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# Shedding Light on the Impact Dimension of Information Systems Success: A Synthesis of the Literature

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## Abstract

*There is little consensus among researchers and practitioners on how best to measure IS impact and on what level to assess this impact. Although various dimensions of IS impact, such as individual impact and organizational impact, have been proposed, the number and type of IS impact's dimensions and how these dimensions can be measured remain unclear. This paper contributes to IS research by synthesizing and extending the knowledge on the evaluation of IS success. In particular, the goal of this research is to synthesize IS success literature in order to identify potential IS impact dimensions and measures suitable to operationalize them. Based on our observations from the literature, we propose a comprehensive IS Success Impact Framework (ISIF) that can serve as a conceptualization for both dimensions of IS impact and possible evaluation perspectives as well as a measurement instrument.*

## 1. Introduction

The rapid development of information technology (IT) and the rise of the Internet have resulted in new ways that people deal with information and interact and communicate with each other. Today, a plethora of information systems (IS) exist that aim at supporting individuals, organizations, or other entities in deriving advantages from these new possibilities. However, the extent to which such IS achieve their purpose is not always clear. This lack of clarity is not surprising; assessing the impact of IS is difficult [4] because of problems like those associated with assessing benefits using tangible numbers [39].

IS success research, which has been underway for more than three decades [1], has suggested various models and constructs with which to measure and explain IS success [45]. Among these models and constructs are dimensions like the quality of information and the system itself [11, 12, 17, 41], system use [11, 12], and user satisfaction [11, 12, 41]. IS success, as the ultimate dependent variable, is typically measured in terms of its effect–often labeled "impact" or "net benefit"–on a particular entity. Net benefit is often regarded as the most important success measure because it captures both the positive and the negative effects of IS for users and other entities [7, 13]. However, because of its multi-dimensionality, IS success can be evaluated from several perspectives [e.g., 5, 13] and at various levels [51], making it difficult for researchers and practitioners to agree on the best way to measure IS impact [15].

It has been suggested that the impact of IS be evaluated on the individual and the organizational levels [11]. However, some researchers have criticized this idea, pointing out that these two levels are only two points on a continuum of possible beneficiaries [12]. Because of this criticism, the understanding of the net benefit construct was significantly broadened in order to leave room for further expansion to investigate other dimensions of impact or benefit. Although research has suggested the investigation of other dimensions, such as workgroup [31] and society [41], the studies that have done so are rare. Therefore, the full variety of potential dimensions of IS impact, their differentiation, and approaches to their measurement remain unclear. While the literature has provided in-depth analysis of the independent variables of IS success [33], to our knowledge no overview of the contemporary dimensions of IS impact and their operationalizations has yet been presented.

Therefore, the goal of our research is to synthesize the literature on IS success and to propose a framework of potential dimensions of IS impact, along with measures we identified in the literature that are suitable for operationalizing them. Our IS Success Impact Framework (ISIF) provides further insights on the nature of IS success and guides future studies in how to measure the net benefits of IS.

The remainder of this paper is structured as follows: The next section provides background on IS success by exploring models that have been applied

in IS success research. Then we describe the methods we used to structure and classify previous research. Then we present the literature review's findings by first characterizing the literature we reviewed and then elaborating on selected results from a content analysis. Subsequently, we present the ISIF proposed in this paper. Finally, we discuss our findings and draw conclusions in which we reflect on our findings and present their implications.

## 2. Background

DeLone and McLean [11] were among the first to propose a multidimensional, integrated approach to assessing IS success. Their original model, published more than twenty years ago, consists of six interrelated constructs: information quality, system quality, use, user satisfaction, individual impact, and organizational impact [11].

A number of researchers have criticized DeLone and McLean's approach of assessing IS impact only on the individual and organizational levels, arguing that IS can affect many more levels than just these two [41]. Seddon [41], for example, suggests a respecified and extended version of the DeLone and McLean (D&M) IS success model. One of his suggestions was to add society as an impact dimension of the IS success model.

In response to this critique, DeLone and McLean merged the two impact dimensions individual and organizational into a net benefits construct in order to avoid over-complicating the model [12]. However, they also reminded researchers to define carefully "[w]hat qualifies as a 'benefit'? for whom? and at what level of analysis?" [13, p. 32] when applying the model.

Expanding the original model to include the quality dimension of service quality and the consolidated impact construct, the updated D&M IS success model encompasses six interrelated constructs: information quality, system quality, service quality, use/intention to use, user satisfaction, and net benefits [12]. Providing a frame for categorizing IS success measures and suggesting causal relationships between the constructs of IS success, the model continues to be the dominant framework for assessing and evaluating IS success [20].

Various researchers have suggested extensions or respecifications of the D&M IS success model. Gable et al. [16, 17], for example, follow the call of DeLone and McLean to reduce the number of measures [11, 12] by eliminating the constructs "use" and "user satisfaction." Originally developed in the context of enterprise systems, their multidimensional IS success measurement model is an instrument with high content validity that should be further evaluated in other contexts [34].

Another approach to measuring the success of IS involves evaluating its level of acceptance. For example, the technology acceptance model (TAM) [10] and its extensions [46] aim to explain the factors that influence people to accept and use IT. The TAM postulates that perceived usefulness and perceived ease of use determine a person's intention to use the technology, which leads to actual use [10].

## 3. Research methods

To synthesize existing knowledge on IS success, we conducted a structured literature review. The goal of a literature review is usually to uncover prior work on a topic of interest [47] in order to build a sound basis of knowledge, to uncover areas of interest, and to facilitate theory development [50]. Literature reviews also support researchers in a wide range of other purposes, such as gaining new and synthesized outcomes from existing research [47]. Therefore, a literature review appears to be an appropriate approach to addressing our research goal. Building on the work of Webster and Watson [50] and vom Brocke et al. [47], we followed the process shown in Figure 1.


**Figure 1. Research approach**

To find suitable articles on IS success, we conducted a search in four major literature databases: ScienceDirect, EbscoHost, Abi/Inform, and AIS e-library. We focused on articles in the IS success research stream using the search terms "IS success" and "information systems success" in titles, abstracts, and keywords. Our initial search found 498 unique articles.

To extract the most suitable articles, we screened the abstracts and papers for their relevance to the topic. Our focus was on articles that conceptualize one or more constructs for measuring the impact of IS on a certain entity. The final selection criterion was that either the items or dimensions used to measure the impact constructs were explicitly reported or that the article suggests measures for the

impact constructs. Through this process, we excluded more than 350 articles, and we excluded another 17 articles because of issues related to access rights. To improve the quality of our results, we included relevant articles that were identified in three extant reviews of IS success literature [14, 34, 45]. The entire search process resulted in 108 relevant articles, which we then analyzed in detail.

We categorized the articles according to theoretical foundation, object of analysis, evaluation perspective, and unit of analysis. *Theoretical foundation* refers to the theories and models used as a foundation for the research [45]. We followed the approach of Urbach et al. [45] in using the models of Davis [10], DeLone and McLean [11, 12], and Seddon [41] and further included the model of Gable et al. [17]. All other underlying theories, frameworks, and models were combined in an "other" category. Papers that did not report on the underlying theoretical foundation were classified as "not explicated."

The second way in which we divided the articles was according to *object of analysis*, which we used to classify the system that the article evaluates. In this context we defined the term "system" more broadly than usual as an aspect of IT use, a single IT application, a type of IT or IT application, all IT applications used by an organization or sub-organization, an aspect of a system development methodology, or the IT function of an organization or sub-organization [43].

The third way in which we divided the articles was according to the *evaluation perspective*, that is, according to who evaluates the IS. Following Urbach et al. [45] we used five categories of evaluators: users, IS executives, IS personnel, multiple stakeholders, and not explicated (for papers that did not clearly report on the evaluation perspective). Extracting the evaluation perspective is particularly relevant for our research since different stakeholders have different views on information systems benefits [13]. Therefore, not every measure of IS impact is applicable to every evaluation perspective [13].

When we analyzed and categorized the impact measures, we encountered two issues concerning the evaluation perspective. For measures in articles that used "multiple stakeholders" as the evaluation perspective, we determined which evaluation perspective was stated for each of the impact dimensions, such as users assessing individual impact and executives assessing the organizational impact. Since we could make this determination for all articles classified as "multiple stakeholders", we added the items from the respective dimension to the appropriate evaluation perspective. The second issue was related to measures that were reported without a clear evaluation perspective ("not explicated"). We reviewed and assigned these measures based on their appropriateness to other evaluation perspectives and marked them with the affix "(ex. n/e)" for better transparency in the resulting list.

The fourth way in which we divided the articles was according to the *unit of analysis*. This method of dividing the articles is particularly relevant for our research objective of identifying potential IS impact dimensions. As a starting point, we used the individual and organizational dimensions suggested in the original D&M IS success model [11] and then extended the list with other dimensions of IS impact identified throughout this study. The final units of analysis for IS impact were individual, organizational, workgroup, project, regional, industry, and societal.

For each of the seven dimensions of IS impact, we collected the reported items and measures and coded each one using an open coding technique. Then we ordered the resulting codes according to dimension of IS impact and evaluation perspective into a 21-cell matrix, thereby creating meaningful clusters, reducing complexity, and increasing readability. The coding and clustering was done by a single researcher only, although critical and unclear cases were discussed in regular group meetings with all three authors throughout the research process.

The next section describes our findings from the literature review. First, we summarize the identified articles by describing their main characteristics. Then we present selected results from the articles' content analysis.

## 4. Findings

### 4.1. Descriptive analysis

Of the 108 relevant articles, 69 percent were journal articles and 31 percent were conference articles. While all articles were published between 1992 and 2013, more than 50 percent were published after 2008, illustrating the continuing importance of the topic (Figure 2).

The analysis of articles concerning their theoretical foundation shows that the D&M IS success model was the dominant research foundation with 61 percent of the articles (Figure 3), while the second most frequent research foundation, TAM, was

used in only 8 percent of the articles. Sixteen percent of the articles used other theoretical foundations, such as contingency theory [25] or trust [26].

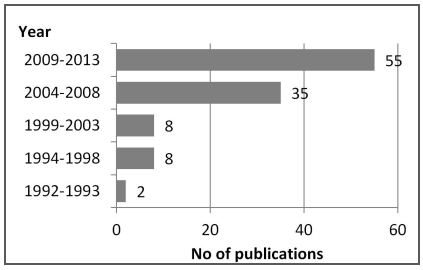


**Figure 2. Years of publication**

As for the object of analysis, more than half of the articles evaluated a "type of IT or IT application," followed by "a single IT application," with 29 percent. Only a few articles evaluated "an aspect of a system development process" or "an aspect of IT use." Eight percent of the articles did not state an object of analysis.

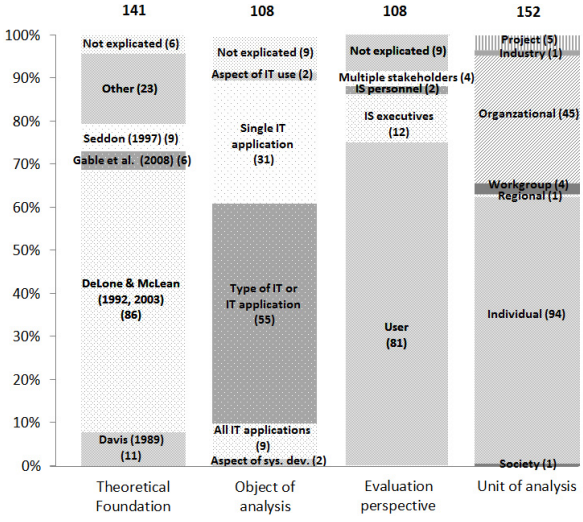


**Figure 3. Publication classifications**[1]

The IS studied most often were enterprise resource planning (ERP) and enterprise systems (ES), with twelve articles [e.g., 8, 16, 19]. E-learning systems and e-government services follow, with ten articles [e.g., 2, 6, 49] and eight articles [e.g., 28, 40, 48], respectively.

The analysis concerning the evaluation perspective showed that 75 percent of the articles applied users' views of IS success, and 11 percent evaluated IS success from IS executives' perspectives. Only two percent of the articles evaluated from the IS personnel perspective, and four percent applied a multiple-stakeholder perspective. Eight percent of the articles did not report on an evaluation perspective.

The final part of the descriptive analysis relates to the unit of analysis. Sixty-two percent of the papers investigated the impact of IS on the individual level and 30 percent considered the organizational level. This finding is in line with the results of three earlier literature reviews, which showed that the individual level was investigated more often than the organizational level was [14, 34, 45]. Other dimensions of impact addressed in the papers are project impact (3 percent), workgroup impact (3 percent), societal impact (1 percent), regional impact (1 percent), and industry impact (1 percent).

## 4.2. Content analysis

While screening and analyzing the articles, we came across the construct "usefulness" several times. Twenty-five of the articles measured "usefulness" [e.g., 42], "perceived usefulness" [e.g., 8, 32], or "social usefulness" [e.g., 29] in the context of IS success. Originating from TAM [10], "perceived usefulness" refers to "the degree to which a person believes that using a particular system would enhance his or her job performance" [10, p. 320]. TAM suggests that a user will adopt an application when he or she believes that using the system will help to improve his or her job performance. In this context Davis' [10] construct of perceived usefulness is future-oriented [37].

The construct of perceived usefulness was also considered in other IS success models, but its meaning differs slightly. For example, Seddon [41] added the concept to a respecified IS success model, defining it as "a perceptual indicator of the degree to which the stakeholder believes that using a particular system has enhanced his or her job performance, or his or her group's or organization's performance" [41, p. 246]. In Seddon's model, the construct of perceived usefulness relates to the attitudes that derive from the *perceived net benefits from past use* of IS. According to this definition, then, perceived usefulness can be considered a valid replacement measure for IS impact on the individual level [37]. Several researchers have followed this view in including perceived usefulness as a surrogate for the individual impact of IS [e.g., 30, 32, 37]. Therefore, we considered items and measures from the construct

[1] Multiple allocations within one category are possible.

of "usefulness" when its purpose to measure the benefits from past use was clearly stated.

One major focus of our study is the identification of dimensions of IS impact. Defining and measuring the impact of IS is probably most difficult when IS success is being evaluated [11] because of the difficulty in assessing the real impact of an IS, not just in general, but on a particular entity. Measuring the impact of IS on individuals and organizations was proposed in the original IS success model [11]. Individual impact refers to the effect of IS on the user [3], whereas organizational impact refers to the effect of IS on the performance of the organization as a whole [11]. Our literature analysis identified five additional dimensions of impact: society, industry, workgroup, project, and regional.

Seddon [41] suggested society as an impact dimension of IS, arguing that evaluations of technology (like the Web) that influences our entire society require a larger unit of analysis. Although the impact of IS on society is difficult to quantify, we identified a study that measures the impact of a health care system on the patient and interprets this service as beneficial for the community [36].

Assessing the impact of IS on industries has also been proposed [9, 12], although studies on the impact of IS on industries are rare. We identified only two articles that refer to industry impact [13, 18]. One of these studies suggests measures without empirical evaluation and the other does not explicitly assign the measures to individual, organizational, or industry impacts, so we excluded these industry measures from the analysis.

Myers et al. [31] introduced the workgroup as a measurable dimension of IS impact, arguing that IS cannot have an impact only on individuals and organizations but must also impact a level between these two entities [20]. In their understanding, the workgroup impact refers to the impact of IS on sub-units or functional departments in the organization [19]. This definition implies three characteristics: workgroups are unions of people *within an organization*, formed on a *long-term basis*, and are usually concerned with *recurring tasks*. Our literature review identified four articles that refer to workgroup impacts [13, 19, 20, 22].

Project impact, which is closely related to workgroup impact, refers to the effect of IS on the project as a whole. Our analysis showed five articles that deal with the impact of IS on projects [8, 24, 27, 35, 38]. In contrast to workgroups, projects are usually *temporary endeavors* that have a particular *one-time task* [23]. Project teams can consist of *intra-organizational members* or can include *external members* [21]. Because of these differences, workgroup impact and project impact are separate units of analysis.

The final dimension of impact identified is the regional perspective. Unlike society and industry, which are not bound to a specific region, the regional impact refers to the impact of IS on a specific geographical area, such as a county or a group of villages or cities. An example of IS that has this kind of impact is accommodation booking systems that provide potential visitors information about accommodations in a specific area. Since IS used in this way benefit an entire geographical area, measuring the impact of IS on a region is appropriate. Our study found one article that addresses the regional impact of IS [18].

## 5. Proposing an IS Impact Framework

Researchers often struggle with how to measure the impact of IS and what measures to use for each evaluation perspective. The IS Impact Framework (ISIF) is a matrix consisting of the seven impact dimensions and the three evaluation perspectives, IS users (ISU), IS executives (ISE), and IS personnel (ISP), resulting in a 21-cell matrix. The ISIF matrix could have been extended by more dimensions, such as the object of analysis or the theoretical foundation. However, adding more dimensions would have significantly increased the ISIF's complexity. Therefore, we excluded the other dimensions in order to enhance readability and comprehensiveness, understanding that the ISIF is a starting point for structuring IS impact measures.

When the ISIF is applied, each cell can be specified with appropriate measures for the impact dimension and the evaluation perspective. The measures presented in the ISIF are based on what we observed in the literature, so they act as a summary of the as-is measures for evaluating the impact of IS. Table 1 shows the scheme of the ISIF.

**Table 1. IS Impact Framework (ISIF) scheme**

| | ISU | ISE | ISP |
|---|---|---|---|
| **Individual** | provided | provided | provided |
| **Organizational** | provided | provided | provided |
| **Societal** | provided | not provided | not provided |
| **Industry** | not provided | provided | not provided |
| **Workgroup** | provided | provided | not provided |
| **Project** | provided | provided | not provided |
| **Regional** | not provided | provided | not provided |

For purposes of readability and presentation, we divided the matrix into seven individual tables, each consisting of the measures for one dimension of impact. Table 1 also shows for which cells we could not identify suitable measures.

Although the ISIF provides a good overview of potential IS impact measures, not every measure is suitable for every IS. Therefore, researchers must reflect carefully on the measures' appropriateness in specific contexts. Table 2 shows the measures (in alphabetical order) for the impact of IS on the individual. Because the individual impact is the most studied impact domain in IS success research [14, 34, 44, 45], the great variety of measures is not surprising. Most of the measures are well-known, but the list also covers IS-specific measures like "entertainment."

**Table 2. Measures of individual impact**

| | ISU | ISE | ISP |
|---|---|---|---|
| 24-hour accessibility | | | × |
| Anonymity | × | | |
| Business vision and trends | × | × | |
| Communication | × | × | × |
| Convenience and experience | × | | |
| Cooperation | × | | |
| Costs | × | | × |
| Customer management | × | | |
| Data analysis | | × | |
| Decision-making | × | × | |
| Entertainment (ex. n/e) | × | | |
| Error reduction | × | | |
| Freedom | × | | |
| Improved information and services | | | × |
| Improved skills and competences | × | | |
| Increased output | × | | |
| Individual advantages | × | | |
| Individual and task effectiveness | × | × | |
| Individual and task efficiency | × | | |
| Individual and task performance | × | × | |
| Individual and task productivity | × | × | × |
| Individual evaluation | × | | |
| Individual flexibility | × | | |
| Individual image and reputation | × | | |
| Information and IS value (ex. n/e) | × | | |
| Information- and knowledge-processing capabilities | × | | |
| Information awareness | × | | |
| Informational and social impact (ex. n/e) | × | | |
| Innovation capabilities and creativity | × | × | |
| Job importance and security | × | | |
| Learning | × | × | |
| Life quality | × | | |
| Monitoring and control | × | | |
| Overall benefits | × | | |
| Personalization and trust | × | | |
| Problem-solving | × | | |
| Process and activity support | × | | |
| Process improvements | × | | |
| Product presentation and range | × | | |
| Profitability | × | | |
| Quality and accuracy | × | × | |
| Reduction of effort and work | × | | |
| Relationship-building | × | | |
| Resources allocation | × | | |
| Risk reduction | × | | |
| Sales | × | | |
| Satisfaction and recommendation | × | | |
| Task fulfillment | × | | |
| Time savings | × | × | × |
| Transparency | × | | |
| Usefulness | × | | |
| Willingness to use | × | | |
| Work and product quality | × | | |
| Work simplification | × | | |

Table 3 provides potential measures of the impact of IS on the organization. Because the organizational level has been reasonably well studied in the last two decades, the list covers a wide spectrum of measures.

**Table 3. Measures of organizational impact**

| | ISU | ISE | ISP |
|---|---|---|---|
| Budgeting | | × | |
| Business opportunities | × | × | × |
| Business requirements | × | | |
| Collaboration (ex. n/e) | | × | |
| Competition and competitive advantage | × | × | × |
| Control | × | × | |
| Costs | × | × | × |
| Customer management | × | × | × |
| Data-, information-, and knowledge-management capabilities | × | × | |
| Decision-making | | × | × |
| Economies of scale (ex. n/e) | | × | |
| Error reduction | × | | |
| Extent of use | | × | |
| Fill rate | × | | |
| Image and reputation | × | × | |
| Improved internal and external services | | × | |
| Improved outcomes/outputs | × | | |
| Increased capacity | × | | |
| Information-sharing intention (ex. n/e) | | × | |
| Innovation capabilities | | × | |
| Input management | | × | |
| Institutional distinction | | × | |
| Internal and external coordination | | × | |
| Intra- and inter-organizational communication | × | × | |
| Lead-time reliability | | × | |
| Maintenance | | × | |

| | | | |
|---|---|---|---|
| Management capabilities | | × | |
| Market share | ×[3] | × | |
| Marketing impact (ex. n/e) | | × | |
| Morbidity and mortality | × | | |
| Operational excellence (ex. n/e) | | × | |
| Organizational effectiveness | × | × | |
| Organizational efficiency | × | × | |
| Organizational flexibility | × | × | |
| Organizational goals | × | × | |
| Organizational performance | × | × | |
| Organizational productivity | × | × | × |
| Organizational structure | | × | |
| Organizational value | × | | |
| Overall success | | × | |
| Problem-solving | × | | |
| Process enablement and improvement | × | × | × |
| Product improvement and design | × | × | |
| Production coordination | | × | |
| Profit | | × | |
| Reduced cycle time | × | | |
| Responsiveness to change | × | | |
| Return on assets (ex. n/e) | | × | |
| Return on investments | × | × | |
| Revenue and income | × | × | |
| Sales | × | × | × |
| Shared vision | | × | |
| Sharing of individual achievement (ex. n/e) | | × | |
| Skills and competencies (ex. n/e) | | × | |
| Staff management | × | × | |
| Stock price | × | | |
| Total equity | ×[2] | | |
| Use and allocation of resources | | × | × |
| Work and product quality | × | × | |

The measures in Table 4 relate to the societal impact. Our literature review identified measures from only the users' perspective.

**Table 4. Measures of societal impact**

| | ISU | ISE | ISP |
|---|---|---|---|
| Community care | × | | |
| Community needs | × | | |
| Community satisfaction | × | | |
| Community services | × | | |
| Error frequency | × | | |

[2] Measures were reported in the context of an experiment in which the organizational impact was assessed based on a combined score of seventeen organizational performance variables. Whether a regular IS user can answer these questions is questionable, so these measures must be viewed with caution when evaluating IS from the users' perspective. We advise against compulsory or rote use of the framework in favor of using creative skills and judgment to apply the framework in light of the requirements of a specific evaluation.

Measures of the industry impact are based on only one article, with conceptual measures covering only the IS executives' perspective (Table 5).

**Table 5. Measures of industry impact**

| | ISU | ISE | ISP |
|---|---|---|---|
| Establishing partnerships (ex. n/e) | | × | |
| Inter-organizational coordination (ex. n/e) | | × | |
| Inter-organizational transaction efficiency (ex. n/e) | | × | |
| Supply-chain integration (ex. n/e) | | × | |
| Synergies (ex. n/e) | | × | |

Workgroup impact measures are provided from the users' and IS executives' perspectives (Table 6), as are measures of project impact (Table 7).

**Table 6. Measures of workgroup impact**

| | ISU | ISE | ISP |
|---|---|---|---|
| Communication effectiveness (ex. n/e) | × | | |
| Effectiveness of enhanced solutions | | × | |
| Knowledge- and information-sharing (ex. n/e) | × | | |
| Meeting efficiency | × | | |
| Organization-wide communication | | × | |
| Sense of responsibility | | × | |
| Sub-unit efficiency | | × | |
| Task delegation | × | | |
| Task tracking | × | | |
| Team and inter-departmental coordination | × | × | |
| Team-internal communication | × | | |
| Workers' organizational participation | | × | |
| Workgroup productivity | | × | |

**Table 7. Measures of project impact**

| | ISU | ISE | ISP |
|---|---|---|---|
| Effective safety management | | × | |
| Project costs | × | × | |
| Project effectiveness | × | | |
| Project efficiency | × | | |
| Project flexibility | × | | |
| Project productivity | × | | |
| Project quality | × | × | |
| Project schedule and time management | × | × | |
| Sustainable project management | | × | |

Finally, the measures of regional impact are provided only from the executives' perspective.

**Table 8. Measures of regional impact**

| | ISU | ISE | ISP |
|---|---|---|---|
| Communication costs | | × | |
| Community benefits | | × | |
| Digital divide | | × | |

| | | | |
|---|---|---|---|
| Economic benefits | | × | |
| External relationships | | × | |
| Internal collaboration/partnerships | | × | |
| Productivity | | × | |
| Regional attractiveness | | × | |
| Regional products and services | | × | |
| Regional skills | | × | |

Having presented our results from the literature review and having presented the ISIF as a synthesis, we proceed with a discussion of our findings.

## 6. Discussion and conclusion

This paper contributes to IS research by synthesizing and extending knowledge on IS success evaluation. We provided an overview and analysis of IS success research contributions from the last two decades. Our results provide an account of current state of research on IS success. While literature reviews on IS success have been presented before, with the exception of Dörr et al. [14], most were published in 2009 or before. Our results show that a great number of articles were published in 2009 and after, so our work complements prior work by analyzing more recent contributions.

Our study also revealed dimensions of IS impact that have only scarcely been considered in IS research but which bear the potential to improve how IS success is explained and predicted. Previous research has focused primarily on the individual and organizational impact of IS [14, 34, 45]. However, through our literature review we identified five more dimensions that are highly relevant for IS research: society, industry, workgroup, project, and regional impact. Still, we believe that more dimensions can be identified and hope to open up the discussion to identify additional impact dimensions that would greatly advance the IS field.

Another contribution of this work is its identification of measures for the seven dimensions of impact based on both conceptual and empirical work. Thus, we hope to support future researchers to apply this set of measures in order to improve theorizing on IS impact.

We consolidated our findings by means of the ISIF, which can serve as a conceptualization for impact dimensions and possible evaluation perspectives as well as a measurement instrument. The ISIF helps researchers to decide which dimension of impact to measure, which evaluation perspective to take, and which measures to choose. Although we agree with DeLone and McLean [12] that researchers should rely on tested and proven measures, suitable measures may not always be available. The ISIF can guide researchers on how to identify suitable measures for each dimension of impact. This can be used as a starting point for a scale-development process.

Our research has also some limitations. First, we used measures from both empirical and conceptual work in our ISIF, so not all measures are empirically tested. Another limitation lies in the coding and clustering approach to the measures, which was done by a single researcher only. Although the research team discussed critical cases during the entire research process, a second coder could improve the validity and density of the final results by, for example, aggregating the measures further, especially for the individual and organizational levels. Finally, we may not have covered all relevant articles in our literature review. Since this research is part of a larger research endeavor, we are content that future research will address all of these shortcomings. In the meantime, we hope that our research provides both a starting point and a framework to stimulate this work, which is much needed in IS.

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