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**Why Don’t You Join In? A Typology of Information System Certification Adopters**

**–Supplementary Material–**

# Related Research taking a Consumer-Perspective

Related research on IS certifications and web seals has been constantly increasing in recent decades and can be divided into three major streams: (1) developing, designing and innovating certifications and underlying attestation processes (e.g., Lins, Schneider, & Sunyaev, 2018; Lins, Schneider, Szefer, Ibraheem, & Ali, 2019); (2) analyzing certifications’ impact on consumers; or (3) taking a vendor perspective to understand vendors’ rationales for adopting certifications and materializing anticipated benefits.

While this study takes a vendor perspective to understand online vendors' motivators and demotivators do adopt IS certifications, a major research challenge with IS certification is to explain how they affect consumers, why these effects occur, and how to predict the effect of certifications on consumers (Löbbers & Siegfried, 2018; Löbbers & Benlian, 2019; Löbbers, Lins, Kromat, Benlian, & Sunyaev, 2020). In the following, we briefly discuss related research taking a consumer perspective.

Reviewing the literature on IS certifications revealed that consumer-related studies have primarily focused on three effects: (1) trust, (2) purchase intention, and (3) perceived assurance (Table 1). *Trust* is defined as consumers’ perceptions of a vendor’s competence (the ability of the vendor to do what the consumer needs), benevolence (vendor’s caring and motivation to act in the consumer’s interests), and integrity (vendor’s honesty and promise-keeping) (H. D. McKnight, Choudhury, & Kacmar, 2002). *Purchase intention* is understood as a predictor for consumers’ actual purchase behavior (Venkatesh & Davis, 2000). *Perceived assurance* refers to a consumer’s perception of the likelihood that the vendor will try to protect consumer’s confidential information collected during transactions and has applied security measures, such as authentication, integrity, encryption, and non-repudiation (D. J. Kim, Ferrin, & Rao, 2008).

However, empirical work exhibits inconsistent findings regarding the effectiveness of IS certifications as our (example) overview in the electronic market literature reveals (Table 1). We term this as the *IS certification effectiveness paradox*. On the one hand, studies assert that IS certifications have a significant positive effect on consumers’ trust (e.g., X. Hu, Wu, Wu, & Zhang, 2010; Mavlanova, Benbunan-Fich, & Lang, 2016), purchase intention (e.g., Nöteberg, Christiaanse, & Wallage, 2003; Clemons, Wilson, Matt, Hess, Ren, Jin, & Koh, 2016), and perceived assurance (e.g., Yang, Hung, Sung, & Farn, 2006; K. Kim & Kim, 2011). On the other hand, scholars could not confirm any positive significance on trust (e.g., M. K. O. Lee & Turban, 2001; D. J. Kim, Ferrin, & Rao, 2008), purchase intention (e.g., Head & Hassanein, 2002; van Baal, 2015), and perceived assurance (e.g., Rifon, Larose, & Choi, 2005; Lowry, Moody, Vance, Jensen, Jenkins, & Wells, 2012).

These ambiguities and the resulting *IS certification effectiveness paradox* proliferated calls for further consumer-centric research on IS certifications (e.g., D. J. Kim, Yim, Sugumaran, & Rao, 2016; Lansing, Benlian, & Sunyaev, 2018; Löbbers, & Siegfried, 2018). Research has already shown that how consumers perceive certifications depends on several factors, including perceptual contingency factors (e.g., understanding of seals (Lowry et al., 2012)), contextual contingency factors (e.g., structural elements of certifications (Lansing et al., 2018)), and consumer characteristics (e.g., personality (Löbbers, & Benlian, 2019)).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Example Studies** | **Dependent** **variables** | **Context** | **Sample** | **Theoretical Foundation** |
| T | PI | PA |
| M. K. O. Lee, & Turban, 2001 | o |  |  | Online Shopping | Students | Trust Theory |
| Head, & Hassanein, 2002 |  | o |  | Online shopping | Internet Users | Trust Theory  |
| Mauldin & Arunachalam, 2002 |  | o |  | Online shopping: MP3 players, cameras | Students | Theory of Planned Behaviour  |
| X. Hu, Lin, & Zhang, 2002 |  | M |  | Online shopping: books, suits | Students | Elaboration Likelihood Model |
| Miyazaki & Krishnamurthy, 2002 |  | M | + | Online shopping: Examine an organization’s privacy policy | Subjects enrolled in evening or academic programs | No explicit theory |
| Gefen, Karahanna, & Straub, 2003 | + |  |  | Online shopping: books, CDs | Students | Technology Acceptance Model; Trust Theory |
| Kaplan & Nieschwietz, 2003 | + | + |  | Online shopping: clothes | Students | Trust Theory |
| Nöteberg et al., 2003 |  | + |  | Online shopping | Unspecified | Trust Theory |
| Wakefield, Stocks, & Wilder, 2004 | + | o |  | Online shopping / e-commerce | Unspecified | Trust Theory |
| D. H. McKnight, Kacmar, & Choudhury, 2004 | o |  |  | Service information: legal advice | Students | Trust Theory |
| Rifon et al., 2005 | + |  | o | Online shopping: music | Students | Social Cognitive Theory |
| Yang et al., 2006 |  |  | + | Online shopping: web cameras | Students | Elaboration Likelihood Model |
| Larose & Rifon, 2007 |  | + | o | Online shopping: Examine an organization’s privacy policy | Students | No explicit theory |
| Hui, Teo, & Lee, 2007 |  | o |  | Product information: mobile computing | Students | Choice Theory |
| D. J. Kim, 2008 | M |  |  | Online shopping | Students | Trust Theory |
| D. J. Kim, Ferrin, & Rao, 2008 | o |  |  | Online shopping | Students | No explicit theory |
| Fisher & Chu, 2009 | o |  |  | Online shopping: textbooks | Students | Theory of Reasoned Action / Theory of Planned Behaviour |
| X. Hu et al., 2010 | M |  |  | Online shopping | Students | Cue Consistency / Cue Utilization Theory |
| K. Kim, & Kim, 2011 | + |  | + | Online shopping: running shorts | Students | No explicit theory |
| Lowry et al., 2012 |  |  | o | Online booking: traveling | Students | Elaboration Likelihood Model |
| M. K. Chang, Cheung, & Tang, 2013 | + |  |  | Online shopping: books | Internet Users | Social Exchange Theory |
| Shah, Peikari, & Yasin, 2014 |  |  | o | Online shopping | Internet Users | Cue Consistency Theory |
| Aiken, Shin, & Pascal, 2014 |  | o |  | Online commerce | Students | Signaling Theory; Trust Theory |
| Hoffmann, Lutz, & Meckel, 2014 | + |  |  | Service selection | Internet Users | Social Cognitive Theory |
| van Baal, 2015 |  | o |  | Online retail | Internet Users | Signaling Theory |
| Clemons et al., 2016 |  | + |  | Online shopping | Unspecified | Trust Theory |
| Mavlanova et al., 2016 | + |  |  | Online shopping: medicine | Students | Signaling Theory |
| Mousavizadeh, Kim, & Chen, 2016 |  | + |  | Online shopping | Students | No explicit theory |
| Cardoso & Martinez, 2019 | M |  |  | Online shopping: books | Millennials | No explicit theory |
| T = trust; PI = purchase intention and related effects (e.g., information disclosure, consumers taking actions in favor of the vendor etc.); PA = perceived assurance; + = positive significant effect; o = no (significant) effect, M = under some conditions an effect was observed |

Table : Example of consumer-related studies on effects of IS certifications.

# Further Information on the Research Approach

## Further Information on the Literature review

Our descriptive literature review (Paré, Trudel, Jaana, & Kitsiou, 2015) was guided by recommendations for literature reviews in IS research (e.g., Webster & Watson, 2002; Vom Brocke, Simons, Riemer, Niehaves, Plattfaut, & Cleven, 2015). For the identification of studies addressing certifications in various literature streams, we searched scientific databases that we deemed representative as they cover a wide range of journal articles as well as conference articles from IS research and social science (i.e., marketing and psychology): ACM Digital Library, AIS Electronic Library (AISeL), IEEE Xplore Digital Library, EBSCOhost, ProQuest, Science Direct, and Emerald Insight. To cover a broad set of articles, potentially relevant papers needed to meet the (certif\* OR “assurance seal” OR “web seal”) AND (adopt\* OR “adopt” OR “adoption” OR motivat\* OR determin\* OR “perceive” OR “perception” OR “value”) search string in “title” or “keywords”, resulting in 694 articles. We did not search in the abstract because this highly open search string led to an unmanageable number of articles in case the abstract was included. Our keyword search yielded a total set of 694 potentially relevant articles. To identify and filter articles, we first checked the relevancy of each article by subsequently analyzing title, abstract, and keywords. If any indication for relevancy appeared, the article was marked for further processing. We excluded articles that were duplicates (76), grey literature (e.g., editorials) and books (9), not in English (18), or off-topic (e.g., emphasizing environmental management system certifications) (552). This first relevancy assessment resulted in a sample of 39 articles deemed to be potentially relevant. Then, a fine-grained relevance validation was made by reading the articles in detail. In this second relevancy assessment, we excluded off-topic articles (26), or had too little information on motivators and demotivators to be coded (2), resulting in a final sample of 11 relevant articles. Also, we identified 747 potentially relevant articles through searching forward (i.e., applying the Web of Science) and backward on the set of 11 articles (Webster, & Watson, 2002). After applying the same relevancy assessment on this set, our literature review on motivators and demotivators from related research resulted in 60 relevant articles that were subsequently coded adapting the process of Lacity, Khan, and Willcocks (2009).

As a first step, we carefully read and analyzed all relevant studies to identify motivators and demotivators. Furthermore, we derived a name and a description for all identified motivators and demotivators based on information provided in the respective articles. To aggregate the identified motivators and demotivators, we created a list of so-called master-motivators and master-demotivators. In this case, a master-motivator is an aggregation of similar motivators, consisting of a name and a description (Lacity et al., 2009). If an identified motivator fitted into an existing master-motivator, we assigned it accordingly; otherwise, a new master-motivator was created. During this process, we avoided semantic ambiguities because different people often put the same labels on different things, and vice versa, and it is crucial for the validity of qualitative analysis to be aware of potential semantic ambiguities (i.e., different terminology is used for same concepts) (Shaw & Gaines, 1989). For example, research proposes motivators, such as “achieve quality improvement” (Sampaio, Saraiva, & Guimarães Rodrigues, 2010), “improvement to business processes and quality of products” (Disterer, 2012), “improve internal efficiency and productivity” (Llopis & José Tarí, 2003), which were summarized under the master-motivator “quality and productivity improvements”. Each pass through a new article also triggered a re-analysis of the master list and a re-examination of previously coded articles, until all articles were coded against the master list of terms and definitions. Completing the analysis, we finalized the master-motivators list by reviewing all assignments. To this end, we applied the same approach for the demotivators in relation to master-demotivators. The analysis process resulted in a list of 13 master-motivators, and seven master-demotivators.

## Further Information on the Delphi Study

While our literature review revealed motivators and demotivators from diverse contexts (i.e., environmental certification and tourism marketing), we aimed to empirically validate that these motivators and demotivators are applicable and relevant in electronic markets. For this purpose, we performed a Delphi study comprising two unique panels, one that includes certified online vendors and another that includes certification authorities. Generally, the Delphi method is applied to establish a meaningful group communication structure (Linstone & Turoff, 1975) and to establish an expert consensus on a complex issue (Czinkota & Ronkainen, 2009). Because the decision on whether or not to adopt IS certifications is followed by an evaluation of a diverse set of potential motivators and demotivators, it can be approached as a complex decision-making scenario (P. C. Palvia, King, Xia, & Palvia, 2010). We followed the Delphi procedure outlined by Schmidt (1997) to brainstorm, select, and rank online vendors’ motivators and demotivators when adopting IS certifications (Figure 1).



**Figure 1:** Three-phased research approach adapted from Schmidt (1997).

### Panel selection

We invited online vendors and certification authority experts to participate in our Delphi study because the Delphi approach as a group decision mechanism necessitates qualified individuals with a good understanding of the topic of interest (Okoli & Pawlowski, 2004). A few large online vendors, such as *Amazon.com*, have managed to establish a strong identity and reputation through substantial investment in branding and advertising so that they do not have to necessarily show web assurance seals on their websites. In contrast, for small and medium-sized online vendors, branding and recognition is probably no viable or economical option. And thus, small and medium-sized online vendors heavily depend upon IS certifications as those can help them mitigate consumers’ concerns (e.g., consumers worry that the products will not be delivered) (Özpolat, Gao, Jank, & Viswanathan, 2013). Consequently, our search focused on small and medium-sized online vendors. Besides, when inviting participants, we made first suggestions on experts’ job positions (e.g., IT decision-makers, managers, or employees working in departments, such as sales and marketing, product development, or quality assurance).

Besides, we reached out to professionals involved in an IS certification’s issuance and audit processes (i.e., certification authorities). Certification authorities are not only involved in different stages of the certification process but also in the consultation of online vendors. They particularly advise online vendors when online vendors weigh IS certifications’ intended benefits and costs, so that further insights into the decision-making process of both certified and non-certified online vendors can be gained by including certification authority experts into our study.

Using this predetermined criterion to select the panel of domain experts (Okoli, & Pawlowski, 2004), we employed different techniques to recruit experts. First, we sent emails to online vendors’ consumer services as well as contacted people directly via email, telephone, or social networks (where possible). In total, about 1,000 emails to online vendors in Germany were sent out (either to consumer services or people directly, where possible). Further experts were recruited through the researchers’ contacts. In doing so, we first explained the purpose of our study and the procedure of the Delphi method – we took special care to the latter one as we wanted to avoid dropouts throughout the whole Delphi process. Further information concerning our study was provided by sending a flyer that contains detailed information about the survey context, purpose, and objectives. Second and after an initial group agreed to participate, their help was sought to recruit additional panelists, who also met the above-mentioned criteria using the snowball sampling technique (Miles, Huberman, Huberman, & Huberman, 1994).

Experts of both panels had diverse backgrounds, with some holding a senior position or key role in their organizations (i.e., managing director of an online shop) as well as auditors, consultants, and lawyers. Experts in the online vendor panel worked for German small and medium-sized companies, with an average of 19.63 years of work experience. They had already been involved in several stages of the IS certification process (in four of six certification process steps on average), thus being considered as the decision-makers, who know best about the motivators and demotivators to acquire IS certifications. Each online vendor has at least acquired one IS certification, with the maximum amount of three IS certifications. Experts in the certification authority panel, in turn, had an average of 18.31 years of work experience. Most of them had been involved in multiple stages of the IS certification process (on average in four of the six certification process steps). The majority of them (75%) were located in Germany. Since they exhibit good certification knowledge (an average of 7.25 on a 9-Point Likert Scale) (Flynn & Goldsmith, 1999), they are considered to be knowledgeable experts.

### Data collection and analysis methods

***Brainstorming phase.*** A key drawback of ranking-type Delphi studies is their long duration due to the iterative nature of the inquiry process, which may result in high panel attrition and dropout rates (Bardecki, 1984). Against this background and due to the logistics and impracticality of bringing the panelists together for successive rounds of face-to-face meetings, we conducted our Delphi study entirely over the internet, using a standard online survey software for the questionnaire rounds and email to communicate with our participants. The online survey started with a brief overview of the whole Delphi process as well as information about the purpose of the current brainstorming phase. A brief introduction to the study context and the overall objective of the study was also given to the panelists. We then informed our panelists that we give away five vouchers each worth 25€ after completing the survey. Following this introduction, we asked online vendor panelists to independently name and describe at least three (up to ten) reasons explaining “what motivated your organization to acquire IS certifications?” to identify motivators and “what hindered your organization to acquire IS certifications?” to identify demotivators. Certification authority panelists, in turn, were asked to independently name and describe at least three (up to ten) reasons explaining “what motivates organizations to acquire IS certifications” to identify motivators and “what hindered organizations to acquire IS certifications” to identify demotivators. Our objective in seeking three to ten items from each panelist in the brainstorming phase was to ensure that we achieved a reasonable coverage of the domain without making the process too time-consuming for the panelists. This was an open-ended solicitation of ideas (Okoli, & Pawlowski, 2004), and therefore, the items did not have to be in any particular order of importance. We also asked the panelists to provide a brief description of each item (this was, however, optional). The assumption here was that these descriptions would help us to (1) understand the various motivators and demotivators, (2) remove duplicates by consolidating items with the same underlying meaning, and (3) categorize the motivators and demotivators according to theoretical perspectives using theoretical coding in a subsequent phase of the Delphi process.

Two authors aggregated and grouped identical answers and similar ones through content analysis (Krippendorff, 2004). In particular, we open-coded motivators and demotivators by analyzing the responses of our panelists (Corbin, Strauss, & Strauss, 2015). For each motivator, we coded a name and description. If a new motivator fitted to an existing motivator, we assigned it accordingly; otherwise, a new motivator was created. We avoided semantic ambiguities. We tried to use the same motivators for both the online vendor and certification authority panel. In case ambiguities occurred regarding the exclusive assignment of a new motivator to an existing motivator, the two researchers assigned the new motivator to an existing motivator, according to the best of their knowledge. The same approach is applied to demotivators. Following Hayes and Krippendorff (2007)‘s suggestions on selecting appropriate inter-coder reliability measures, we calculated Hayes and Krippendorff (2007)’s α, revealing the following levels of consensus among the two researchers: α = 0.40 (motivators) and α = 1 (demotivators) for the online vendor panel as well as α = 0.705 (motivators) and α = 0.268 (demotivators) for the certification authority panel. Given a low consensus for the demotivators coding, we aimed to validate our coding by asking panelists to validate the categorization of their responses (Okoli, & Pawlowski, 2004).

We finally consolidated our findings by matching literature review results to the data of our Delphi brainstorming phase to evaluate the applicability and relevance of literature. On the one hand, we carefully considered the description of each master-motivator or -demotivator and, on the other hand, the panelists’ responses and their descriptions, to match a master-motivator or demotivator with the motivators or demotivators, which were identified in the Delphi brainstorming phase. In doing so, we were able to map 10 master-motivators to the Delphi motivators and six master-demotivators to the Delphi demotivators. We added the remaining master-motivators (i.e., *achieve* cost savings, *pressure from industry associations*, *internal normative pressure*) and -demotivators of our literature review (i.e., employee resistance) to our motivators and demotivators sample. The literature review and the Delphi brainstorming phase together resulted in a consolidated set of 24 motivators and 17 demotivators.

***Selection phase.*** In the selection phase, we narrowed the consolidated list into a more manageable set for the ranking phase. Literature has proposed various thresholds with regards to the number of items that should be selected within this phase. While Schmidt (1997) proposes that panelists should select around 20 items, Okoli and Pawlowski (2004) suggest to let the panelists identify at least ten items. Due to the rather small number of items (24 and 17), we decided to let participants choose exactly ten. We also asked participants to provide a short explanation for their selection of items (this was optional as we wanted to avoid dropouts).

***Ranking Phase.*** We asked each panel independently to review the list and rank the items in order of priority (separately for both motivators and demotivators) and, besides, to provide a short explanation for their ranking of items. We presented the selected motivators and demotivators in random order and also provided information on how many panelists selected a motivator or demotivator. Following Schmidt (1997), we used Kendall’s Coefficient of Concordance (*W*) to measure the degree of consensus among the panelists. The values of *W* range from 0 to 1, with 0 indicating no consensus, and 1 indicating perfect consensus. When Kendall’s *W* is greater than 0.70, it signifies strong consensus; when the value is between 0.50 and 0.70, it signifies moderate consensus; and if the value is less than 0.50, it signifies that there is little consensus among the panel members (Schmidt, 1997).

Of the 15 panelists of the online vendor panel, only 14 panelists participated in the first round of ranking, yielding a Kendall’s W of 0.24 (N = 14; χ2 = 26.933; p = 0.001) for the motivators and 0.201 (N = 14; χ2 = 25.309; p = 0.003) for the demotivators, which suggested a weak level of consensus among the panelists. Of the initially 24 panelists of the certification authority panel, only 11 panelists completed round one of the ranking phase, reaching a Kendall’s W of 0.193 (N = 11; χ2 = 14.879; p = 0.038) for the motivators and 0.26 (N = 11; χ2 = 28.545; p = 0.001) for the demotivators, which suggested a weak level of consensus among the panelists as well. Against this background, we decided to continue the ranking process until either: (1) the coefficient of concordance indicated good consensus, or (2) the level of consensus for the panel leveled-off in two successive rounds, following Schmidt (1997)‘s recommendations. We, therefore, conducted a second round of ranking where we once again asked the panelists to review and rank-order the list of motivators and demotivators. For this purpose, we provided the following information to each panelist as controlled feedback: (1) the mean rank of the item for the panel; (2) the panelist’s ranking of the item in the former round; (3) an indication of the current level of consensus, based on the value of *W* (for example, *‘‘weak agreement’’*); and (4) a paragraph summarizing the other panelists’ comments on why they ranked that item as they did (where possible) (Okoli, & Pawlowski, 2004). We assumed that this additional information would help the panelists to consider their ranking in light of the group’s ranking and allow them to adjust their rankings where it made sense to do so. We requested panelists to provide a short explanation of their ranking of each item because these explanations might give us a certain indication of why the panelists ranked an item as they did.

# Coding of Master-Motivators

|  |  |
| --- | --- |
|  | **Master-Motivator** |
| **Reference** | **Increase sales and profit** | **Regulatory pressure** | **Pressure from consumers** | **Pressure from suppliers** | **Pressure from competitors** | **Internal normative pressure** | **Pressure from the public** | **Pressure from industry associations** | **Quality and productivity improvements** | **Achieve cost savings** | **Increase consumer satisfaction** | **Use as a marketing tool** | **Achieve a competitive advantage** |
| ***Keyword search*** |
| B. Bond, Lyon, Munsell, Barrett, & Gagnon, 2014 | X |  | X |  |  |  |  |  |  |  |  | X | X |
| Disterer, 2012 | X | X | X | X | X | X | X |  | X | X | X | X | X |
| Djofack & Camacho, 2017 |  | X | X |  | X | X |  |  | X | X |  | X | X |
| Galati, Gianguzzi, Tinervia, Crescimanno, & La Mela Veca, 2017 |  | X | X |  |  | X | X |  | X |  |  | X | X |
| Gavronski, Ferrer, & Paiva, 2008 | X |  |  |  |  |  |  |  | X |  |  |  |  |
| Kammoun & Aouni, 2013 | X | X | X | X | X | X |  |  | X | X | X | X | X |
| Llopis, & José Tarí, 2003 | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Margaryan & Stensland, 2017 | X |  | X |  |  | X |  |  |  |  | X | X |  |
| Quazi, Khoo, Tan, & Wong, 2001 |  |  | X |  |  | X |  |  |  | X |  |  | X |
| Sampaio et al., 2010 | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Valmohammadi & Kalantari, 2013 |  | X | X | X | X | X | X |  | X |  | X | X | X |
| ***Forward search*** |
| Bellesi, Lehrer, & Tal, 2005 |  | X | X |  |  | X |  |  | X | X |  | X | X |
| Chan & Wong, 2006 |  | X | X |  |  | X |  |  |  |  |  |  |  |
| Fernandez-Muniz, Manuel Montes-Peon, & Jose Vazquez-Ordas, 2012 |  | X | X | X | X | X | X | X | X |  |  | X | X |
| S. Georgiev & Georgiev, 2015 |  |  | X |  | X |  |  |  | X |  | X | X | X |
| J. González-Benito & González-Benito, 2005 |  | X | X |  | X | X |  |  | X | X | X | X | X |
| Guoyou, Saixing, Xiaodong, & Chiming, 2012 |  |  | X |  | X | X | X | X | X |  |  | X |  |
| Heras‐Saizarbitoria, Landín, & Molina‐Azorín, 2011 | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Mak & Kong, 2014 |  |  |  |  |  | X |  |  | X |  |  | X | X |
| Marimon & Casadesús, 2017 |  |  | X |  | X | X | X |  | X |  |  | X |  |
| J. F. Munsell, Ares, Barrett, Bond, & Gagnon, 2017 | X |  |  |  |  |  |  |  |  |  |  | X |  |
| D. Prajogo, Tang, & Lai, 2012 |  | X | X |  |  |  |  |  | X |  | X | X |  |
| Tambunlertchai, Kontoleon, & Khanna, 2013 |  |  | X |  |  |  |  |  |  |  |  |  |  |
| Zeng, Tam, Deng, & Tam, 2003 | X | X | X | X |  |  |  |  | X |  | X | X |  |
| Zeng, Tam, Tam, & Deng, 2005 | X | X | X | X |  |  |  |  | X |  | X | X |  |
| ***Backward search*** |
| Brown, van der Wiele, & Loughton, 1998 |  |  | X | X |  |  |  |  | X |  |  | X |  |
| Bryde & Slocock, 1998 |  |  | X |  |  | X |  |  | X |  |  |  | X |
| Buttle, 1997 | X |  | X |  |  | X |  |  | X | X | X | X |  |
| M. Carlsson & Carlsson, 1996 | X | X | X |  |  |  |  |  | X |  |  |  | X |
| Casadesús, Giménez, & Heras, 2001 | X |  | X |  |  |  |  |  | X |  | X | X | X |
| Casadesús & Giménez, 2000 |  |  | X |  |  | X |  |  | X |  |  | X |  |
| Casadesús & Karapetrovic, 2005 |  |  | X |  |  | X |  |  | X |  | X |  |  |
| Douglas, Coleman, & Oddy, 2003 |  |  | X |  |  |  |  |  | X |  |  | X |  |
| Escanciano, Fernández, & Vázquez, 2001 |  |  | X |  |  | X |  |  | X | X |  | X | X |
| Faggi, Zuleta, & Homberg, 2014 | X | X | X |  |  | X | X |  | X |  |  | X | X |
| Feng, Terziovski, & Samson, 2007 |  |  | X |  | X |  |  |  | X |  |  | X |  |
| K. D. Gotzamani & Tsiotras, 2002 | X |  | X |  | X | X |  |  | X |  | X | X | X |
| Jones, Arndt, & Kustin, 1997 |  |  | X |  |  | X |  |  | X |  | X | X | X |
| Karapetrovic, Casadesús, & Heras-Saizarbitoria, 2010 | X |  | X | X | X | X |  |  | X |  | X |  | X |
| Kaziliūnas, 2010 |  |  | X | X | X |  |  |  | X |  | X | X |  |
| D.‐Y. Kim, Kumar, & Kumar, 2011 |  | X | X | X |  |  |  |  |  |  | X | X | X |
| Krasachol, Willey, & Tannock, 1998 |  |  | X |  |  | X |  |  | X |  | X |  | X |
| T. Y. Lee, 1998 | X |  | X | X |  | X |  |  | X |  | X |  |  |
| Lo & Chang, 2007 | X |  | X |  |  | X |  |  | X | X | X | X | X |
| Magd, 2010 |  | X | X | X | X | X |  |  | X |  | X |  |  |
| Magd & Curry, 2003 |  | X | X | X | X | X |  |  | X | X | X | X |  |
| Martínez-Costa, Martínez-Lorente, & Choi, 2008 |  |  | X | X | X |  |  |  | X |  | X | X |  |
| Melnyk, Sroufe, & Calantone, 2003 |  |  |  |  |  |  |  |  | X | X |  |  |  |
| Overdevest & Rickenbach, 2006 | X | X | X |  |  |  | X |  | X |  |  | X | X |
| Poksinska, Jörn Dahlgaard, & Antoni, 2002 | X | X | X |  | X | X | X | X | X | X | X | X |  |
| D. I. Prajogo, 2011 |  |  | X |  | X | X | X |  | X |  |  | X | X |
| Psomas, Fotopoulos, & Kafetzopoulos, 2010 |  | X | X |  | X | X |  |  | X |  | X | X | X |
| Singels, Ruël, & van de Water, 2001 | X | X | X |  |  |  |  |  | X |  |  | X | X |
| Singh, Feng, & Smith, 2006 |  |  | X |  |  | X |  |  | X |  |  | X | X |
| Terziovski, Power, & Sohal, 2003 |  | X | X |  | X |  | X |  | X |  |  |  |  |
| G. Tsiotras & Gotzamani, 1996 |  |  | X |  |  |  |  |  | X |  |  |  |  |
| Williams, 2004 | X | X | X |  | X | X |  |  | X |  | X | X | X |
| Withers & Ebrahimpour, 1996 |  |  | X |  |  |  |  |  | X | X |  |  | X |
| Yahya & Goh, 2001 |  |  | X |  |  |  | X | X | X |  | X | X |  |
| Zaramdini, 2007 | X | X | X | X | X | X |  |  | X | X | X | X | X |

Table : Coding of master-motivators.

# Coding of Master-Demotivators

|  |  |
| --- | --- |
|  | **Master-Demotivator** |
| **Reference** | **Expenditure** | **Costs** | **Not perceiving benefits** | **A lack of experience and knowledge in getting certified** | **Limited manager commitment** | **Employee resistance** | **Side effects** |
| ***Keyword search*** |
| B. Bond et al., 2014 |  |  | X |  |  | X |  |
| Disterer, 2012 | X | X | X | X | X | X | X |
| Gavronski et al., 2008 |  |  |  | X |  |  |  |
| Kammoun, & Aouni, 2013 | X | X |  | X | X | X | X |
| Llopis, & José Tarí, 2003 | X | X | X | X | X | X |  |
| Sampaio et al., 2010 | X | X | X |  |  | X | X |
| ***Forward search*** |
| Mak, & Kong, 2014 | X | X |  |  |  |  |  |
| Marimon, & Casadesús, 2017 |  |  | X | X | X |  |  |
| J. F. Munsell et al., 2017 |  |  |  | X |  |  |  |
| Tambunlertchai et al., 2013 |  |  |  | X |  |  |  |
| Zeng et al., 2003 |  |  | X |  |  |  |  |
| Zeng et al., 2005 |  |  | X |  |  |  |  |
| ***Backward search*** |
| Brown et al., 1998 | X | X |  | X |  |  |  |
| Casadesús et al., 2001 |  | X | X |  |  |  |  |
| Douglas et al., 2003 |  |  | X |  |  | X |  |
| Kaziliūnas, 2010 | X | X |  |  |  |  |  |
| T. Y. Lee, 1998 |  |  |  | X |  |  |  |
| Magd, 2010 | X | X |  | X |  | X |  |
| Melnyk et al., 2003 |  |  |  | X |  |  |  |
| Poksinska et al., 2002 | X |  |  |  |  |  |  |
| Psomas et al., 2010 | X | X | X | X | X | X |  |
| Singh et al., 2006 | X | X |  | X |  |  |  |
| Yahya, & Goh, 2001 | X | X | X | X | X | X |  |

Table : Coding of master-demotivators.

# Descriptions of Motivators and Demotivators

## Functionalists

|  |  |  |
| --- | --- | --- |
| **Motivator /****demotivator** | **Description** | **Example quote** |
| ***Internalize certifications’ best practices*** |
| Quality and productivity improvements Literature & Delphi | Vendors acquire IS certifications to increase efficiency and to improve the quality of internal processes (e.g., ordering processes). | “Checking and optimizing the ordering processes.” [online vendor] |
| Increase IT security Delphi | Through IS certifications, the security of the IT infrastructure underlying an online vendor’s business is assessed and then improved (where necessary). | “With this certification, we also check our existing processes with regards to [IT] security issues.” [online vendor] |
| Ensure legal conformity Delphi | IS certification attestations can provide information for improving the conformity regarding the legal requirements of an online vendor’s business. | “The certification provides important information on the legal compliance of our online shop.” [online vendor] |
| Restricted flexibility Delphi | IS certifications require online vendors to comply with best practices and standards, which, in turn, can restrict them. | “The certification requirements to be implemented can restrict the operational business and the flexibility of the employees.” [certification authority] |
| Fear of failure Delphi | An online vendor does not even attempt to get certified because the online vendor is afraid of not meeting the certification requirements. | “Legal requirements […], which are required for completing IS certifications, are difficult to implement for manufacturers of the offered products.” [certification authority] |
| ***Gain access to experts*** |
| Gain access to experts Delphi | Vendors acquire IS certifications to gain access to experts (i.e., the support provided by certification authorities or independent auditors). | “Access to expert knowledge (‘what are we doing wrong?’ and provided us with additional information, such as magazines, newsletters, and events.” [online vendor] |
| Depending on a certification authority Delphi | Being certified can lead to dependence on IS certifications and the corresponding certification authority. | “One does not want to be dependent on other organizations [carrying out IS certifications].” [online vendor] |
| Data confidentiality concerns Delphi | Online vendors fear to disclose internal information when seeking IS certifications. | “Concern for disclosing internal information” [certification authority] |
| ***Achieve benefits from thorough internalization*** |
| Achieve a competitive advantage Literature & Delphi | Being certified can lead to a competitive advantage over competitors (i.e., other online vendors). | “[Achieve] competitive advantage”, “over other online vendors” [online vendor] |
| Achieve cost savings Literature | Vendors acquire certifications because they expect cost reductions.  | - |
| Increase consumer satisfaction Literature & Delphi | Online vendors acquire IS certifications because those can increase consumer satisfaction by, for example, increasing the user-friendliness (i.e., usability) of the website. | “Our consumer service includes a money-back guarantee to give consumers a feeling of safety.” [online vendor] |
| Expenditures Literature & Delphi | IS certifications require high efforts in documentation as well as a considerable amount of time to adjust internal processes, to meet certification requirements. | “The certification process is time and resource consuming.” [online vendor] |

Table 4: Functionalists' motivators and demotivators.

## Institutionalists

|  |  |  |
| --- | --- | --- |
| **Motivator /** **demotivator** | **Description** | **Example quote** |
| ***Satisfy coercive pressure*** |
| Regulatory pressure Literature & Delphi | Vendors acquire certifications because the government or regulations exert pressure on them. | “IS certifications are demanded by a higher authority to deliver specific goods and services.” [certification authority] |
| Pressure from suppliers Literature & Delphi | Vendors acquire certifications because their suppliers, such as service providers, exert pressure on them. | “IS certifications are demanded by, for example, a service provider.” [certification authority] |
| Pressure from consumers Literature & Delphi | Vendors acquire certifications because consumers exert pressure on them. Certification may be a necessary precondition to participate in a market. | “IS certifications are acquired, when important consumers demand IS certifications.” [certification authority] |
| Side effects Literature & Delphi | IS certifications could result in negative side effects, such as negative consumer comments attached to certain IS certifications. | “Consumers may exploit IS certifications and comments [that are attached to certain IS certifications] to exert pressure on online vendors.” [online vendor] |
| ***Satisfy mimetic pressure*** |
| Pressure from competitors Literature & Delphi | Vendors acquire IS certifications because competitors exert pressure on them. | “Our competitors [i.e., other online vendors] are also certified.” [online vendor] |
| Increasing comparability Delphi | Online vendors can be better compared when they are certified. | “Consumers can recognize and compare seals […].” [certification authority] |
| ***Satisfy normative pressure*** |
| Pressure from the public Literature & Delphi | Vendors acquire certifications because the public exerts pressure on them. | “Communities exert pressure on the online shop, which leads to the online shop being certified.” [certification authority] |
| Pressure from industry associations Literature | Vendors acquire certifications to ensure compliance with industry policies or expectations. | - |
| Internal normative pressure Literature | Vendors acquire certifications because employees or managers exert internal pressure on them, or the acquisition is part of a company’s strategy. | - |
| Resistance from employees Literature | A vendor is discouraged to acquire certifications because employees resist change processes. | - |
| Limited manager commitment Literature & Delphi | Online vendors are discouraged to acquire IS certifications when the management does not commit. | “Not least because the management is hard to convince.” [certification authority] |
| A lack of experience and knowledge in getting certified Literature & Delphi | Online vendors are discouraged to acquire IS certifications because they lack experience and knowledge in getting certified. | “Many online vendors have only a vague understanding of IS certifications.” [certification authority] |

Table : Institutionalists' motivators and demotivators.

## Signalers

|  |  |  |
| --- | --- | --- |
| **Motivator /****demotivator** | **Description** | **Example quote** |
| ***Convey hidden information and hidden actions*** |
| Increase transparency Delphi | Being certified can help online vendors to show transparency towards external stakeholders (e.g., consumers and business partners) regarding their online platforms, order, and payment processes, as well as their products and services.  | “[With IS certifications,] both internal and external clarity and transparency can be communicated.” [certification authority] |
| Signal integrity Delphi (feedback round) | Being certified can help online vendors to appear reputable and authentic towards their consumers. | “By showing a web assurance seal, we want to position us as being reputable towards our consumers.” [online vendor] |
| Signal data protection Delphi | Online vendors need to signal that an online vendor processes data confidentially and follows data protection guidelines. | “Since we process sensitive data, it is important to show consumers a clear proof that their data is securely processed and stored.” [online vendor] |
| Signal buyer protection Delphi | Being certified can help online vendors to offer security assurances/guarantees to their consumers, minimizing the risk for their consumers to buy online. | “The online shop wants to offer its consumers [..] a guarantee. For this, the online shop needs a seal (i.e., has to be checked in advance).” [certification authority] |
| Increase consumers’ trust Delphi | IS certifications can help online vendors to increase consumers’ trust in online shopping, the online platform, and the payment provider. | “Consumers trust [online] shops more, when they are certified. [...]” [online vendor] |
| No suitable certifications Delphi | The market for certifications is large and confusing (i.e., too many IS certifications) so that online vendors cannot find a suitable IS certification that fulfills their intentions. | “There are too many IS certifications, not clear which IS certification will be best suited for a particular website/target group.” [certification authority] |
| Only attest to minimum standards Delphi | An online vendor does not acquire IS certifications when only minimum requirements are checked because such minimum requirements are not sufficient for the online vendor.  | “The certification process […] does not consider the specifics of an online vendor.” [certification authority] |
| ***Use certifications as a marketing tool*** |
| Use as a marketing tool Literature & Delphi | Online vendors acquire IS certifications because those can be used as marketing tools by, for example, using IS certifications’ popularity. | “The public image of a certified company is always better.” [online vendor] |
| Achieve a better web search ranking Delphi | Through IS certifications, visibility and findability with search engines can be improved. | “appearance at the top of a Google search” [online vendor] |
| Certification’s lack of credibility Delphi | Online vendors do not acquire IS certifications because they question IS certifications’ credibility or reputation.  | “Does ‘EVERY’ potential consumer know the seal/certificate/provider of the certification?” [certification authority] |
| Certification’s lack of reliability Delphi | IS certifications cannot keep their long-term promises for online vendors and consumers. | “IS certifications are snapshots, such as a technical inspection for a car […]. Everything was fine at the time of the attestation. But as soon as you leave the test site, safety is over.” |
| Strong extant brand Delphi | An online vendor’s brand is strong enough so that no IS certification is needed or wanted. | “Organizations with their strong brand do not need or want any external trademarks shown on their websites.” [certification authority] |

|  |
| --- |
| ***Encourage consumers to interact with an online vendor*** |
| Acquire more consumers Delphi | Online vendors aim to acquisition further consumers when embedding IS certifications on their websites. | “By showing a web assurance seal, we hope to convince consumers to buy from us.” (online vendors) |
| Increase sales and profit Literature & Delphi | Vendors acquire certifications because they expect an increase in sales and profits. | “Higher sales.” [online vendor] |
| Not perceiving benefits Literature & Delphi | Online vendors do not see how to benefit from IS certifications. | “To some extent, the positive effect is not known in advance or is not quantifiable.” [certification authority] |
| Costs Literature & Delphi | High costs are required, for example, during implementation. It is distinguished between acquisition, implementation, and running costs of IS certifications. | “Certification costs are quite high, especially for small online vendors. That was a reason to think about returning the […] seal.” (online vendors) |
| Already certified Delphi | If an online vendor is already certified, further IS certifications may no longer be necessary. | “Other seals or certificates are already there.” [certification authority] |

Table : Signalers' motivators and demotivators.

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