Team Knowledge Sourcing and Creativity in IS Development

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Abstract

Team creativity in information systems development is becoming an important factor of success. This research looks at how team’s creativity is influenced by the degree of team’s knowledge sourcing and by the learning orientation of the team. This empirical study was conducted by gathering data from 148 graduate students working in teams on an e-commerce project. The research model was tested using PLSPM. The findings show the significant influence of both independent variables.

1. Introduction

To cope with the demands of dynamic global markets, organizations draw on creative project teams to develop information systems (IS) for novel business applications and new problem domains [1,2]. Creative project teams are temporary and self-managed organizations consisting of two or more individuals who engage in non-routine tasks to produce creative outputs [3,4]. Creative project teams have traditionally been contrasted with stable work teams because membership is temporary, creative processes differ from the processes of routine production, and creative project outputs are one-off [5].

IS development (ISD) is a creative process that involves the generation and evaluation of new ideas, designs, solutions, and artifacts [2,6]. The ISD life cycle involves translating an abstract business idea into project requirements, which are then used to create project concepts and system specifications. Successful ISD thus depends on the team’s ability to seek out several interdependent sources of knowledge in order to develop ideas [2]. There is rarely “one right design” for an ISD problem, because there is often more than one possible solution to the same end [7]. Thus, creative team members need to generate a variety of solutions about a problem, manage knowledge, and promote creativity [8,9].

Despite the critical need for team creativity in ISD projects, team members do not always manage creativity well [2,10]. In particular, the extent to which team members have the knowledge they need to do their work will determine their ability to be creative [2,11,12]. Furthermore, access to accurate, timely knowledge is especially critical for team creativity [13]. Often, the relevant knowledge will be found elsewhere in the organization than among the team members [14]. Understanding how team members acquire the knowledge they need to transform it into creative processes in ISD projects is therefore important for scholars and managers alike.

The IS literature has abundantly shown that improving team members’ access to internal knowledge will lead to team creativity, but surprisingly little attention has been given to explain this connection. Prior research on the creativity of ISD project teams has focused on whether and why individual team members access knowledge and skills from within the team [2,6,11]. However, individuals need to access knowledge relevant to their work not only from the project team but also from other sources in the organization. In fact, developing an IS that addresses a problem requires technical knowledge and knowledge about the application field [15]. Some of this knowledge is often not available within the team and is not readily available in an explicit form such as documents and repositories [16].

Our research addresses this shortfall by proposing the first empirical test of a model based on the knowledge sourcing theory [17]. Knowledge sourcing describes a specific mechanism by which an individual accesses others’ knowledge, including documents and repositories [18]. We then develop the idea that an ISD team’s creativity is determined by the extent to which its members access both team knowledge and others’ knowledge for developing project concepts, designs, and solutions. We refer to such a source of individual knowledge at the team project level as team knowledge sourcing.

We address the following research question: How does team knowledge sourcing influence an ISD project team’s creativity? We do so by investigating the theoretical links between team knowledge sourcing and associated team creativity. We present and test a new model that enables to understand how a team’s knowledge sourcing processes influence its capacity to
generate new ideas in ISD projects. We also look at how the learning orientation of the team influences both team knowledge sourcing and team creativity.

2. Theory and research model

2.1. Team creativity

The need for team creativity in ISD projects is increasingly recognized in practice [2,5,19,20]. However, team creativity in IS studies has not yet received the attention it deserves [21]. Previous IS studies on creativity analyzed the impact of IS use on the potential of individuals and groups to generate creative outcomes. Examples include studies of how creativity support systems influence the quality and quantity of idea generation [22–27], how the use of software tools stimulates idea generation [28–30], and how group support systems influence idea generation [31–34]. However, fewer IS studies have analyzed team creativity during the process of IS development [2,6]. Team creativity is concerned with idea generation and development [35]. It is inherently a social process that builds on and incorporates individual creative processes at the project level [20]. Creative processes are considered to be interactions among members of a team and/or with other groups or individuals outside the team that serve to transform members’ skills and knowledge into meaningful outcomes [36–38]. Thus, team creativity emerges from an improvisational process where individual team members collaboratively build on and inter-relate their knowledge with the perspectives and unique skills of other individuals or groups outside the team, so that the joint activities of individual team members create a collective system of creative actions [37]. It is also assumed that team creativity influences project outcomes [5, 37].

2.2. Knowledge Sourcing in Teams

Gray and Meister [17] developed a knowledge sourcing theory to address a theoretical gap in knowledge management research by helping to articulate the missing segment in the causal chain connecting knowledge availability to its creative use. Their theory was founded on adult education and educational psychology studies [39, 40] and presented a new model focused on the extent to which an individual accesses other organizational members’ knowledge, insights, ideas, and opinions. Because we are interested in work at the team level, our attention and theoretical development related to knowledge sourcing is devoted to this level. Farr et al. [37] noted that the team is the level at which much knowledge sharing and learning takes place in organizations, especially with regard to creativity and ISD. Team knowledge sourcing means that team members engage in the process of searching for, accessing, transferring, and applying both team knowledge and others’ knowledge [10]. Team knowledge sourcing allows team members to reflect on the sourced knowledge and to use it to adjust their understanding of a given problem. They can then create new knowledge that integrates the sourced knowledge with their new understanding of the problem [10]. Further, fully understanding the problem that the intended system must solve is often one of the most challenging aspects of ISD [41]. Thus, integration of the understanding and knowledge of team members at the project level renders them usable for creating the system [2].

Knowledge can be obtained from varied sources such as colleagues, documents, and repositories [17,18]. Sourcing from colleagues is an indirect learning behavior whereby team members interact with each other to exchange knowledge [17]. Examples include communication via electronic discussion groups or face-to-face meetings. Next, sourcing from published documents is explicit knowledge sourcing where team members can benefit from the codification of the knowledge of a single source [42]. Examples include accessing documents from team members, books, or intranet postings [17]. Last, sourcing from repositories such as forums, blogs and websites offers a way to enhance team members’ learning experiences and knowledge access [43].

We suggest that knowledge sourcing within a team that is attempting to create a system is ultimately concerned with the development of a shared mental model of the desired end-system. The shared mental model defines the perceived requisite knowledge and skills for team creativity [37, 44]. A comparison between the required knowledge and the inventory of existing knowledge defines the knowledge that the team must attain by learning from other sources.

2.3. Team knowledge sourcing and team creativity

Next, consider how team knowledge sourcing influences team creativity. The highest levels of team creativity are a result of different cognitive structures coming together [45]. Team creativity results from finding novel associations and linkages among diverse ideas, perspectives, and skills that individual team members hold [2]. Access to a variety of alternatives, solutions and ideas can potentially lead to higher team creativity [46]. ISD projects must draw on and
integrate the contributions of individual team members. Integrating of individually held knowledge and skills at the team level provides a mechanism for enhancing team creativity, because it leads team members to access, explore, and use diverse information from related knowledge domains associated with the project [2]. Individual team members, however, often start out with their own partial mental models about the possible solutions, which are biased by their limited knowledge and experiences [44]. To generate useful solutions, the project team needs first to identify and evaluate problems by enhancing team members’ learning and knowledge access [47, 48]. Team knowledge sourcing can in fact improve team creativity in several ways. In replication, team members can essentially duplicate existing knowledge in new contexts and to new problems for improving the system. This constitutes a productive exploitation of resources that generates value through the efficiencies that result from not re-creating knowledge that already exists [49]. Although replicated knowledge is just relatively novel, it can be used creatively in new contexts to resolve problems with notably better quality or notably less expense than the original solution [50]. Next, sourced knowledge also provides an alternative lens through which prior knowledge and existing problems can be viewed, so that team members can revisit and adapt the knowledge to generate entirely new solutions and solve existing problems [50,51]. Last, team members can integrate their understanding of the problem with that of other team members and invent new knowledge favoring a radical solution with greater modification representing greater novelty [19]. Replication, adaptation, and invention are the possible types of creativity inherent in team knowledge sourcing processes [50,52]. This leads to our first hypothesis.

H1: A high level of team knowledge sourcing will be positively and directly related to creativity of ISD project teams.

2.4. Learning orientation

Drawing on the earlier models of work group creativity processes [2, 13, 37, 45, 51, 53, 54], we adapted the knowledge sourcing model [17] to the team level. Although several factors have been linked to team creativity, our model suggests that one particular factor (orientation learning) is directly relevant to influence team knowledge sourcing in ISD projects. Learning orientation has been defined as team members’ motivation and dedication to learn in the project [54, 55]. It is related to both skill acquisition and intrinsic motivation [55]. Further, it may influence team members’ willingness to solicit and use feedback to improve their skills and creativity [56]. Team members with strong learning orientation believe their own skills can be improved, and thus they intensify efforts, and enjoy the challenge [17]. Consistent with their belief that skills can be improved, team members are more likely to acquire and harness new knowledge and skills for coming up with creative solutions [55]. In order to acquire such knowledge and skills, team members must engage in a learning process. Therefore, the following hypothesis will be tested:

H2: The degree of learning orientation will be positively related to team knowledge sourcing in ISD project teams.

In addition, research has found learning orientation to be essential for creativity [54–56]. First, team members with strong learning orientation are more intrinsically motivated in understanding and mastering demanding tasks [56]. This intrinsic motivation leads to a deeper and more intensive engagement with the challenging task, which often results in creativity [55]. Next, learning orientation improves creativity by engendering the development of domain-relevant skills and creativity-relevant skills [57]. These skills provide the essential background knowledge and basis for creativity [56]. Finally, when obstacles are encountered, learning-oriented team members tend to deal with these challenges by investigating additional effort to develop creative ideas [55]. Because team members with strong learning orientation invest more attention in learning, they are more likely to acquire new knowledge from the activities that they are already performing [17], and thus have better developed creative skills [56]. Therefore, the following hypothesis will be tested:

H3: The degree of learning orientation will be positively related to creativity of the ISD project teams.

Team learning orientation affects not only the extent to which they learn from others’ knowledge and develop creative skills, but also may moderate the effect of team knowledge sourcing on team creativity outcomes. Team members’ learning behavior encourages and facilitates learning and is a particularly relevant factor for bringing out learning-oriented members’ disposition to engage in knowledge sourcing [56]. But an emphasis on learning does not necessarily translate directly into creative outcomes. Learning may be insufficient at very high levels [58]. Although, individuals with very high learning orientation do indeed build extensive, detailed, and accurate cognitive structures, they may nevertheless be less likely to learn something new when sourcing knowledge [17]. In spite of their motivation to engage in knowledge sourcing, individuals with a very high learning orientation are thus less likely to benefit from this behavior for developing creative outcomes [56]. In contrast, those with low learning orientations are more likely to have
less developed cognitive structures, and thus take advantage from knowledge sourcing for creative problem solving [17]. In case of very high level of learning orientation, team learning behavior may encourage team members to prioritize learning activities to such an extent that it has diminishing creative returns [56]. The impact of team knowledge sourcing on team creativity is thus expected to be stronger when team members have a low learning orientation.

**H:** The impact of team knowledge sourcing on team creativity will decrease with very high learning orientation in ISD project teams.

### 3. Methodology

#### 3.1. Participants and data collection

Our model was tested with master's students as part of their e-commerce course at French Business School. The group's project consists on developing a business model which results in the design of a website. The course is taught for two different cohorts; a class of 141 classical training students and a class of 150 continuing education students (apprentices in work experience scheme). In each class, groups of four students were voluntarily created based on their affinity and their willingness to work together. The groups worked together during the sessions, and they had access to a set of documents, course materials available on the Moodle e-learning platform as well as repositories such as forums, blogs and websites on the Internet. Groups could also interact with each other to collaborate and to share their knowledge.

At the end of the project, an online questionnaire was administered to collect anonymous data from project groups. An email invitation was sent to the 291 members of groups in the two cohorts. A total of 148 (50.9%) responses were received with 102 participants from the classical training class and 46 from the continuing education class. The average age of the participants was 22.5 years with a standard deviation of 1.76 years. Forty-one percent of the participants were male.

#### 3.2. Measures

Our model includes three constructs measured by adapting valid and reliable scales used in the literature to IS development. The participants indicated their agreement with a set of statements using a 7-point Likert-type scale that ranged from strongly disagree to strongly agree. We measured the formative construct of team knowledge sourcing (TKS) using twelve items that we adapted from Gray and Durcikova [18]. The reflective construct of learning orientation (LO) was measured using five items adapted from the original works of Gray and Meister [17], and Gong et al. [55]. Last, we measured the reflective construct of team creativity (TC) using four items that we adapted from the original works of Tiwana and McLean [2], and Chen et al. [59]. All measures were translated into French by the author and then back-translated into English by an independent native speaker.

### 4. Data analysis and results

Data were analyzed using partial least squares path modeling (PLSPM version 2012.2.03), following the general procedures laid out by Chin [60] and Wetzels [61]. PLS has become increasingly popular as alternative to SEM because it can handle both reflective and formative constructs even with single item constructs [62]. It differs, as implied in the name, in that PLS is estimated with regression-based methods rather than maximum likelihood estimation [63]. PLS focuses on explanation of variance (prediction of the constructs) rather than covariance (explanation of the relationships between items), and significance testing of parameter estimates is not possible without using bootstrapping methods [62]. Further, PLS estimation approach handles both very small and very large samples with more ease than does SEM [63]. Finally, PLS is better suited than SEM techniques for testing of interaction effects between latent variables [64].

#### 4.1. Testing the measurement model

We used PLSPM for testing the measurement model. We first assessed the psychometric proprieties of the measurement scales for the first-order factors in terms of convergent validity, discriminant validity, and reliability. The measurement scales have good convergent validity if item’s loading on its corresponding construct exceeds 0.70 and the average variance extracted (AVE) exceeds 0.5 [65]. Only six items were dropped due to low loadings (<0.7) on their respective constructs. The resulting factor loadings are shown in Table 1 with all retained items exceeding 0.7 on their corresponding constructs, indicating adequate convergent validity.

To assess the discriminant validity, a good test is to compare the square root of the average variance extracted (AVE) for every construct with the inter-correlations among these constructs [60]. The square root of AVE should be greater than the inter-correlation estimates [63].
<table>
<thead>
<tr>
<th>Construct</th>
<th>Dimensions and Retained items</th>
<th>TC</th>
<th>KSIGs</th>
<th>KSIG</th>
<th>KSD</th>
<th>KSR</th>
<th>LO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team Creativity</strong> (Reflective)</td>
<td><strong>Team Creativity (TC)</strong>&lt;br&gt;TC1. Our group frequently experiments with proven alternatives to carry out our project. 0.70 0.24 -0.04 0.24 0.15 0.16&lt;br&gt;TC2. Our group often invents new ways to perform the project. 0.87 0.21 0.25 0.11 0.31 0.40&lt;br&gt;TC3. Our group is highly imaginative in thinking about new or better ways to perform our tasks. 0.90 0.21 0.40 0.24 0.36 0.42</td>
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<tr>
<td><strong>Knowledge Sourcing</strong> (Formative)</td>
<td><strong>Knowledge Sourcing Inter-Groups (KSIGs)</strong>&lt;br&gt;KSIG1. Members of my group frequently discuss difficulties with other groups when they need to improve knowledge on issues related to the project. 0.25 0.95 0.27 0.22 0.19 0.14&lt;br&gt;KSIG2. Members of my group often consult with other groups to compare similar encountered issues when they are working on a difficult task. 0.24 0.92 0.16 0.13 0.13 0.17</td>
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<tr>
<td><strong>Knowledge Sourcing Intra-Group (KSI)</strong>&lt;br&gt;KSI1. Members of my group frequently communicate with each other to share their knowledge about the project. 0.35 0.31 0.92 0.27 0.29 0.42</td>
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<tr>
<td><strong>Knowledge Sourcing from Documents (KSD)</strong>&lt;br&gt;KSD1. Members of my group often refer to available documents to learn more about a problem. 0.28 0.25 0.14 0.77 0.23 0.26</td>
<td></td>
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<tr>
<td><strong>Knowledge Sourcing from external Repositories (KSR)</strong>&lt;br&gt;KSR1. Members of my group frequently check on the Internet when they need to improve knowledge on a topic or issue. 0.40 0.18 0.24 0.32 0.90 0.42</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Learning Orientation</strong> (Reflective)</td>
<td><strong>Learning Orientation (LO)</strong>&lt;br&gt;LO1. Members of my group are willing to select a challenging work assignment that they can learn a lot from. 0.40 0.23 0.38 0.38 0.43 0.91&lt;br&gt;LO2. Members of my group often look for opportunities to develop new skills and knowledge. 0.37 0.14 0.28 0.35 0.42 0.88&lt;br&gt;LO3. Members of my group enjoy challenging work where they will learn new skills and knowledge. 0.32 0.02 0.24 0.18 0.32 0.81</td>
<td></td>
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</table>

[r] reverse-coded item
The correlation matrix shown in Table 2 indicates that the square roots of AVE on the diagonal are greater than the corresponding off-diagonal inter-construct correlations. This test shows good evidence of discriminant validity. Composite reliability scores for the reflective measured scales ranged from 0.78 to 0.90, exceeding the recommended 0.70 threshold [63], indicating the high reliability of the retained items.

### Table 2: Discriminant validity

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Composite reliability</th>
<th>Correlation of constructs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LO</td>
<td>KSR</td>
</tr>
<tr>
<td>LO</td>
<td>0.90</td>
<td>0.87</td>
</tr>
<tr>
<td>KSR</td>
<td>0.87</td>
<td>0.46</td>
</tr>
<tr>
<td>KSD</td>
<td>0.78</td>
<td>0.36</td>
</tr>
<tr>
<td>KSIGs</td>
<td>0.82</td>
<td>0.36</td>
</tr>
<tr>
<td>KSIG</td>
<td>0.93</td>
<td>0.16</td>
</tr>
<tr>
<td>TC</td>
<td>0.85</td>
<td>0.42</td>
</tr>
</tbody>
</table>

(a) Diagonal elements are the square root of the AVE

### 4.2. Testing the structural model

PLSPM was used to assess the structural model. Since Team knowledge sourcing (TKS) is conceptualized as second-order aggregate, we generated factor scores for the first-order dimensions (KSR, KSD, KSIGs, and KSIG) which were then used as formative measures of the second-order aggregate constructs [66]. To do so, we first ran the full research model in PLS with the dimensions for each construct disaggregated. The resulting construct scores for each dimension were then used as measures of the aggregate TKS construct. One of the concerns with formatively measured constructs is multicollinearity across the formative indicators of each construct. We thus tested all constructs in the model for multicollinearity. Variance inflation factor (VIF) values for the four TKS dimensions ranged from 1.1 to 1.4. This is well below the threshold of 3.3 suggested by Petter et al. [66], indicating no serious concerns with multicollinearity in the data.

Another concern with formative measured constructs is the significance of the weights. As indicated in Table 3, two TKS dimensions have non-significant weights. Since each of non-significant dimensions is an integral part of the TKS construct, and all dimensions have significant bivariate correlations with their TKS construct, we retained all dimensions despite their non-significant weights [63].

### Table 3: Weights for aggregate and formative construct

<table>
<thead>
<tr>
<th>Latent variable</th>
<th>Manifest variables</th>
<th>Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>TKS</td>
<td>KSR</td>
<td>0.592***</td>
</tr>
<tr>
<td></td>
<td>KSD</td>
<td>0.254 (n.s.)</td>
</tr>
<tr>
<td></td>
<td>KSIG</td>
<td>0.398**</td>
</tr>
<tr>
<td></td>
<td>KSIGs</td>
<td>0.185 (n.s.)</td>
</tr>
</tbody>
</table>

Since the retained dimensions are validated, we tested the moderating effect of learning orientation (LO) on the relationship between team knowledge sourcing (TKS) and team creativity (TC). Results show no support for the moderating effect (see Figure 1).

### 5. Discussions and implications

This study was motivated by investigating the role of team knowledge sourcing in project information systems development team’s creativity as well as by studying the influence of team learning orientation on this relationship. Among the four hypotheses that were tested, three were validated (H1, H2, H3). We will now discuss the implication for each of them.

#### The relationship between team knowledge sourcing and team creativity

The first and important finding of our research is the positive and significant relationship between team knowledge sourcing and team creativity (H1). The results suggest that team creativity partially results (R² = 29%) from members engaging into the process of searching for, accessing, transferring, and applying both team knowledge and others’ knowledge [10]. The path coefficient for this relationship is 0.3 showing non-negligible impact. This research introduced the use of four manifest variables to measure the team knowledge sourcing.
sourcing; knowledge sourcing inter-groups (KSIGs), Knowledge sourcing intra-group (KSIG), Knowledge sourcing from documents (KSD), and Knowledge sourcing from (external) repositories (KSR). Two of these variable weights are significant; KSR and KSIG, implying their stronger impact on team’s creativity. This can be explained by the fact that our population was composed of students working on an e-commerce project, under time constraint, and with limited access to previously generated documents (internally available on the Learning Management System). Therefore, interaction with other groups (KSIGs) was limited and the knowledge sourcing was mainly performed among the group members (KSIG) and through searching for information on the Internet (KSR) to find ideas and answers to their questions and problems. It is expected that in a different environment (i.e., professional), the weight and significance of these variables may vary. This result is the first to test the relationship between team knowledge sourcing and team’s creativity. This finding has some important implication on how team creativity could be leveraged in organizations. As previously presented, replication, adaptation, and invention are the possible types of creativity inherent in team knowledge sourcing processes [50], [52]. By making knowledge more easily searchable, identifiable, and available the chance of leveraging the creative capability of the team will increase. How can it be done in practice? The first step is to make teams aware of the benefits of knowledge sourcing and to make them realize, and later on recognize, that new knowledge can help them find better and easier solutions to their problems rather than just relying on their past experience and knowledge. It is also a way for them to learn and grow individually but also collaboratively as a team. Intrinsic and extrinsic motivators might be required for this change to occur. The second step is to provide ways for team members to easily identify/locate the knowledge that could benefit them. This source can be a document, a person, a team, a best practice, a lesson’s learned, a Web site, etc. Technology can be a great enabler for this task by providing internal and external search capabilities that can help to identify relevant sources of knowledge. Expertise locators are also a good tool to internally identify skills and expertise of employees. It is also important to keep in mind that sometime people do not exactly know what they are looking/searching for, so leaving room for serendipity is important. This can be done by letting team members navigate organizational content through different channels/taxonomies but also by navigating by media type or by other less conventional way to look for content. Once the potential source of knowledge has been identified it is important to make this knowledge artifact available to the team so it can be integrated and leveraged to its best. This is not an aspect that we addressed in this research but it was covered by Staats et al. [10] by looking at specialized and broad knowledge sourcing approaches.

**The relationship between learning orientation and team knowledge sourcing**

The second finding in our research is the positive and significant relationship between the team learning orientation and the team knowledge sourcing (H2). The results suggest that learning orientation (team members’ motivation and dedication to learn in the project [54, 55]) affects, and is an antecedent to, team knowledge sourcing. The path coefficient for this relationship is 0.54, showing some strong relationship. Openness and motivation to learn drive the quest for new knowledge. This finding has some important implication on how team knowledge sourcing could be leveraged in organizations. By making sure that some members of the team possess a strong learning orientation (i.e. assessed through learning style tests, or by previous observations), it is likely that these individuals will look and bring some new knowledge and idea to the group. But as Staats et al. [10] suggest, you want to make sure that these team members are given the opportunity (or are assigned) to conduct some specialized knowledge sourcing activities on behalf of the entire team. Without this openness and strong interest for learning, team knowledge sourcing might remain limited. Trainings can also be offered to teams to strengthen or rejuvenate their learning appetite.

**The relationship between learning orientation and team’s creativity**

The third finding in our research is the positive and significant relationship between the team learning orientation and the team creativity (H3). The results suggest that learning orientation (team members’ motivation and dedication to learn in the project [54, 55]) affects, and is an antecedent to team creativity. The path coefficient for this relationship is 0.26, showing some non-negligible relationship. Being creative mainly relies on allowing ourselves to think outside the box and to be open and motivated to learn new things. For a team to be creative it requires to have a strong learning orientation, so when decision or solutions need to be found or developed, the motivation to learn new things is present, leaving all doors open for new explorations and for new cognitive activities. Has previously suggested, it is important to have in the composition of each team some people with such strong learning orientation who will influence others to become eager to learn too and to collaboratively strengthen their creativity capabilities.
Training and awareness sessions will also certainly help.
To our surprise the moderating effect of learning orientation on the relationship between knowledge sourcing and creativity was not significant (H4). The non-significant negative direction of the path coefficient (-0.041) warrants further discussion. Although much of the contributing literature led us to predict that the impact of knowledge sourcing on team’s creativity will decline for very high levels of learning orientation [56], these results indicate that might not always be the case. The possible interpretation of this result is that existing body of research that suggests a significant moderating effect of learning orientation was developed largely in R&D departments with experts (scientists and engineers) [56]. Those have very high levels of learning orientation and expertise, and thus take less advantage from knowledge sourcing because they have the knowledge. In our study we tested the model with young students who have not the level of knowledge compared to experts, which can explain that the knowledge they hold cannot impact negatively their team’s creativity. Further research need to be conducted in that direction.

6. Conclusion and limitations

As a conclusion, we would like to highlight the novel contributions that this empirical study provides to the information system development literature. First, it adapts the construct of knowledge sourcing [17] to the team level of analysis. Second, it conceptualizes the perspective that individually held knowledge influences creativity in the ISD process primarily through the process of knowledge sourcing (internal and external) at the team level. This is an important contribution, because it highlights the central role of knowledge sourcing in facilitating team creativity – a relationship that has received little attention in ISD literature. Third, it shows how team knowledge sourcing enhances team creativity in the ISD process. This research is subject to several important limitations. First, team creativity was examined as team member perceptions of the creative processes in the team task. For future investigation, it would be more interesting to reanalyze the data at team level. Second, data was gathered from graduate students working in a team on an e-commerce development project from a unique French graduate school, which limits generalizability. Further research will be conducted in companies where IT development teams operate in real work environments. Third, the data set was relatively small (148) for such type of statistical analysis. Forth, we tried to limit the number of variables in our initial research model to first focus on the ones that we, and that the literature, had identified has most important. Further studies will include additional variables, particularly intellectual demands as antecedent of knowledge sourcing. Despite these limitations, the initial findings show some interesting patterns that will be worth investigating on a larger scale and in various environments. This is a starting point for further advanced research.

7. References


