The Evolution of Knowledge Economics through the Course of Time: An Analysis of the Hawaii International Conference on System Sciences (HICSS) Minitrack

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Abstract

Since its inception in 2012, the Minitrack on Knowledge Economics at the Hawaii International Conference on System Sciences (HICSS) has attracted an increasing amount of high-quality contributions. The combination of adequate marketing measures and being a topic that is continuously gaining importance led to the current standing of the HICSS Minitrack. In this paper, we analyze the content and methodology of the accepted submissions. Further on, upcoming research questions are raised. The main purpose of this work is to present the current status of the research on Knowledge Economics while also offering other scholars a solid foundation for future research projects.

1. Introduction

Knowledge economics deals with the financial impact of knowledge creation, modification, distribution and use [1].

The field of knowledge economics is broad and has attracted a variety of submissions at the Hawaii International Conference on System Sciences (HICSS). Throughout each year, the Minitrack co-chairs have created a brief summary of the submissions [1-2].

In this contribution, published papers are analyzed with further details, emphasizing content, cited contributions and future research.

The motivation for the analysis described in this paper and the intended contribution is to provide a more in-depth analysis of contributions. This would provide a foundation for authors interested in this field.

The remainder of the paper is structured as follows. In the next section, we briefly describe the background of knowledge economics. Then, we outline the methodology of our analysis and summarize the main results. After discussing the results, we propose several future research opportunities.

2. Background

In the current digital economy, the field of knowledge economics is a rising discipline. As described earlier, knowledge economics deals with the financial impact of knowledge creation, modification, distribution and use [1].

\[ \text{Knowledge} + \text{Economics} = \text{Knowledge Economics} \]

Figure 1: Origin of the knowledge economics

The term defined in this contribution contains two words, knowledge and economics, which are combined to derive the term knowledge economics, as shown in Figure 1. The term knowledge has been defined by Davenport and Prusak [3] as an evolving mix of contextual information, framed experience, values and expert insight that provides a framework for evaluating and incorporating new experiences and information that, in organizations, often become embedded in documents or repositories as well as in organizational routines, processes, practices, and norms.

Knowledge management according to Jennex et al. [4-5] can be defined as the process of the selective application of knowledge from past experiences of decision-making to current and future decision making activities with the intent of improving the organization’s effectiveness. According to Jennex and Zyngier [6], knowledge management aims to increase the use of knowledge within organizations, or what they know, by applying the processes of knowledge identification, capture, storage, search, and retrieval and by creating processes that facilitate the transfer of knowledge from those who generate it to those who use it to make decisions.
Knowledge management and organizational memory are essentially the same; the difference is the players [4, 7].

According to Colander [8], the field of economics studies how people coordinate their wants and desires given the social customs, decision-making mechanisms and political realities of the society. Mankiw [9] takes a different stand by defining economics as the study of how society manages its scarce resources. Bade and Parkin [10] see economics as the study of human behavior, focusing on human decision-making.

There are obviously financial aspects of knowledge management. For example, there are costs associated with knowledge identification, capturing, storing, search, and retrieving. There are also potential financial benefits of knowledge management in the form of better decision-making and improved products and/or services. These costs and benefits of managing knowledge can be defined as knowledge economics.

3. Methodology

In order to determine the current state of the knowledge economics field, past contributions of the HICSS Minitrack on Knowledge Economics have been used as a basis. Since the inception of the Minitrack, seven submissions have passed the rigorous review process.

From the year 2012, the following contributions that were presented at the HICSS conference were considered for our examination:

- Chung et al. [11]
- Rai [12]
- Trauth [13]

Contributions considered from 2013 are as follows:

- Bahrs et al. [14]
- Loeser et al. [15]
- Prpic et al. [16]
- Thies et al. [17]

The seven contributions of the Knowledge Economics Minitrack were analyzed in four major steps regarding dimensions depicted in Figure 2. The following section describes the results of our analysis.

4. Results

In the following section we present the four steps of our analysis. The section is concluded with recommendations for further research.

4.1 Citation Analysis

In the first step of our analysis, we examined the theoretical foundation of the seven analyzed papers. For this purpose, we looked at characteristics of sources included in the reference sections. The analyzed contributors used a variety of sources. In total, 298 unique citations were counted within the seven contributions, which are distributed as shown in Table 1 by the kind of source. It can be observed that approximately 85 percent of the overall citations are based on journal articles (61 percent) and books (23 percent), followed by conferences. In contrast, very few authors cited trade publications, websites and working papers. One conclusion is that authors wishing to disseminate their ideas in the field of knowledge economics should strive mostly for journal publications. As a next step, they should proceed by publishing their ideas in books. Ideas presented at conferences are merely considered; the effort of publishing in trade publication, websites and working paper is not rewarded at all by the community.
Table 1: Distribution of sources

<table>
<thead>
<tr>
<th>Type of source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal</td>
<td>61.41 %</td>
</tr>
<tr>
<td>Book</td>
<td>23.16 %</td>
</tr>
<tr>
<td>Conference</td>
<td>8.39 %</td>
</tr>
<tr>
<td>Trade publication</td>
<td>3.02 %</td>
</tr>
<tr>
<td>Websites</td>
<td>3.02 %</td>
</tr>
<tr>
<td>Working papers</td>
<td>1.00 %</td>
</tr>
</tbody>
</table>

Since the majority of publications cited were published in journals, a deeper analysis of them was performed. Table 2 shows that six journals account for over 33 percent of the cited articles. It can be concluded that the sources are dominated by two streams: management literature and IT literature. It can also be observed that authors who would like to see their work cited should incur one of the journals listed below.

Table 2: Frequency of cited journals

<table>
<thead>
<tr>
<th>Journal</th>
<th>Percentage</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS Quarterly</td>
<td>10.93</td>
<td>10.93</td>
</tr>
<tr>
<td>Strategic Management Journal</td>
<td>6.06</td>
<td>16.09</td>
</tr>
<tr>
<td>Journal of Management Information Systems</td>
<td>4.91</td>
<td>21.00</td>
</tr>
<tr>
<td>Organization Science</td>
<td>4.91</td>
<td>25.91</td>
</tr>
<tr>
<td>The Journal of Strategic Information Systems</td>
<td>4.91</td>
<td>30.82</td>
</tr>
<tr>
<td>Academy of Management Journal</td>
<td>2.7</td>
<td>33.52</td>
</tr>
</tbody>
</table>

Moreover, a closer examination of conference publications shows that most of the cited conference work originated from the AMCIS and HICSS.

In order to determine the degree of novelty of the field, the authors who were cited were analyzed. The assumption was that established fields have dominant authors who are cited with great frequency. However, in our analysis we could not find any author who accounts for more than 5 percent of the citations. Those authors who are cited more than two percent are shown below:

- Ikujiro Nonaka [18-22]: 3.35 percent
- Eileen Trauth [23-28]: 2.35 percent
- Richard Florida [29-34]: 2.01 percent

4.2 Objectives and Methodologies Used

In the next step, we examined the objectives of the seven contributions. Frequently, the purpose of the papers was described in the abstract or methodology section. In this step of our analysis, we also examined the research methodologies used. The following Table 4 shows the objectives and applied methodologies of the contributions submitted. It can be observed that the introduction of new concepts is a primary goal for authors looking to publish their research.

The following Table 3 shows how current publications from their respective outlets were. The second column of Table 3 depicts the average year of publication. In this context, for books the value in the third column indicates that approximately half of the cited books were published before 1996.

It is observable that conference papers, working papers and web pages provide the most current theoretical insights. Once the ideas have matured through the discussions during conferences, they are published in journals and afterwards in a book.

1 All citations were self citations.

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Table 3: Kind of outlet and year published

<table>
<thead>
<tr>
<th>Kind of outlet</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book</td>
<td>1996</td>
</tr>
<tr>
<td>Journal</td>
<td>2000</td>
</tr>
<tr>
<td>Trade</td>
<td>2001</td>
</tr>
<tr>
<td>Working paper</td>
<td>2005</td>
</tr>
<tr>
<td>Web page</td>
<td>2007</td>
</tr>
<tr>
<td>Conference</td>
<td>2008</td>
</tr>
</tbody>
</table>

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Table 4: Objectives and methodologies

<table>
<thead>
<tr>
<th>Paper</th>
<th>Objective</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chung et al. [11]</td>
<td>To examine the role of organizational agility as a mediator between knowledge creation processes and financial firm performance</td>
<td>Empirical study</td>
</tr>
<tr>
<td>Rai [12]</td>
<td>Determine the gap between perceptions of importance and knowledge in Information Technology (IT) skills among accountants in Australia</td>
<td>Empirical study</td>
</tr>
<tr>
<td>Trauth [13]</td>
<td>Determine process of knowledge acquisition, production, transfer and management</td>
<td>Model building and testing</td>
</tr>
<tr>
<td>Bahrs et al. [14]</td>
<td>Introduce two opposing approaches for the design of knowledge transfer</td>
<td>Action research</td>
</tr>
<tr>
<td>Loeser et al. [15]</td>
<td>Propose a green IS strategy</td>
<td>Model building</td>
</tr>
<tr>
<td>Prpic et al. [16]</td>
<td>Outline the overarching theory of crowd capital</td>
<td>Theory building</td>
</tr>
<tr>
<td>Thies et al. [17]</td>
<td>Identifying the state of the art in environmental reporting, extracting the requirements for information quality in environmental reporting, and proposing an approach of how the quality of environmental information in IO-ERIS can be enhanced following the design science research cycle.</td>
<td>Design science</td>
</tr>
</tbody>
</table>

4.3 Data Source and Unit of Analysis

In the third step of our analysis, we investigated the data sources and unit of analysis. This analysis, shown in Table 5, indicates that most of the researchers validate their concepts in practice prior to publishing them. Only two contributions were conceptual, without an empirical validation of the proposed concepts.

The most frequently used unit of analysis is organizations, with some exceptions being when an individual or a region has been the focus of the research.

Table 5: Data source and unit of analysis

<table>
<thead>
<tr>
<th>Paper</th>
<th>Data Source</th>
<th>Unit of Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rai [12]</td>
<td>Survey</td>
<td>Individual</td>
</tr>
<tr>
<td>Trauth [13]</td>
<td>Focus Groups, Interviews, Survey</td>
<td>Region</td>
</tr>
<tr>
<td>Bahrs et al. [14]</td>
<td>Interviews</td>
<td>Organization</td>
</tr>
<tr>
<td>Loeser et al. [15]</td>
<td>Literature</td>
<td>Organization</td>
</tr>
<tr>
<td>Prpic et al. [16]</td>
<td>Literature</td>
<td>Organization</td>
</tr>
<tr>
<td>Thies et al. [17]</td>
<td>Case studies</td>
<td>Organization</td>
</tr>
</tbody>
</table>

4.4 Recommendations for Future Research

In the final step of our analysis, we examined the seven papers included in our sample for authors’ recommendations regarding future research opportunities. All of the authors recommend future research in their work.

Overall, the future research recommendations, as shown in Table 6, allow for the conclusion that authors wish to expand their concepts by increasing validity through supplementary tests.
Table 6: Recommended future research

<table>
<thead>
<tr>
<th>Paper</th>
<th>Recommended Future Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chung et al. [11]</td>
<td>Conduct more research</td>
</tr>
<tr>
<td>Rai [12]</td>
<td>Replicate the current study</td>
</tr>
<tr>
<td>Trauth [13]</td>
<td>Perform quantitative testing</td>
</tr>
<tr>
<td>Bahrs et al. [14]</td>
<td>Merge the strings of research and enhance the modeling language to reflect risks and benefits</td>
</tr>
<tr>
<td>Loeser et al. [15]</td>
<td>Conduct empirical research to validate the theoretically derived model</td>
</tr>
<tr>
<td>Prpic et al. [16]</td>
<td>Develop testable propositions</td>
</tr>
<tr>
<td>Thies et al. [17]</td>
<td>Collect empirical data from ongoing user evaluation</td>
</tr>
</tbody>
</table>

5. Discussion

Overall, our analysis presented in the previous section underscores the novelty of the field of Knowledge Economics. For example, no dominant author themes or schools seem to exist. The field is dominated by mainstream journals where mostly US-based academics publish their work.

Although the ideas presented in this paper are based on only seven papers presented at two consecutive HICSS conferences (HICSS 2012 and 2013), we feel that our work makes a reasonable contribution to the emerging field of knowledge economics. Mainly, our paper points to several future research opportunities that are presented in the following section.

From the citation analysis, we were able to detect that conferences provide the most current landscape of research. The Americas Conference on Information Systems (AMCIS) is the most prevalent, followed by the HICSS. The literature base besides conferences can be categorized as established. Two examples are the citation from 1937 of Coase [35] and the citation from 1945 of Hayek [36].

The focus of most researchers in the field is on organizational implications of the knowledge management process.

6. Limitations and Future Research

As every academic work, our paper is subject to limitations. Primarily, the conclusions are derived from an analysis of only seven papers. This limitation can serve as an idea for future research projects related to the field of Knowledge Economics. For example, our sample of papers may be expanded to include more papers. This expansion may include papers presented at the various HICSS tracks and other conferences. The expanded sample may also include journal publications.

In addition, further work may be done on the individual and group level. Also, investigating the country level is promising. In particular, further research projects that investigate Knowledge Economics in emerging economies have great potential. Many of these emerging economies tend to import knowledge products and technology despite the availability of local talents.

To conclude, we hope that our review of HICSS contributions provides a solid foundation for future research.

7. References


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