omada. Omada is focused on digitally scaling a clinical Diabetes Prevention Program (DPP) that has been validated over the last two decades in YMCAs. This presented an opportunity to test our hypothesis that a DPP could work for an elderly population. As part of our prototyping and learning process, we partnered with Omada. We picked an elderly population to test. We didn’t know if they were going to be predisposed to digital or not. We launched the Omada digitally-based Prevent program with Humana Medicare Advantage members. A cohort of 491 participants with an average age of nearly 70 completed a digital, social journey around behavior change. What did Omada need? Omada needed a partner that could help their innovation launch and we needed insight and connectivity to our strategy. I’m probably not going to talk as much to you about what we should build at Humana because co-creation is the way. I’d argue that it’s rare in today’s world given the speed of change and given the access to smart people, that any company should be innovating alone. Our pre-disposition is that we understand an unmet need, we have a hypothesis that is driven out of research, and we partner to prototype. We did that with Omada. Six months after beginning, 85% of participants remained active in the program, and more importantly, graduates lost an average of 8.7% of their body weight. That represents a 71% reduction in type 2 diabetes risk. Now we have an extendable, scalable, digital solution, that’s the first line of digital therapeutics to help people with pre-diabetes.

We are transforming Humana to be more of a health partner for life by taking our clinical chassis and enhancing it to be more dynamic. We are moving our view of the customer from one based on our members’ use of the healthcare system to being based on a longitudinal understanding. When we do that, you can create a whole new set of solutions to help people manage their health. That’s what a health care company does; it looks at needs driven by insights. We had a hypothesis based on consumer interactions. We created a prototype solution. We looked for external technology to get access to the best entrepreneurs. We provided our capabilities to figure out how to scale the technology.

Q5: How do you decide who you’re going to partner with? Are there metrics? Is there a checklist?

It’s a great question. I think partnering is hard because there’s not always alignment. All of our partnerships are rooted in a clear understanding as to what the problem is and the job to be done. We want to partner with entrepreneurs with potential, who we feel are brought into mutual value. We’re not partnering with them to make them great and they’re not partnering with us to make us great. We’re partnering together towards a shared view of success. Some people may challenge us and say: “You could go build the diabetes prevention digital therapeutics yourself.” We probably could, but I bet there is a quarter billion of venture capital dollars invested in some of the smartest behavioral scientists and
technologists that are already building solutions. We have to break through that orthodoxy that we should build it. When we partner, we start to learn about the capabilities we need as a company to bring a solution to scale.

It's a very outside-in view of innovation. A lot of corporate leaders don't think this way. Why is partnering so important? The differentiation over time is in the ability to integrate partners into a horizontal platform. We need to be generous about not needing to own everything and we need to have enough insight to think horizontally. Imagine that we can have a dynamic, real-time, evolving clinical model. If we design that right, you can plug in any solution. I think that's the business we're going to be in 10 years from now.

Q6: **What are some of the criteria that you're thinking about as you progress in the innovation process from a small pilot?**

The first and most often wrong question is: “How much is this worth?” Early stage pilots should be about experience metrics. Do people use it? When and how do they use it? It is about interaction based learning. Attrition in health programs is high; it's generally hard for people to sustain another thing when they're not feeling well. If you're managing diabetes, you have to stick yourself and you have to watch what you're eating... you have enough problems. Our job is to empower people and take the complexity away. Our job is to create solutions that make life easier. People need things to be simple and easy. Early metrics are about engagement. They're about sustainability. They're about usability. Some of this stuff you know when you see it, but a lot you don't. The process moves from concept phase to prototype phase, and then to pilot phase before we go to market calibration and scale it. Each stage we have a different set of predetermined gates. When we start building prototypes with consumers, we're focused largely on desirability. Is this something people want? Is this something people love? Once you get through desirability, we start to go into piloting, where we are testing for viability. Can you stitch this together in a way where we can close the feedback loop, or in way where we can solve for some of the unknowns in a system? In market calibration we look to understand the feasibility. If it's desirable and viable, then how do you scale it? We determine if there is a way to build the capability such that we can support this at scale.

Each gate is predefined. If you get to a gate and it's not working, there has to be some way to kill it and take the findings back into the portfolio. That's hard... to kill an innovation in the process.

Q7: **For the gate reviews who makes the decision?**

The real answer is that it depends. If it's something that's disruptive, there will not be a business sponsor in the early stages. In that case, it consists of an innovation team of external folks and some advisors. If it's a business led innovation, absolutely the business is at the table. The process of going from desirability to viability to feasibility is incredibly new and incredibly enlightening for the business team. I started this conversation by saying the wrong question to ask upfront is “How much?” The right question is: “Are we clear about what we're trying to solve?” Innovation always starts with focus. Ideation doesn't happen first in the innovation process because you start with real focus about understanding the problem we're trying to solve. Then we go validate the underlying insights and needs.

Q8: **Why doesn't ideation start at the beginning?**

Every concept starts with the concept brief, which outlines a problem to be solved. What's happening? Why do we care? Who else is thinking about this? Why do we want to solve this problem? What is the business we're going to be in 10 years from now. You have shared that co-creation is where a lot of the big benefits come from. What does decision making internal to Humana look like versus partnering with other companies?

Well let's go from both angles. I think for internal innovation, which is largely self-generated, motivators such as wanting to be successful or fear of failure come into play. There are a number of cultural elements in companies that prevent innovations from stopping. Typically teams do not understand what they're trying to learn. “Let's go build a website.” If that comes out of an ideation session and the team goes off and builds a website, how do you measure whether you should and shouldn't go forward? Does that sound familiar? There are great companies that don't define the problem first.
On the other hand, when you’re starting with an unmet need and you look for a partner, you’re not making a decision as to whether you are going to build, buy, or partner. What you’re doing is you’re accelerating the learning to get to the requirements to make that decision. We may partner with somebody and have an incredible insight that the idea doesn’t work. Remember, in this case we didn’t build it, but we learned a lot. We can bring back the learning into the system. That’s a great model and it’s great for entrepreneurs because they say: "Holly molly, this didn’t work." It’s great for us because we have accelerated the speed to insight and learning.

The underlying reason we partner is to create value and to understand the capabilities we need to have in the future. We always have the option to partner differently, and to buy or to build ourselves. Oftentimes, we will make a capital investment in the partner. If we are scaling them and they are growing the value to the company, then we get an option value. We invested in Omada. Where we see the best companies that have potential to win (which we are getting access to largely because we have a great team in the valley) then we use our capital to help them scale for mutual advantage.

We have great teams at Humana, but we are aware of the risk that somebody may already be working on the same solution. They could come in from a different side and just wipe out the whole opportunity. This is happening in health care.

Q10: Thinking about building internally, are there organizational factors that come into play outside the typical gate system? Are there other reasons for killing a project?

We’ve come to the realization when you look at our enterprise innovation strategy, that we need to be focused on defining the transformational health, or trend benders, of the future. You know the role the trend benders play in our business; it’s to help us manage health and cost. If we can help people manage their health, guess what—they’ll stay with us! We can provide stable benefits or better benefits at a better price and that grows membership.

We have a platform view of things like slowing disease progression and avoiding acute events. We work on those horizontally. One reason innovations fail is because they’re rooted in a silo. For example, the pharmacy team may be innovating around some incredible work on adherence, but the clinical organization is not connected in. What does it look like when a pharmacy meets our clinical business? If you’re innovating in silos, you’ll never get to answer that question. Our job as a company is to turn ourselves sideways, and manage innovation along the platforms that extend across all businesses and then build portfolios around those.

Q11: How do you do that [innovate across business lines]?

A lot of the innovation strategy work we’ve done, in partnership with the Humana business lines, has allowed us to get to a platform view. The question on how you do that is largely a design question for the organization. Anybody that shows up to a platform conversation is going to view that it represents only 15% of what they do. We have to create working teams that have horizontal responsibility. We’ve assembled those teams at Humana. Then we go through a vetting period. We must get everybody to trust that we’re going to accelerate innovation in the organization. We get everybody to put their stuff out and make it visible. That’s hard.

We have to create a generous environment for people to want to share and gain alignment. If the first question is how much, people aren’t going to come forward with innovation because they don’t know the answer. We need to create a forum to build trust. As we manage the portfolio, we then have to have an active group of decision makers that are focused on accelerating the health and the impact of that portfolio. Oftentimes companies misalign business accountability with horizontal accountability. If I were running a business, how much should I invest in something that’s going to create enterprise value, but no P&L value? That tension is there. The third thing you have to do is align investment with accountability. If we are investing capital on something that a leader is building, that leader needs to be held accountable. We manage all that through discipline portfolio process and then that becomes integrated into the planning. Through integration we avoid the chasm between innovation in the business and accountability in the operations.

In discussions with the business we’ve gathered 40 or 50 things that are in pilot phase. That probably represents half of what is actually out there. Next, we map the pilots against the platform. We start to see, for example, that there are three pilots going on in three different parts of the business. They are actually close enough that when grouped together you get a multiple on them. Other pilots, for example, shouldn’t be pilots because they’re not based on any insight. Pilots that are at a later stage, we need to give the resources to invest to scale. While the innovation team has been working on supporting this health
transformation center—the strategy of the company—we’ve also been building the enterprise innovation capability to do this across the organization. It’s hard work, but I’m really bullish.

Q12: There is a lot of short term focus in organizations. Have you had any challenges with making decisions on innovation taking a short term financial view versus a long term view?

That again is a portfolio question. Where do you want to place your bets? Google is a 70-20-10 company. That is how they pay and how they allocate their time. 70% of Google’s work is in their core work. If you worked in search, 70% of your time would be in search, 20% is moving search into adjacent space, and 10% is in disruption. What’s our 70-20-10? That’s a risk appetite question that the senior leaders of a company need to decide.

Once you do that you can start to value the early stage portfolio over time. Great companies then pay their leaders based on the value of their early staged portfolio. You can see that it’s a journey. You get a lot of things in place at the starting line, and think and act horizontally. Let’s build the trust, let’s accelerate the things that we know are going to be impactful, and then let’s start to build this organization pipeline (C. Kay, personal communication, January 20, 2016).

**Discussion**

It is clear that Chris Kay is driving a unique and interesting approach to healthcare innovation at Humana. Kay provided both contrasting and supporting viewpoints to generally accepted business practices found in both academic and practitioner articles. The following discussion offers comparison with a common definition of innovation and distinguishes Kay’s definition. Next, this discussion explores why most business leaders request financial metrics early in the innovation process. Kay states this is not the best approach during the early phases of an innovation idea. Last, this discussion looks at Humana’s innovation collaboration model compared to other models described in a recent HBR article.

**Innovation Definition & Problem Identification**

Kay has developed a succinct definition of innovation that gets to the core of managing innovation in large organizations. Innovation has been defined in numerous ways. Both academic and practitioner literature provide various characterizations. The Product Development Management Association (PDMA) Handbook defines innovation in two ways. First, it is described as “a new idea, method or device” and next as “the act of creating a new product or process, which includes invention and the work required to bring an idea or concept to final form” (Kahn, 2012). In contrast, Kay simply states innovation is “insights to action.” Kay’s representation of innovation distinguishes what motivates the innovation: insights that drive action, that then drive development of a new product or service. In Q1, Q3, and Q8 Kay shared the importance of grounding the innovation in consumer research. Unmet needs are identified by studying customers with chronic illness in their daily lives. This is commonly referred to as ethnography or the study of a culture sharing group (Creswell, 2012). The example definition explains what innovation is; Kay’s definition explains how to do it.

In Q8, Kay shared that idea generation shouldn’t be the first step. The first step should be identification of a problem that needs to be solved. A common mistake managers make when developing an innovative idea is to begin with a blank slate. They mistakenly begin innovation by white boarding ideas with no guardrails and no constraints. Research supports Kay’s assertion that this is not the best approach. Research in fields such as cognitive psychology and creative sciences conclude that starting with a frame of reference results in more creative ideas versus starting with a blank slate (Scopelliti et al., 2014; Sellier & Dahl, 2011). Organizations need a question to answer, a problem to solve, or, in Kay’s words, an unmet need. Starting without a clear direction will result in unfocused ideas, and may lead to a waste of time, effort, and resources.

**Early Stage Metrics & Involvement of Business**

Education in business focuses on informed decision making in a capitalistic economy that is driven by the motivation to maximize profit. Dr. Alan Balfour and Dr. Sally Fuller share that today’s business education is heavily influenced by profit motives. In a recent article, they attribute some of the responsibility to Adam Smith’s “invisible hand” and more recently Milton Friedman’s argument that “the only responsibility of business is to maximize profits” (Balfour & Fuller, 2010). Managers are taught to use metrics that maximize profit to drive decision making. This has been adopted as conventional wisdom in business.

In Q6 and Q7, Kay shares a different perspective. The end result of a new product or service may drive a financial metric (i.e., reduction of cost or increase in revenue). However, in the early stage of an idea it
is more important to find a product or service that proves desirable to customers. First, determine if there will be a use or market for a new product or service. Business leaders are educated and trained in an environment where “Finance and economics have trumped management as the disciplines guiding decision making” (Balfour & Fuller, 2010). The default questions managers apply will focus on financial metrics and result in, according to Kay, a risk of prematurely killing good ideas. Changing the mindset of business leaders that are not intimately involved in the innovation management process on a daily basis can be difficult. Kay, in Q7, takes the approach of limiting business leader involvement in the early stage of disruptive innovation ideas.

Collaboration in Innovation

It is imperative for leaders to account for changing customer demands in an increasingly complex and interconnected global economy. The days of one organization developing a new product from idea generation through market launch are rare. Very few organizations are successful in repeatedly developing disruptive new products or services within their own four walls. A recent HBR article titled “Which Kind of Collaboration Is Right for You?” provides a good framework for organizations to consider when collaborating on innovation. “It’s now conventional wisdom that virtually no company should innovate on its own” (Pisano & Verganti, 2008). Kay agrees. In Q4, Q5, and Q9 he shared a similar statement as well as an example of how Humana partners with startups in Silicon Valley.

In the HBR article, Pisano describes four basic models of innovation collaboration: elite circle, innovation mall, innovation community, and consortium (Pisano & Verganti, 2008). In elite circle one company selects the participants, defines the problem, and chooses the solution. This model is a good explanation of how Kay and Humana partner with startup companies. Humana works to define the problem, or unmet need, before seeking potential external partners. Once the need is identified, Humana seeks the best and brightest Venture Capital backed startups that are already working on solving the problem. Partnering minimizes the risk of competing companies developing a solution before Humana. It also supplements Humana’s human capital and technical capabilities by partnering with leading subject matter experts and working with cutting edge technologies. All of this is gained at a much lower price tag compared to building a similar capability entirely in house.

Generating new ideas, also known as ideating, will prove to be an unproductive practice unless research has defined the problem for an innovative idea to solve. Ideas must be rooted in customer insights and unmet needs. Generating new ideas, also known as ideating, will prove to be an unproductive practice unless research has defined the problem for an innovative idea to solve. Ideas are then tested for desirability, feasibility, and viability before being scaled and ready for a market launch. Leaders in organizations have a tendency to ask how much an innovation is worth early in the process. Kay reiterated that this is the wrong approach. Instead of financial metrics, organizations should measure how desirable an idea is to customers during its early innovation phase. At Humana those early metrics are concentrated on experiential measures of members.

Kay emphasized the importance of co-creation, an innovation approach where Humana partners with smaller startup companies on new ideas. Based on customer insights and unmet needs identified through research, Humana’s innovation team seeks the best and brightest venture capital backed startups to form a partnership. Creating a shared view of success allows both the partner and Humana to capture knowledge, build value, and learn from failures. Humana is able to take advantage of new technology by partnering, and start-ups get access to Humana’s membership and clinical capabilities to test new ideas in anticipation of scaling a solution to the market. Decisions on these disruptive innovation ideas are typically made by a team of external partners, advisors, and leaders outside of Humana’s established lines of business.

Innovation also occurs internal to Humana. The diverse lines of business at Humana consist of health insurance, health data analytics, pharmacy, clinical support, and healthcare service providers. Kay stressed the importance of working across horizontals in such a large, complex organization to minimize the effects of innovating in silos. Working off of horizontal platforms allows the company to take advantage of different resources to gain synergies when developing an innovation idea. Innovation across horizontals also increases transparency of new ideas, and allows Humana to take a portfolio approach to innovation.

Conclusions

Chris Kay, the Chief Innovation Officer at Humana, shared his perspective on innovation in large organizations as was well as his philosophy on selecting innovation ideas at Humana. Organizations must be very clear on the problem they are attempting to solve. Ideas must be rooted in customer insights and unmet needs. Generating new ideas, also known as ideating, will prove to be an unproductive practice unless research has defined the problem for an innovative idea to solve. Ideas are then tested for desirability, feasibility, and viability before being scaled and ready for a market launch. Leaders in organizations have a tendency to ask how much an innovation is worth early in the process. Kay reiterated that this is the wrong approach. Instead of financial metrics, organizations should measure how desirable an idea is to customers during its early innovation phase. At Humana those early metrics are concentrated on experiential measures of members.

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References


Author

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Review

This article was accepted under the *constructive peer review* option. For further details, see the descriptions at:

http://mumabusinessreview.org/peer-review-options/
What Critical Factors Do Companies Consider When Selecting Innovation Ideas?

By

Troy Montgomery, University of South Florida

Innovation management in organizations should be viewed in the context of systems thinking. Managers must take a holistic approach to selecting the ideas best suited for their organization. Decision-making is a major component of innovation management, especially in the early stages of innovation. Organizations must choose which innovation ideas warrant allocation of scarce resources. The selection of some ideas over others will impact the probability for success of new products or services. Extant literature provides insight into the factors managers should consider during idea selection in the front-end phases of innovation.

The academic literature studied for this research question review article contained both quantitative and qualitative research. Additionally, a number of related theories impact innovation idea selection including: portfolio theory, contingency theory, systems theory and organization ambidexterity theory.

This article provides a consolidated reference for organizations developing innovation decision-making frameworks. One thing seems clear from the research—a reductionist approach towards innovation management will prove inadequate. In other words, there is no “golden ticket” or single answer to the innovation idea selection process. Managers must consider the key factors from literature and then determine the best fit application to their current business environment and constraints.

Keywords: Idea Selection, New Product, New Service, Innovation, Selection Criteria, Decision-making

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Introduction

According to a recent survey, 93% of CEO’s stated that innovation is critical to their business strategy and long-term success (Koetzier & Alon, 2013). However, the failure rate for new product introduction is 49% for the majority of companies, and 29% among leaders in innovation (Castellion & Markham, 2013). Why is innovation such an important topic to executives, yet so difficult to execute?

There are a multitude of explanations for the high failure rate. In fact, a recent article in Harvard Business Review listed 40 reasons new product launches fail. Some leading examples include: a lack of market research, a lack of product differentiation, and a lack of proper funding to launch (Schneider & Hall, 2011). The Chief Innovation Officer of a large global technology company stated that a critical factor of innovation is how to filter, analyze, prioritize and then select the idea. Other experts, including the Director of a Research University’s Center for Entrepreneurship, honed in on a similar need for organizations to improve decision-making regarding innovative ideas. It appears that idea selection is worth further investigation. Thus, this article is intended to provide management in organizations with a summary of current academic research on innovation idea selection.

Methodology

A literature review was conducted using different combinations of key words in Pro Quest ABI including: “innovation,” “selection,” “criteria,” “new products,” and “idea.” Peer-reviewed journal articles written after 2010 were filtered with preference given to highly rated innovation journals such as Journal of Product Innovation Management, Technovation, and R&D Management. A brief abstract review of search results led to more than 50 articles downloaded for inclusion in this analysis. This resulted in a comprehensive view of current academic research related to innovation idea decision-making.

Literature Summary

The academic literature provides a number of factors for organizations to consider during the innovation decision-making process.

Table 1 provides an overview of findings that researchers agree are critical factors when making decisions on new ideas in an innovation management process. Factors in Table 1 are labeled as general factors and can be viewed as overarching factors not specific to just the idea selection phase.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Findings</th>
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<tr>
<td>Innovation Type</td>
<td>There is agreement across the literature that there are primarily two types of innovations: incremental and radical.</td>
<td>Rodgers (2010); Ritala &amp; Hermelin-na-Laukkanen (2013)</td>
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<td>- <strong>Radical</strong>: Innovation that creates a high degree of uncertainty (also called disruptive or discontinuous innovation). Radical innovation represents a new paradigm for carrying out some task. It represents a departure from “existing capabilities in the firm” and results in new products or services. Examples: The first iPod &amp; iTunes, digital photography, self-driving cars</td>
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<td>- <strong>Incremental</strong>: Innovation that does not create much uncertainty and does not require as high level of technical expertise to implement (also referred to as sustaining innovation). Incremental innovations are typically minor changes to existing products or services. Examples: Next year’s model of a new automobile, subsequent versions of computer processors (Pentium 3, Pentium 4, etc.), Windows XP to Windows 7 to Windows 8</td>
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### Table 1: General Factors in Innovation Idea Selection (continued)

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| Criteria Related to Innovation Type         | Consider the type of innovation when applying criteria to the decision-making process.  
  **Qualitative criteria are a better fit for Radical ideas**  
  - A scorecard approach with specific questions to consider, or a version of the Delphi-method, have all been identified as good approaches to apply to radical idea decision-making.  
  **Quantitative (i.e., financial) criteria tend to work better for Incremental ideas**  
  - Organizations can obtain data on products or services that are the same or similar to an incremental innovation.  
  - There is less of a frame of reference for radical innovation. When applying decision criteria such as analyzing the Net Present Value (NPV) or an Internal Rate of Return (IRR) requirement, it is difficult to accurately create estimates. Data has shown that there is a higher probability to kill radical ideas early in the process using quantitative criteria. This creates an imbalance in an innovation idea portfolio leading to less game changing, radical ideas (see Portfolio of Ideas below). | Schmidt, et al. (2009); Bessant, et al. (2010); Cooper (2013); Dooley, et al. (2000); Salerno, et al. (2015)                                                                                                                                                                                                                                               |
| Number of Decision Points                  | There is no consensus among researchers on the right number of decision points in the lifecycle of an innovation. However, there is agreement that **there should be more than one decision point**.  
  - The New Product Development (NPD) Stage-Gate method, developed by Cooper, consists of a linear process of 5 different gates from idea generation to product launch.  
  - Managers need to view decision-making as a progression of gathering more information for a group of ideas in order to answer questions on their selected criteria. | Ahn, et al. (2010); Carbonell-Foulquié, et al. (2004); Cooper (2013); Cooper (1994); Cooper (2008); Kock, et al. (2014); Martinsuo & Poskela (2011); Salerno, et al. (2015); Schmidt, et al. (2009)                                                                                                                                                           |
| Portfolio of Ideas                          | Portfolio management has its roots in modern portfolio theory which was originally applied to financial securities. The objective is to choose a group, or portfolio, of assets that will maximize expected return while minimizing risk.  
  - Innovation managers seek to maximize the potential of new product success by making decisions on a portfolio of ideas as opposed to one idea at a time.  
  - A strategic portfolio of ideas should be advancing through the organizations innovation process.  
  - Intentionally choose a target portfolio percentage for different idea types. One example of portfolio categories is: “Disruptive,” “Progressive,” “Continuous,” and “Tactical.”  
  - Idea selection should take into account a breakdown of the number and type of ideas that fall into a specific category. | Martinsuo (2013); Khurana & Rosenthal (1997); Kock, et al. (2014); Abbassi, et al. (2014); Ahn, et al. (2010); Kester, et al. (2011)                                                                                                                                                                                                                   |
### Table 1: General Factors in Innovation Idea Selection (continued)

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| **Open vs. Closed Strategies** | Innovations management should consist of a balance of opposing forces referred to as open and closed strategies. Open strategies in innovation promote knowledge generation while closed strategies enhance knowledge integration.  
- Examples of open strategies include: providing employee autonomy and gathering data from consumers early in the process by voting on ideas.  
- Examples of closed strategies include: putting in controls to limit the scope and providing guidelines on a strategic direction.  
It is advantageous to apply a hybrid approach utilizing both closed (formal) and open (informal) activities throughout the innovation process. Decision-making is no exception. | Gebert, et al. (2010); Kock, et al. (2014); King & Lakhani (2013) |

Table 2 identifies more specific innovation idea selection factors that have been noted in the literature.

### Table 2: Decision Factors in Innovation Idea Selection

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| **Strategy** | In evaluating innovation ideas one of the most important factors is alignment with the firm strategy. Kock, et al. determined (in a study of 175 German companies) this to be positively correlated with both “front-end” innovation success and overall project portfolio success. Consider the following in decision-making:  
- Vision and goals of the overall organization when selecting ideas  
- Strategic fit with the organization  
- Brand fit  
- Portfolio fit  
| **Feasibility** | Is the organization equipped to create the new product or service? Khurana & Rosenthal (1997) studied 15 business units at 11 companies to determine value chain considerations, and front-end planning regarding feasibility was important to a majority of the cases. Managers should consider the following:  
- Do the operations and current assets of the organization support the idea into a new product launch?  
| **Market** | Is there a market for the new product? Consider the following:  
- Market size and potential growth opportunities  
- Attractiveness of idea to market  
- Market share evaluation and opportunities | Calantone, et al. (1999); Carbonell-Foulquié, et al. (2004); Martinsuo & Poskela (2011); Ahn, et al. (2010); Kester, et al. (2011) |
Troy Montgomery

Table 2: Decision Factors in Innovation Idea Selection (continued)

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| Customer          | Will customers adopt the new product or service? Carbonell-Foulquié studied 77 innovative products and came away with 5 key dimensions, including customer acceptance. Consider the following:  
          • Likelihood of customer acceptance  
          Note: it was found that most customer related criteria should be applied throughout, but has the highest impact on the back end of the innovations process, closer to launch. | Carbonell-Foulquié, et al. (2004)           |
| Technology        | Is the organization ready for technology advances and requirements? Consider the following:  
          • The maturity of technology necessary to support innovation.  
          • The readiness of the market to accept a technology advancement.  
          • The technical education of human resources in the organization. | Carbonell-Foulquié, et al. (2004); Calantone, et al. (1999); Khurana & Rosenthal (1997); Martinsuo & Poskela (2011); Abbassi, et al. (2014); Smith, et al. (2008) |
| Resources         | Does the organization have the required resources? Consider the following:  
          • The capability of current human resources  
          • The motivation towards innovation (management & associates)  
          • The available capital for funding  
          • The time to develop and development costs  
          • The knowledge management internally | Khurana & Rosenthal (1997); Abbassi, et al. (2014); Ahn, et al. (2010); Smith, et al. (2008); Dooley, et al. (2000) |
| Financial Opportunity | What is the long-term financial opportunity? Consider the following:  
          • The short and long-term volume and profitability  
          • The commercial success probability | Carbonell-Foulquié, et al. (2004); Khurana & Rosenthal (1997); Abbassi, et al. (2014); Kester, et al. (2009); Trotter (2011) |

Discussion

Numerous innovation decision-making factors have been identified in the preceding tables, however the body of research reviewed to identify these factors appears unconnected. Innovation research is fragmented with a wide variety of definitions that impact the outcome and consistency of findings (Ritala, 2013). This makes managerial application of the research very difficult in practice. One cause of the fragmentation of the research can be attributed to the lack of an agreed upon measurement for innovation in organizations. Multiple instruments for measurements have been proposed, but none that researchers and practitioners seem to agree on. Regardless of the fragmentation, the previous tables extract specific factors from innovation research that managers can build into their innovation idea selection processes.

This discussion will attempt to pull together the findings into a manner that managers can apply to their organizations and academics can use to build future research questions. The following sections include a conceptual model that provides a visual representation of key findings, a limitations section that acknowledges limitations of this study, and a future research section that includes opportunities for future lines of research.

Conceptual Model

A conceptual model (Figure 1) was developed with the intent of providing managers a tool to increase the probability of a successful innovation launch. The following discussion aims to consolidate the factors from Tables 1-3 as well as provide deeper context to the visual.

A high-level organization innovation process, listed in chevrons at the top and bottom of Figure 1, helps set the context for when the idea selection process occurs within organizations. The process steps in the
Table 3 provides a summary of central theories that are applicable to innovation idea selection.

**Table 3: Theory Related to Decision Criteria in Innovation Idea Selection**

<table>
<thead>
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<th>Overview &amp; Application to Research Question</th>
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<td><strong>Portfolio Theory</strong></td>
<td>Originally this theory was developed for the financial markets. An investor’s decision to purchase a financial asset should take into consideration other assets in the portfolio with the goal to minimize risk and maximize return. The same concept has recently been applied to selecting and managing a portfolio of projects.</td>
<td>Martinsuo (2013); Khurana &amp; Rosenthal (1997); Kock, et al. (2015); Abbassi, et al. (2014); Ahn, et al. (2010); Kester, et al. (2011)</td>
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<td>Applying this logic to innovative ideas will ensure managers are not making an isolated decision on one idea. They would take into account other ideas when making a decision. They should continue to gather information on one potential idea before moving into a subsequent project phase. Additionally, managers who use this theory develop categories based on pre-determined criteria, and targets for potential risk and reward. For example, they may agree that at least 70% of the ideas in the initial testing phase of implementation are radical ideas, with a high probability for failure, but also high potential for reward.</td>
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<td><strong>Contingency Theory</strong></td>
<td>This theory explains that there is no one way that is the “best” way for managers to lead organizations. Decisions are contingent on internal and external factors that may be different. Managers must therefore adapt to the environment and make adjustments due to the factors in consideration.</td>
<td>Salerno, et al. (2015); Martinsuo (2013)</td>
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<td>Applying this theory to innovation idea selection would lead us to believe that the process must be extremely flexible. For example, in the case of radical innovation managers, they may determine that the idea is great, but the market is not ready to adapt to this innovation (see Diffusion of Innovation by Everett Rodgers). Therefore, they may decide to shelf an idea for the short term and revisit it on a continual basis until the time is right.</td>
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<td><strong>Organizational Ambidexterity Theory</strong></td>
<td>This theory suggests there are contradictory activities within organizations that are in a state of natural tension. An ambidextrous organization is one that is able to take on tasks that are in some degree of conflict where trade-offs cannot be entirely eliminated.</td>
<td>Gibson &amp; Birkinshaw (2004); Andriopoulos &amp; Lewis (2009).</td>
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<td>Innovation research describes two specific activities that are in tension. “Exploitation hones and extends current knowledge, seeking greater efficiency and improvement to enable incremental innovation. Exploration entails the development of new knowledge, experimenting to foster the variation and novelty needed for more radical innovation” (Andriopoulos &amp; Lewis, 2009). Management must be aware of the fact this exploration causes friction within the organization and they need to enact strategies to minimize this friction.</td>
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</table>
Systems Theory

Systems theory is credited to biologist L. von Bertalanffy, who described a system as something made up of objects, attributes, relationships between objects, and existing in an environment. He states that investigation of single parts and processes in biology will not give scientists a true understanding of the phenomenon of an organism. One must take into account the relationship of all of the parts within the entire system to truly have an understanding. Looking only at a single part could result in misguided conclusions.

Likewise, we can apply this same thinking to innovation. Managers must take a holistic view when thinking about an innovative idea. This makes a case for a multi-criteria mind set where decisions are made with more in mind than simply a financial analysis or differentiation from competitors.

Table 3: Theory Related to Decision Criteria in Innovation Idea Selection (continued)

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initiation and implementation phase were adapted from Rodgers seminal work on innovation diffusion specific to organizations (Rodgers, 2010). Once an idea is developed, organizations select which ideas move into the implementation phase. At this point, the critical factors are taken into consideration and applied to the selection process, which is indicated within the dotted lines.

Notice that the innovation selection process is different for radical vs. incremental innovation ideas. As discussed in Table 1, the type of innovation will drive factors to be considered in a different manner. Note that the linearity in process flow in the incremental innovation is not present for radical innovation. Managers lack a frame of reference for products or services that create a new market or shift their existing market. Radical innovations can take shape quickly or bounce around for longer periods of time before falling out of the funnel for a decision to move forward to launch. On the other hand, companies become more efficient over time with incremental innovations. Driving incremental innovations should become a machine (linear) over time as associates build the necessary skills and proper technology is in place.

Organizational ambidexterity theory applied to innovation tells us that the activities of exploitation and exploration cause tension within the organization. It is vitally important for management to recognize this tension. The ideas that fit in the incremental (right) side of the decision-making model will have less resistance since they attempt to exploit the current technology, human resources, and other existing assets. On the other hand, the ideas on the radical (left) side of the decision-making model will generally have more resistance within the organization due to the radically different nature of the idea. Typically, these ideas will require a major shift of technology, human resources, and other existing assets.

The conceptual model does not visually take into account the “portfolio” of ideas. It should be noted that this is not a single idea in/out approach. Decision-making is actually contingent on other ideas in a true portfolio approach. There is a merging of theories in making portfolio decisions that are contingent on the environment, the resources, project types, the market, and other influences. Notice the circular activity on the radical innovation side. Contingency theory tells us that it is extremely difficult to lock down a clear step by step methodical process. The decision-making is contingent on the confluence of dynamics at play during that particular moment in time. Furthermore, it is essential managers incorporate systems theory in the approach to decision-making. Consideration must be given to all aspects of the organization and the impacts, both positive and negative. In other words, criteria must be in place to help remind managers to consider all the critical factors and not just financial factors.

The decision factors listed: strategic alignment, feasibility, market & customer, technology and financial
all help to provide managers with a systems perspective. Strategic factors remind decision makers the importance of alignment with business strategy. Feasibility factors prompt managers to evaluate existing resources available and determine if a shift is necessary for the innovation idea. Market & Customer factors are a necessary pull in the system that indicate to managers the direction to move. If no customer pull is present it would be wise to shift based on market insights. Technology factors provide consideration if the organization has the technology in place, or will need to improve existing technology to meet the demands of the idea. Lastly, financial factors determine if the idea is commercially viable and will create short or long-term returns. Like a true system, the decision factors have a relationship to one another as well as a relationship with the overall system (organization) under consideration.
Limitations
First, the tables are focused on scholarly articles published in the innovation literature. Other research disciplines may agree or disagree with the factors included in this article. Next, this research review does not take into account some of the current practitioner related approaches toward innovation. Lean Startup is becoming a popular methodology to apply at both startup companies and innovation groups within large organizations. Lean Startup approaches or articles were not included in the scholarly research results that surfaced for this research question review.

Future Research
A number of associated research questions were generated based on review of the literature. First, the research reviewed does not address what is happening in practice. What are common factors present in practice today versus what “should” be occurring regarding decision-making in innovation? There seems to be agreement among researchers on some of the decision factors, but there is no agreement on gaps that may exist in practice and academia. Based on a cursory investigation and discussions with subject matter experts, practitioners are relying heavily on un-researched innovation methods and approaches. Are these approaches successful? Why are certain decision-making factors used over others? Designing a qualitative study with practitioners close to decision-making in large organizations will uncover gaps and begin to identify current practices. A qualitative study collecting data from innovation practitioners could prove beneficial in gaining an understanding of the existing factors. Subsequent research can then test the existing factors using quantitative methods.

Even when managers have developed an agreed upon decision-making approach to innovation, it doesn't always go as planned. Large organizations are filled with political battles and internal power struggles. Misaligned incentives, organizational structures focused on existing operations, or personal motivations could impact innovation decision-making. Executives tend to over invest in “pet projects” or place an excessive amount of resources in ideas they have generated themselves. Research has been conducted on some of these factors in general. However, there was no discussion of the impact of “pet projects” in innovation decision-making research reviewed for this study.

Regardless of the type of innovation, research has indicated that these criteria are important in innovation management. However, depending on the type of innovation, radical or incremental, there may be differences on how they apply and which are more important. Current research does not provide clear guidance on differences in the criteria by type of innovation.

Table 3 describes theories that have been applied to innovation decision-making. The theories tend to be viewed in a singular fashion. Future research and conceptual models need to incorporate and integrate aspects of all appropriate related theories in innovation idea decision-making. This can prove powerful in providing managers a better model to use in developing innovation strategies and decision-making factors.

Conclusions
Managers agree that innovation is imperative for organizations to succeed in a continuously changing market place. A product launch failure rate of 49% signifies that there is a need to improve the way most companies innovate. Determining which ideas to select, and eventually launch, is a major contributor of an organization’s ability to launch successful products or services. This article reviewed current academic research to highlight findings and theories related to the research question:

What critical decision factors do companies apply when selecting innovation ideas?

Research literature on the topic of innovations is fragmented, largely due to the difficulty in defining a consistent measurement for success in innovation. Without a consistent measurement, it is challenging to establish critical factors relating to the decision-making process. However, a number of common themes have been accepted among researchers. First, there are two different types of innovations referred to as radical (also known as disruptive, discontinuous) and incremental (also known as sustaining). Qualitative decision criteria have been shown as a better fit for radical innovation versus quantitative decision criteria. Quantitative decision criteria including financial measurements such as NPV or IRR are a better fit for incremental innovation ideas. Next, utilizing multiple decision points throughout the innovation management lifecycle is a more effective approach than a single decision point. Likewise, defining and managing a portfolio of innovation ideas, as opposed to managing individual ideas, was discussed through the lens of modern portfolio management theory. Lastly, utilizing a hybrid ap-
Innovation Idea Selection

Approach of both open and closed decision-making strategies is recommended by researchers. Key decision factors that have been identified by researchers include: strategic alignment, feasibility, market dynamics, technology, resource, customer, and financial factors.

A conceptual model (Figure 1) was developed based on the factors uncovered from this research review. Taking a systems approach to innovation calls for managers to consider the holistic picture when developing a decision-making model. Applying contingency theory challenges decision makers to consider the current environment and constraints when applying criteria, and be open to adjustments when needed.

In closing, further research is warranted regarding innovation decision factors in organizations. Building a conceptual model and study of decision factors using portfolio, systems, and contingency theory together can provide managers with a better model for management of innovations. There is an opportunity to better understand what organizations are currently employing as decision-making factors through a qualitative study using data from innovation practitioners. While the current research is fragmented, it serves as a foundation for future investigation around innovation selection factors.

Review

This article was accepted under the constructive peer review option. For further details, see the descriptions at:
http://mumabusinessreview.org/peer-review-options/

References

Dougherty, D., & Hardy, C. (1996). Sustained product innovation in large, mature organizations:


Innovation Idea Selection


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