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## Understanding Storytelling in the Context of Information Systems

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# Understanding Storytelling in the Context of Information Systems

*Full Paper*

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## Abstract

Storytelling has been used for a long time as a powerful communication tool. In the time of digital transformation storytelling is rediscovered on online platforms for e-commerce or crowdfunding projects. Digital storytelling is also increasingly used in the social media context, including online blogs, on Twitter or in the form of online reviews of services and products. Across all these digital settings, storytelling is used in order to transport a complex content more vividly to the audience and to ensure that the audience remembers the content as long as possible. In these digital forms of storytelling, textual description is frequently supplemented by digital elements like video, pictures or hypertexts. Recognizing importance of these developments, in this paper we provide an overview of existing studies on storytelling with a particular focus on information systems settings.

## Keywords

Storytelling, information systems, digital storytelling, crowdfunding, e-commerce, social media.

## Introduction

Storytelling is one of the oldest and most impactful communication tools (Kaufman 2003). Until now, stories have been widely used in the context of theater, psychotherapy, teaching and as a vehicle for communicating company visions (Sobol et al. 2004). By providing vivid examples that enable recipients to identify with the protagonist or the context in place, storytelling is often applied to make the transferred content more understandable (Erickson 1996).

In times of growing digitalization and social media use, storytelling became more and more relevant within the context of information systems. This is because digital tools provide a new way to convey information in a story-like fashion (Gershon et al. 2001). Thereby storytelling is used in a number of information systems contexts such as crowdfunding platforms, e-commerce platforms, social media tools, company webpage presentation as well as requirements engineering to communicate ideas, projects or experiences to an audience. Compared to offline storytelling, online storytelling can operate with different storytelling tools. Thereby, a textual description is mostly supplemented by digital elements like videos, pictures or hypertexts (digital storytelling). For example, in crowdfunding settings digital storytelling is used for describing projects or ideas. Each project is mostly recapped by a digital story on crowdfunding webpages. That means the project or idea is summarized textual but in addition to that is complemented by a video or pictures. Quite similar digital storytelling is used in e-commerce context for distinguishing brands from others by telling stories. The motivation to use storytelling on e-commerce context is deeply rooted in activating audience's emotions by storytelling and dealing with characters on stories with high affinity for the audience (Cohen 2001). Stories seem to be more authentic and credible and are more appealing than a documentation of facts (Aaker et al. 2016). In addition to that storytelling is also used on social media where stories are written as blogs, twitter news or online reviews of services and products. Thereby, often microcontent is established which means that the length of a text is limited and a long

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story is separated into different chunks. Furthermore, on social media context stories are often told in an interactive way supplemented by different persons anytime (Alexander et al. 2008). Additionally, storytelling is also increasingly used for describing requirements of IT-project in order to simplify and better understand complex technical content (Alvarez et al. 2002).

When storytelling is used in the context of information systems the stories are written by professionals as well as by non-professionals. Thereby stories are mostly used to strikingly explain a special situation to a person who reads the story online. Mostly stories are used to provoke an anticipated behavior like a donation within crowdfunding context or a purchase within an e-commerce environment. For an increasing benefit of storytelling within information systems, we need to further understand the interactions between storyteller, story and audience and how storytelling within information systems might affect audience's behavior compared to existing tools like documentation, reports and scenarios. Therefore, the research question of this paper is the interaction between storyteller, story and audience as well as the key enablers for a good story in general. Thus a literature research of studies is conducted which highlights the success factors of storytelling and identifies their relevance in the context of information systems.

## Theoretical Background

What is storytelling and how does it differ from digital storytelling? On the one hand, storytelling is used in the traditional way, which means the storyteller is present in person. A story is told to the audience in order to persuade them of an idea or to explain a complex content in an understandable way. On the other hand, storytelling is used in different online contexts where stories are written by a person who could be anonymous. In this context, the story is mostly written for an invisible audience. This implies that the personal interaction does not exist in many cases of online storytelling. Furthermore, the story which is written online can be mostly shared worldwide and is often accessible anytime and anywhere and is possibly changeable.

Kotler et al. (2006) define storytelling as a qualitative tool for marketing research whereby consumers can describe their personal experiences with the product by telling stories. Additionally, Escalas (2004) identifies favorable effects of storytelling while evaluating brands. According to Burroway (1999), stories should be as detailed as possible and contain dramatic elements and well elaborated actors (Burroway 1999). In contrast to this, scenarios only describe sequences of actions and are more generic than stories (Gruen 2000).

<b>Original Storytelling</b>	<b>Describing Scenarios (Gruen 2000)</b>	<b>Digital Storytelling (Bracey 2005)</b>	<b>Crossmedia Storytelling (Jenkins et al. 2006)</b>	<b>Transmedia Storytelling (Jenkins 2006)</b>
<ul style="list-style-type: none"> <li>▪ Story is told face-to-face</li> <li>▪ Contains traditional narrative elements such as the arc of suspense and a hero</li> </ul>	<ul style="list-style-type: none"> <li>▪ Do not contain any traditional narrative elements</li> <li>▪ Describe special sequences of actions</li> <li>▪ The content is generic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Traditional narrative elements are connected with multimedia tools</li> <li>▪ Whole story is told by only one (digital) media channel such as a webpage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Story is told via different media channels</li> <li>▪ All media channels tell the same story</li> </ul>	<ul style="list-style-type: none"> <li>▪ Story is told via different media channels</li> <li>▪ Each media channel tells the story in a different way</li> </ul>

**Table 1. Overview of Different Forms of Storytelling**

In addition to storytelling, the term of digital storytelling is more and more used in different ways. According to Bracey (2005), digital storytelling covers the traditional storytelling method combined with multimedia tools such as audio, graphical visualizations, videos and web publishing. Sylvester et al. (2009) define digital storytelling as a narrative construction which consists of any digital technology element like videos or animations. Another term, which is relevant from the standpoint of Information Systems, is transmedia storytelling, which systematically extends integral elements of fiction by using

different media channels such as books, videos or websites (Jenkins 2006). Compared to that, crossmedia storytelling implies that stories are also told via different media channels but all media channels tell the same story (Jenkins et al. 2006). In Table 1 the main differences between storytelling, scenarios, digital storytelling, crossmedia storytelling and transmedia storytelling are summarized.

One of the most important reason to use storytelling as a tool to transmit information is mentioned by Schank (1999) who points out that human memory is story-based. This implies that storytelling is used to ensure that the message is kept in memory as long as possible. This phenomenon is also verified by an experiment from Heath et al. (2007): Thereby students got data on crime statistics and had to talk about that topic. Only 10% of the students formed the data into stories and 90% relied on statistics. Afterwards, students had to write down what was talked before. Interestingly, most of the students remembered stories while only 5% remembered any statistics. In addition to that, Cahill et al. (1995) have shown that the higher emotionality of a story the better people can remember its content in their long-term memory.

## Methodology

Literature research has been conducted following the guidelines of Webster and Watson (2002). In the beginning, a keyword search was done on the following databases: Google Scholar, ScienceDirect, ACM Digital Library, IEEE Xplore Digital Library, and Emerald Insight. The used keywords were “storytelling” combined with “information systems”, “crowdfunding”, “social media”, “e-commerce”, “marketing”, “research” and “study”. In the second step, more studies were searched for with the help of backward and forward search.

For the identification of relevant literature only English-language papers describing storytelling-related studies within the domain of information systems were selected independently of the year of publication. In total 67 papers were identified by reading the abstracts of returned papers. For all these papers a full-text paper review was conducted. A final sample included 31 studies, which were identified as suitable for the analysis and published between 1991 and 2017. Among those, 20 papers describe an empirical study and 11 a qualitative study.

For analyzing and structuring the literature concept-centric the categories “storyteller”, “story itself” and “audience” were defined (see table 2).

<b>Storyteller</b>	<b>Story itself</b>	<b>Audience</b>
<ul style="list-style-type: none"> <li>▪ Motivation and benefits (i.e. simplification of complex processes or evidence)</li> <li>▪ Qualification, knowledge and experiences of storyteller</li> </ul>	<ul style="list-style-type: none"> <li>▪ Story structure</li> <li>▪ Narrative style including emotional content</li> <li>▪ Archetypes / hero of the story</li> <li>▪ Level of fiction</li> <li>▪ Videos and pictures</li> </ul>	<ul style="list-style-type: none"> <li>▪ Changing belief</li> <li>▪ Feelings and behavior of the audience</li> <li>▪ Prior knowledge of the audience</li> <li>▪ Need for closure</li> <li>▪ Self-referencing</li> <li>▪ Persuasion of the audience</li> </ul>

**Table 2. Considered Factors of Different Empirical and Qualitative Studies**

In the “storyteller’s” perspective different studies containing research on the motivation and qualification of storytellers have been evaluated. Concerning the “story”, there are different studies covering topics which can influence the success of a story. Thereby studies which focused on the story structure, narrative style and used archetypes and hero are considered. Furthermore, some studies cover the level of fiction and elements like videos or pictures as a success factor of a story. The third perspective which is considered in some studies is the “audience”. It includes the changes of beliefs and feelings of the audience triggered by stories. In addition to studies investigating these reactions, there are studies which draw attention to the correlation of the story’s success and the audience’s prior knowledge, the need for closure, the level of self-referencing<sup>1</sup> and the persuasion of the audience.

<sup>1</sup> Self-referencing means that the audience recognized information by relating it to their personal experiences (Burnkrant et al. 1995).

## Results

According to their content, studies were assigned as follows: 7 papers contained results for the category “storyteller”, 16 papers contained results for the “story” itself and 17 papers contained insights into the perspective of the audience (see Table 3).

	<b>Content of Studies</b>	<b>References of Studies</b>
Story-teller	Motivation	Adamson et al. 2006 (Q); Alvarez et al. 2002 (Q); Erkas et al. 2007 (Q); Gruen 2000 (Q); Pera 2017 (E); Zammita et al. 2016 (Q)
	Qualification	Gilliam et al. 2015 (Q); Gruen 2000 (Q)
Story itself	Story structure	Hoeken et al. 2000 (E); Pera et al. 2016 (Q); Quesenberry et al. 2014 (Q)
	Narrative style	Banerjee et al. 2012 (E); Black et al. 2009 (E); Boje 1991 (Q); Hoeken et al. 2000 (E); Manning et al. 2016 (Q); Omeragic 2016 (E)
	Archetypes / hero	Pera et al. 2016 (Q)
	Further success factors (videos, level of fiction)	Appel et al. 2007 (E); Appel et al. 2010 (E); Frydrych et al. 2014 (E), Green et al. 2000 (E); Laer et al. 2014 (Q)
Audience	Changing belief	Appel et al. 2007 (E); Green et al. 2000 (E); Mazzocco et al. 2010 (E)
	Feelings	Akgün et al. 2015 (E); Eviatar et al. 2006 (Q); Gonzáles 2006 (E);
	Prior knowledge	Green 2004 (E)
	Need for closure	Omeragic 2016 (E); Roets et al. 2011 (E)
	Self-referencing	Akgün et al. 2015 (E); Escalas 2007 (E)
	Persuasion	Appel et al. 2010 (E); Baesler et al. 1994 (E); DeSteno et al. 2004 (E); Escalas 2007 (E); Fenger et al. 2015 (E); Lundqvist et al. 2012 (E)

Note: (E) - empirical study; (Q) - qualitative study.

**Table 3. Overview of Studies Regarding to Storytelling**

### **Motivation and Qualification of Storytellers**

Stories like myths and fables are very popular and are told over and over again (Kendall et al. 2012). Some studies demonstrate that storytelling is a high performing tool in different contexts (Adamson et al. 2006, Alvarez et al. 2002, Erkas et al. 2007, Gruen 2000, Pera 2017, Zammita et al. 2016). In the sales context, the motivation to use stories is rooted in the fact that stories can be very helpful to inform and persuade customers (Gilliam et al. 2015). Thereby, storytelling becomes more and more important at online advertising and for presenting products or brands on e-commerce platforms (Woodside 2010). For company's internal and external communication, storytelling can be leveraged to describe complex processes easier and also add feelings and commitment, which is normally difficult to generate and communicate (Erkas et al. 2007; Zammita et al. 2016). Furthermore, strategic changes are better recognized if a story is told rather than simple information are given. Therefore, storytelling is a working tool for communicating strategies successfully (Adamson et al. 2006).

In context of IT projects, storytelling is a pragmatic way to get a view on existing requirements for business analysts (Alvarez et al. 2002, Gruen 2000). According to Zammita et al. (2016), a big advantage for organizations is the reduction in costs to develop knowledge content transported by storytelling. This trend is notable considering that previously stories have been viewed as barriers to data gathering in the information systems context (Kendall et al. 2012). Furthermore, stories are used as a powerful mechanism to describe organizational innovations both online and offline. Thereby, the innovative idea is translated

across the organization and is comprehensible and appears legitimate to the audience (Bartel et al. 2009). In the online context, the innovation could be presented on the company's webpage as a text combined with a video. According to Pera (2017), storytelling is also often used for describing own experiences while forming experiences of the audience at the same time. Writing online blogs and telling stories via Twitter are prominent examples for this application. In business context, such as sales and IT development, studies show that storytelling skills are necessary for a positive effect on the success of a story (Gilliam et al. 2015, Gruen 2000). These skills can be learned either by practicing or by taking courses, which convey how to write good stories (Gilliam et al. 2015; Gruen 2000). Following Gilliam et al. (2015), on the one hand, trainings can foster good storytelling; on the other hand they can prevent bad storytelling, which is very important for the success of a story. Concluding, according to Kowalewski et al. (2011), storytelling and professional narratives are successful tools for organizations and necessary for a business person's skill sets.

### **Key enablers of stories**

One of the main key enablers for a good story is that the story's content is transported in the most effective way to the audience (van Laer et al. 2014). According to Mazzocco et al. (2011), the optimal transportation of a story depends on the storyteller itself, penetrating pictures, high level of realism, clear structure and described surroundings and context. Zak (2013) describes the phenomenon of transportation as the beginning of emotional identification with the protagonist of the story.

### **Story structure**

A clear structure is important for both a successful transportation of the story and a good understanding of the story's content by the audience. As Mazzocco et al. (2011) emphasize, a story with a clear structure has a higher success of transportation than a story with inconsistencies in its plot. Furthermore, story structure influences the responses of the readers, which can be provoked by surprise, curiosity and suspense (Brewer 1982).

	<b>Freytag's Pyramid (Freytag 1863)</b>	<b>Labov's model (Labov et al. 1967)</b>	<b>Dramatic arc (Zak 2013)</b>	<b>Five-act dramatic (Quesenberry et al. 2014)</b>	<b>High-level structure (Pera et al. 2016)</b>
Start ↓ End	Exposition	Abstract	Start	Exposition	Beginning
	Inciting incident	Orientation	Increases tension		
	Rising action	Complication action			
	Climax	Falling action	Climax	Climax	Crisis or turning point
	Falling action				
	Resolution	Resolution	Resolve	Reversal	Conclusion
	Dénouement	Coda (conclusion)		Dénouement	

**Table 4. Different Story Structures**

In theory, different approaches of a good structure exist. In Table 4 some established story structures are summarized. All models show that a well-delineated beginning is important for a story for getting the audience's attention (hook). In the next step, the main character or hero has to be introduced. As an important part of the story an adventure is described. This can be a conflict, a problem, a trigger or an opportunity (Kendall et al. 2012) (hold). The hero needs to have such kind of adventures on the path to his success. The adventures the character encounters have to be described in detail and should be as emotional as possible (Mazzocco et al. 2010; Hsu 2008; DeSteno et al. 2004). A good story needs a happy end and in the best-case the audience could be part of this happy end (payoff). This element is mostly used in the context of crowdfunding. According to this approach, a donator should be involved in the story

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as a person who can influence the happy end by giving a donation. Stories can also end with recognition and joy or with an epilogue, that means the storyteller will explain what has happened since the problem was resolved (Kendall et al. 2012).

Traditional story structures mentioned above can be used in e-commerce environments, where ideas or products are presented. In the context of social media, the story is mostly hyperlinked, participatory and limited for length (Alexander et al. 2008). In those cases, the elements hook, hold and payoff have to be still considered for a successful story (McKee 2009). That means also a story consisting of small chunks (microcontent) has to get the audience's attention (hook), needs an arc of suspense (hold) and has to consider the payoff for the audience.

The relevance of the hook is also confirmed by Hoeken et al. (2000) who research the impact of changing the order of the story structure. One result is that stories are better supported if they contain surprising elements compared to a story without a surprise.

**Narrative style**

In addition to narrative structure, narrative styles are also discussed in the literature and different studies are conducted related to this topic (Manning et al. 2016; Banerjee et al. 2012; Boje 1991). For example, Banerjee et al. (2012) investigate the influence of first- or third-person narratives. Interestingly, the authors cannot find any differences between the effect of a story which is written or told by the first- or third-person.

Manning et al. (2016) research the link between the narrative style and the content of crowdfunding projects. They find that ongoing journey style is normally used if campaigns promote rather intangible outcomes and less depend on advanced technology. Results-in-progress narratives are applied, if advanced technology is used and value is derived from tangible elements.

A case study done by Boje (1991) demonstrates that stories can be more successful if they are told tersely, so that the audience is required to silently fill in major parts of the storyline, context and implications.

**Archetypes**

Studies demonstrate that archetypes for protagonists (such as a ruler or a seeker) are very important for a successful story (Pera et al. 2016; Woodside 2010). This way the readers are able to connect with the chosen character. The main actor is mostly described as a hero who is highly motivated (Woodside 2008; Kendall et al. 2012). For O'Hara (2014), the hero of a story should not be the same person as the narrator.

**Further Results for Success Factors of a Good Story**

Regarding storytelling in the context of online reviews, an empirical study done by Black et al. (2009) emphasizes that online reviews are rated better if the story has a high level of trust, contains character development and is detailed and well-written.

Studying a crowdfunding context, Frydrych et al. (2014) show that today most crowdfunding projects are described by both a written story and a video message. However, the study has not provided evidence that crowdfunding stories, which are also described by a video, are better funded than stories which are only described by a well-written story.

Further studies conclude that the more real the story appears, the greater its impact is (Appel et al. 2010; van Laer et al. 2014; Green et al. 2000). In addition, Pera et al. (2016) demonstrate that the more the story can be communicated as a metaphoric and symbolic, the more engaging the story will be.

***Stories' Effects on the Audience***

In addition to a well-written story with a clear structure it is important to pay attention to the audience in order to achieve the desired results by storytelling (Barker et al. 2010). Particularly in the context of crowdfunding stories and for presenting products via e-commerce platforms, the audience has to be inspired to donate for a crowdfunding project or to buy a product respectively.



## **Belief and Feelings**

Different studies have shown that reading or listening to a story can alter beliefs, even if the characters and occurrences described in the narrative are fictitious (Appel et al. 2010; Appel et al. 2007; Green et al. 2000). The empirical study by Appel et al. (2007) reveals that beliefs which the audience gains by reading fictional stories are integrated into real-world knowledge. Additionally, Green et al. (2000) highlight the fact that stories can change beliefs to some extent if the audience is highly involved in the story. However, the more the story is actualized the higher the effect of changing audience's beliefs is (Green et al. 2000). Following Mazzocco et al. (2010), highly transportable stories have a higher impact on audience's emotional beliefs than can be achieved by logical arguments.

Emotional aspects and feelings can be changed by identification with certain characters of the story, wishful identification, similarity, and liking (Moyer-Gusé 2008). Eviatar et al. (2006) conclude that a literal, metaphorical or ironical statement at the end of a story can influence person's feelings after reading or hearing a story. Furthermore, an experiment conducted by Gonzáles (2006) provides evidence that reading olfaction-related words yields significant brain activations.

## **Prior Knowledge, Need for Closure and Self-Referencing**

Green (2004) explores the link between prior knowledge of the audience and the success of narrative transportation. The empirical study indicates that the more prior knowledge or experience relevant to the themes of the story an individual has, the better the transportation into the story is (Green 2004). As Bartlett notes, people review and construe new situations by getting back to their prior knowledge. Therefore, the audience is easily influenced by storytelling (Bartlett 1932).

Furthermore, a number of studies have focused on the need for closure, which implies individual desire for a clear structure and order (Kruglanski et al. 1996). As Roets et al. (2011) validate in their empirical study, the five main items that measure the need for closure are: order, predictability, decisiveness, ambiguity and closed-mindedness. In the context of crowdfunding, surprising stories have been found to have the best effect on individuals with a high need for closure. For individuals with a low need for closure, suspense stories have emerged as more effective (Omeragic 2016).

Another important aspect for a successful transportation of story content is the identification or self-referencing with the main character by the audience. During the identification process the audience replaces his or her personal identity with the identity of the character (Cohen 2001). Moreover, according to Akgün et al. (2015), self-referencing can evoke empathy by the audience. Two experiments by Escales (2007) confirm that self-referencing in the narrative context leads to a high persuasion of the story, inducing positive feelings and fewer counterarguments.

## **Persuasion by Storytelling**

Stories have the power to motivate and to persuade people of ideas and propositions by appealing to their emotions and ability for empathy (Hsu 2008). Numerous studies have shown that storytelling is an effective tool for persuading the audience. For example Fenger et al. (2015) show that consumers who are not open for a new product become more positive when storytelling is applied. Appel et al. (2010) find that people can be better persuaded by stories with high emotional content than by stories with low emotional content.

According to the study by DeSteno et al. (2004), persuasion will increase if the emotional frame of the story content matches the emotional state of the audience. Furthermore, Baesler et al. (1994) demonstrate that evidence described in a statistical and vivid way is more persuasive in the long-term, while evidence described in the form of a story is more persuasive in the short-term. Another study by Lundqvist et al. (2012) dealing with well-crafted company stories shows that the audience has positive associations with the brand when stories are involved. Moreover, this study underlines an increase in the audience's willingness to pay once storytelling is used (Lundqvist et al. 2012).

## Conclusion

Our literature review suggests that storytelling is a relevant topic across many technology contexts. Specifically, storytelling is often used on crowdfunding and e-commerce-platforms as well as in the context of company webpages. The motivation for using storytelling is to persuade the audience of a product or story by influencing the audience. These stories are usually told with the help of digital storytelling, cross-media storytelling or transmedia storytelling. In the context of IT development projects, storytelling is commonly used for reducing complexity of technical details. On social media, storytelling is utilized in order to share experiences or news with the audience. Thereby, the audience is invited to interact with the story or to supplement the story. One of the main advantages of storytelling is that stories are better kept in memory than facts (Heath et al. 2007), which can be further strengthened through a high level of emotional content (Cahill et al. 1995).

Although most characteristics of traditional storytelling can be reused for storytelling in information systems context, additional aspects that might be relevant for digital storytelling should be researched in more detail. Some of these factors could be devices on which the story is retrieved, further information the audience receives as a supplement to the story, as well as the influence of cross cultural differences in storytelling strategies and impact, which is getting more important as stories are told worldwide via the internet.

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