Expectations and Benefits of Utilizing Social Media Tools in New Product Development

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Abstract--**This paper discusses drivers of the use of social media tools by organizational members. Specifically, we contrast the expectations of senior managers of social media tool adoption with the benefits perceived by organizational members after the implementation of these tools. We analyzed empirical findings from 252 respondents to a survey of three global companies before and after social media tool adoption. The respondents to the survey held various internal functions and were from several organizational layers. According to our results, the working practices, notably in terms of information sharing, among organizations become more similar due to the social media tool adoption. . We present individual-level drivers of the use of social media tools based on expectations and perceived benefits, such as increased transparency inside the organization. Additionally, based on the empirical evidence, we present both managerial and theoretical implications. The identified drivers can be used by practitioners as guidance in social media tool implementation. From a theoretical perspective, the study contributes to discussions on absorptive capacity, new product development (NPD) performance, and company-level social media tool adoption.**

I. INTRODUCTION

Social media tools have contributed to various bodies of management literature, such as strategy [15], knowledge management [21], organizational change [9], new product development (NPD) [10], business-to-business (B2B) interactions [16], and absorptive capacity [29]. Haefliger referred to social media tools as social software and concluded that they challenge strategic thinking [15]. Further, Haefliger noted that as social media tools have a role in value creation, they can be considered as technology and a platform that enables interaction between parties. Martins et al. discussed knowledge management in virtual teams and suggested social media tools that can enhance the competitive flexibility of organizations [21]. Another study reported that online discussion forums can be used to secure organizational change by enabling media for critique, sharing humor, valuing employees, and expressing solidarity [9]. Communal tools and working practices have been shown to be effective in idea generation and harvesting ideas for new product development [10]. In addition to internal use, social media tools can be very important in B2B interactions. According to Jussila et al. customers can be a fruitful source of ideas and those potential good ideas can be harvested with these tools [16]. In particular, NPD and knowledge acquisition perspectives it is straightforward to agree with Tsai [29] that absorptive capacity theory is closely relating and interesting theory to discuss about the impact of the utilization of social media tools. As shown in other studies, the deployment of social media tools can increase communication and collaboration between parties [25] and that foundation of strong and weak ties enables utilization of available knowledge [14, 26].

Individual-level drivers have a crucial impact on the adoption of social media tools. These need to be understood before introducing such tools in organizations. The present study adds to the current social media-related literature by providing insights into expectations and drivers of social media tool adoption. The context of the present research is NPD. The main goal is to identify various expectations and drivers of social media tool adoption among organizational members, including the perceived benefits of these tools. Collaboration tools based on social media technologies that are used in enterprises are referred to in the present study as online collaboration tools.

II. LITERATURE

A. New product development and internal communication

A common theme in all development projects, incremental or radical, is the uncertainty that surrounds the development work. Such uncertainty can be competitive, market, or technology related [23]. Competitive uncertainty is rooted in not knowing what competitors (if any) are doing and how business should be conducted; market uncertainty, on the other hand, is not knowing whether the innovation adds value to the user; technology uncertainty is not knowing whether the innovation can be produced [23]. Naturally, the reduction of these uncertainties requires multiple parties from various fields to be involved in product development projects to share their expertise. Research has shown that the performance of NPD crucially depends on cross-functional communication [8, 11]. As argued elsewhere, the organizational capability to share knowledge between individuals is important from an organization-learning point of view [5]. A previous study demonstrated that cross-functional communication is necessary to a) share acquired knowledge organization wide to decrease the possible risk of lacking key knowledge in the future and b) to discuss different ideas because some individuals might have tactic knowledge to support idea screening [5]. According to another study, combining pieces of information across organizational boundaries decreases uncertainties at the beginning of the NPD [17]. Studies have shown that the use of social media in internal communication seems to enhance the amount of communication [31], as well as the absorptive capacity [25]. However, task requirements

should reflect on expectations, in particular if internal communication is considered as a tool for engagement as suggested by Ruck and Welch [27].

B. Online collaboration and social media in new product development

Identifying and fulfilling market needs requires an intimate understanding of the markets and technologies involved and a capability to combine the two [8]. As suggested elsewhere, looking to future customers rather than current customers might provide the best indications of market needs [4]. The need to combine market and development knowledge emphasizes the need for cross-functional integration and effective dissipation of externally gathered knowledge. Perhaps as a direct result of this need, scholars have argued that innovation management is part of strategic management [3, 30]. An antecedent for cross-functional integration is that various functions, or individuals who perform these functions, share similar expectations of the benefits of their collaboration. The ability of new IT tools and technologies, such as social media tools, to facilitate cross-functional integration of work depends largely on employees having similar expectations about the benefits that will be gained from using these new tools.

Fichter et al. argued that collaboration is not necessary for successful NPD, particularly if the performance indicator is financial success [13]. On the contrary, McKinsey argued that productivity can be raised by 20–25% after social media technology adoption due to improvements in communication and collaboration [22]. Therefore as the expectations from literature and reports are scattered and somewhat even polarized, the background for the study is fruitful. In contrast to the literature on expectations of social media tools, scholars have a more shared understanding of the role of such tools in knowledge sharing. Reagans and McEvily pointed out that people are more receptive to ideas from their own social network [26]. Others suggested that successful knowledge transfer seems to require trust [1, 20, 32]. This requirement for trust is not a trivial issue in virtual online communities, especially in a business context, where the activity is not based on volunteerism controllable by the senior managers. However, the positive impact of online communities, especially on knowledge sharing, has been demonstrated, despite the existence of potential drawbacks related to confidentiality [2]. As reported earlier, virtual groups might face challenges, such as developing a group identity, that are difficult to tackle [13]. The same study stated that group identity and mutual trust are interlinked and that virtual teams have a more informal structure and weaker ties than traditional teams [13]. If the members do not consider themselves part of the group, it may be problematic to establish trust between the members. In one study, weak ties between organization members facilitated intra-organizational knowledge acquisition [18]. Therefore the amount of informal discussion might be elevated after utilization of online collaboration tools (OCT).Furthermore, research suggested that the OCT usage can undermine

hierarchies and increase interactions between organizational levels [15]. This increased interaction at the organization level has influences at the individual level, as organizational members are more aware of the "big picture." A study by Mumford concluded that in addition to having a positive impact at the individual level, to be successful, social media tools should have direct benefits for the organization as a whole [24].

III. METHODOLOGY

Data were collected from three large [12] global enterprises operating in different business environments. The data collection method was an online survey. The data were collected twice: before and after implementing the social media tools. In both cases, a survey was used to identify and measure the current level of cooperation and communication in the companies. The survey items were ranked 1 to 7 on a Likert scale. The validity of the items in the questionnaire was first tested with a group of scholars. Before launching the survey, it was also tested with representatives of each organization in the study and revised. The final version of the survey questionnaire contained four primary sections: (a) details on the participant, (b) the company's current NPD process emphasizing idea acquisition, assimilation, and communication habits, (c) general attitudes toward and familiarity with social media tools and technologies, and (d) a final feedback section.

The questions in these four sections were used to gain an understanding of the working practices in each organization. The primary section (b) contained the majority of the questions (67%). All questions in the primary sections (a), (b), and (d) remained the same in all case studies in both the pre- and postdata collection phase. In each company, 6–12 months elapsed between the pre- and postdata collection. Thus, some of the questions in the primary section (c) differed in the questionnaires in the pre- and postdata collection stages due to the causal research setting. In the predata collection, the respondents were asked about the future uptake of the tools. However, in the postdata collection, respondents were asked about the actual utilizations of the tools in communal working practices.

Each company provided details on those who would participate in the survey, and this sample population was invited to answer the online survey in both the pre- and postdata collection phases. In the online survey, the researchers selected the majority of the items for inclusion in the questionnaire rather than the companies. The sample population included organizational members involved in NPD processes. Division wise, it included organizational members from research, development, product management, accounting, quality, technical support. The data were collected from the companies in stages. In case study 1, the data were collected between 2011 and 2012. In case study 2, they were collected between 2012 and 2013, and they were collected between 2012 and 2013 in case study 3. The anonymity of all the respondents was quaranteed. Concerns

about the reliability and validity of the findings were addressed by member checks [19].

IV. RESULTS AND DISCUSSION

The data included 252 valid questionnaires. The response rate to the online questionnaire survey was 42.3%: 131 from the predata collection and 121 from the postdata collection. In both data collection phases, the link to the online survey was active for four weeks for each company. Two reminders were sent to nonresponders within the two four-week data collection periods. Managers in the organizations supported participation by encouraging the selected employees to participate in the survey. The data contained responses from individuals with various internal functions. The perceptible share of the development organization among all organizations generated some bias, as 41% of all online survey respondents identified themselves as a member of the NPD team. This bias was a reflection of the sample population. According to a Mann–Whitney U test, nonresponse bias was not a problem because the respondents were representative of the entire invited sample population (respondent's background organization; $p<0.05$). The demographics of the sample are presented in Table 1.

The results revealed an interesting correlation between organizational interactions and expectations, with organizational members who had more interactions with various stakeholders or were familiar with social media applications being more optimistic about the organizational adoption of social media tools (Table 2). These people might be extroverts and see social media technologies as tools to help them communicate easier with other parties. Interestingly, those who had to interact with external parties did not have positive expectations, indicating that expectations are a reflection of individual characteristics. The significant positive correlation ($p<0.01$) found between expectations and familiarity with social media applications indicates that communal activities outside work generate positive expectations about communal working practices at work.

The findings suggest that the adoption of social media tools might be challenging at the company scale, as the expectations about new working practices seemed to be strongly related to personal characteristics. The choice to adopt online collaboration tools is up to the individual members. Therefore, a managerial decision to adopt a new set of tools may not be the best approach to secure adoption of these tools at the organizational level. In the present study, the survey questionnaire asked the respondents about their familiarity with social media technologies, mainly by asking them about their online habits, including the time spent online. According to the results, it can be argued that expectations are strongly correlated with familiarity with social media technologies. The organizational members who were not familiar with social media tools shared a clearly qualified attitude toward social media tools. These findings underline the importance of individual recognition for organizational members and challenge the success of the organizational level adoption by relying only on the management decision of OCT implementation.

Corralation tables (Table 2 & 3) about expectations and the usage of OCT, respectively, revealed that familiarity with social media applications also seemed to have a significant impact on its usage. However, the communication likelihoods after the uptake (Table 3) are not anymore equally significant, with only communication with external parties having an apparent significant correlation with the use of OCT. Therefore, the use of OCT does not seem to depend on communication between members. However, the adoption of social media applications might encourage organizational members to increase their cross-functional communication and thereby strengthen the success of the company. The success of cross-functional communication has been identified as one of the success factors for companies [8]. However, as mentioned, the amount of communication might not be a good indication of the actual usage of OCT.

TABLE 1. DEMOGRAPHICS OF THE STUDY PARTICIPANTS

	Pre	Post	Cumulative	% share
Gender				
Male	119	104	223	88.5%
Female	12	17	29	11.5%
Highest degree				
University	109	86	195	77.4%
Other	22	35	57	22.6%
Organization level				
Senior manager	33	42	75	29.8%
Manager	39	24	73	29.0%
Employee	59	45	104	41.3%
Organization				
NPD	54	48	102	40.5%
Marketing and Sales	7	4	11	4.4%
Consulting	15	20	35	13.9%
Service, installation, implementation	2	10	12	4.8%
Assembly	15	2	17	6.7%
Tech support	17	5	22	8.7%
Other	21	32	53	21.0%

TABLE 2. EXPECTATIONS OF PARTICIPANTS PRIOR TO SOCIAL MEDIA TOOL ADOPTION ($N = 131$)

	Positive expectations	Communication within the team	Cross-functional communication	Interactions with external parties	Interactions with external parties as part of the job	Familiarity with social media applications
Positive expectations	1					
Communication within the team	**0.221***	1				
Cross-functional communication	**0.224***	**0.369****	1			
Interactions with external parties	**0.216***	**0.467****	**0.325****	1		
Interactions with external parties as part of the job	0.024	0.122	**0.279****	**0.291****	1	
Familiarity with social media applications	**0.371****	0.174	-0.054	0.068	-0.171	1

Significance levels: * $p<0.05$; ** $p<0.01$

TABLE 3. USE OF SOCIAL MEDIA TOOLS IN THE POST ADOPTION PERIOD ($N = 121$)

	Usage of OCT	Communication within the team	Cross-functional communication	Interactions with external parties	Interactions with external parties as part of the job	Familiarity with social media applications
Usage of OCT	1					
Communication within the team	0.124	1				
Cross-functional communication	0.188	**0.343****	1			
Interactions with external parties	**0.251***	**0.396****	**0.538****	1		
Interactions with external parties as part of the job	0.133	0.085	**0.262***	**0.195****	1	
Familiarity with applications	**0.377***	0.100	0.021	0.056	0.075	1

Significance levels: * $p<0.05$; ** $p<0.01$

In both data collection phases, the organizational members were asked to point out the most important aspects of online collaboration tools. In the predata collection phase, the expectations for the online collaboration tools were not convergent and informal communication was flourished compared to the others (Fig. 1). The finding is rather easy to understand, as people are generally familiar with social media as consumers (e.g., Facebook and Twitter). Many might also already use Facebook and Twitter. When they are try to ascertain how they would use such a tool at work, they may find informal discussion a familiar selection. However, the postdata collection survey of each company revealed that all the respondents considered information transparency the most important aspect (Fig. 2). The postdata survey also highlighted a change in attitudes following the implementation of OCT, with responses no longer based on expectations. The respondents were now familiar with the use of OCT and the benefits and drivers of its adoption.

Drawing conclusions from the combined datasets from all three companies is challenging, as the business environment in each case was slightly different. However, concentrating on each case study separately can provide fruitful insights into the changes in attitudes and expectations that occurred during the research period. The respondents clearly considered information transparency the most important aspect of OCT, with increased transparency apparently viewed as the basis for concrete benefits. Therefore, it can be identified as the main driver for the adoption of OCT. The identification of increased transparency as the most important driver of OCT is due to the results-driven and task-oriented climate in the organizations. The organizational members consider OCT as a tool to help them in their tasks and not as a tool for informal discussions, for which they do not have time. The individual-level benefit (increased transparency) also offers organizational-level benefits, with increased information transparency in organizations speeding up the acquisition of knowledge and the identification of required expertise.
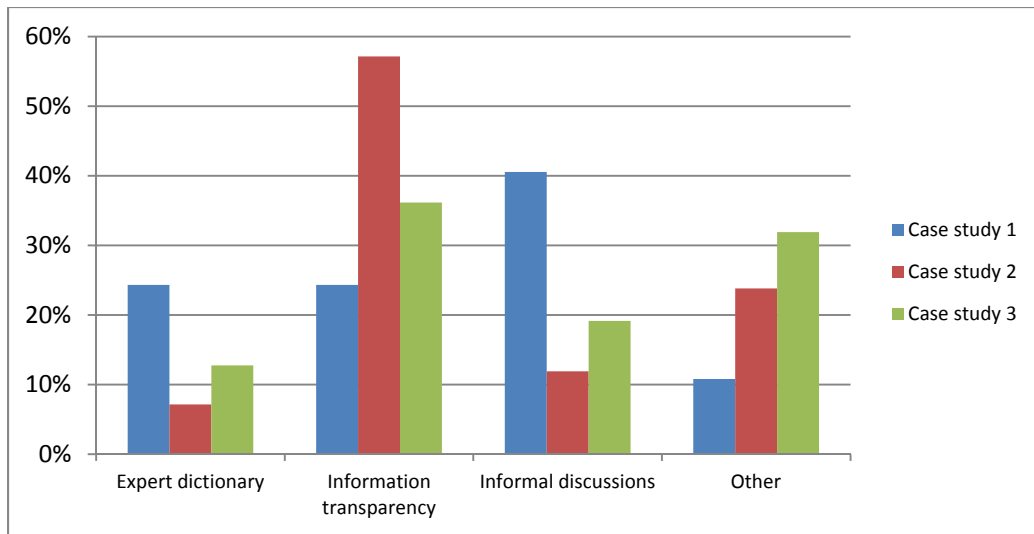
Figure 1. Most important aspects of OCT based on the predata collection, showing the three most frequently cited components. The remainders of the items are combined into "Other."
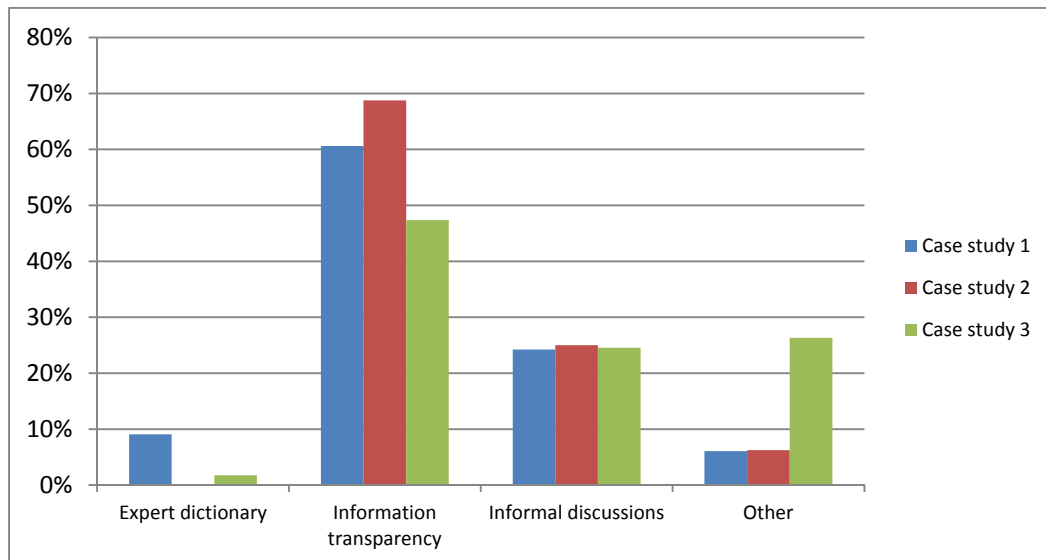

Figure 2. Most important aspects of OCT in the postdata collection, showing the three most frequently cited components. The remainder of the items is combined into "Other."

In each case study, the senior managers had positive expectations of the utilization of the online collaboration tools. However, the senior managers' expectations in the survey of case study 1 are not convergent with those of the other case studies. Although their expectations were the same as those of the managers in the other case studies during the predata collection (Table 4), according to the postdata collection, the benefits were not realized or perceived by the organizational members. In addition and according to the comparison of active and conservative users of OCT in case study 1, it can be concluded that that these two data sets are statistically almost the same in terms of organizational level (Table 5). Active users were defined as frequent (daily) users of OCT and the rest of the users are considered to be conservative users. Although the number of active users had

increased by the postdata collection stage in case study 1, there were still more conservative users than active users (Table 4). In contrast to the other two case studies, there was no giant leap toward online collaboration and usage. Therefore, as indicated, the results are different between case study 1 and case studies 2 and 3.

According to the results, the number of active users in case studies 2 and 3 increased compared to the numbers of conservative users. Furthermore, the active and conservative user datasets in these case studies were statistically different in terms of organizational level. When the findings were grouped by organizational level, those in case studies 2 and 3 perceived benefits due to the utilization of OCT. On the other hand, benefits based on the utilization of OCT in case study 1 are identified contrasting pre dataset as a whole to post

dataset (table 5). According to the indication based on combined dataset benefits are relating to increased intra-organizational awareness and collaboration in case study 1. The combined dataset in case study 2 indicated a statistically significant difference in the perception of organizational members of the commitment of senior management. Therefore, the implementation and utilization of OCT seemed to have a positive impact on NPD [6]. The combined dataset in case study 3 indicated that information have become more complex. As positive expectations of OCT also increased, the usage of OCT has been perceived to help organizational members to organize that complex information and secondly, has therefore been identified to have positive reflection on NPD [17, 28]. In addition, based on the combined datasets from all case studies, senior managers that reported individual benefits also noted organizational benefits ($R^2 = 0.889$, F = 221, $p<0.001$).

Contrasting pre-post datasets to each other within the case study a common statistically significant difference can be identified. The frequent of OCT usage has been increased in all case (table 4). That is supported by administrative user statistics that included the user adoption and activity data on organizational level. Activity data confirms that organizational members have begun to utilize OCT There were statistically significant differences between active and conservative users in case studies 2 and 3 (Table 5). As presented in the Table 5, there were many statistically significant differences among senior managers in case study 2. Following the adoption of the OCT social media tools, they shared more ideas and considered the NPD process to be more rigorous.

In addition, knowledge acquisition and assimilation increased due to increased intra-organizational interactions. Based on the increased transparency and awareness, middle managers in case study 2 considered that knowledge acquisition had increased. Specialists in the case study 2 also perceived that knowledge acquisition had increased following the uptake of OCT. In case study 3, senior managers reported that they benefited from the increased transparency. For example, it enabled them to identify activities taking place at the whole organization level rather than just those taking place in their main sphere of interest. In addition, they reported that it allowed them to better support their employees. The middle-level managers in case study 3 perceived increased interactions and contributions between internal functions and R&D as the greatest change. They were also more convinced about the rigor of the NPD process. There were also several statistically significant differences among the specialists in case study 3 with regard to intra-organizational awareness, knowledge acquisition, and assimilation due to the usage of OCT.

According to a Kruskal–Wallis test ($p<0.05$), the similarities between case organizations increased following the uptake of the social media tools. Contrasting all variables, only 11.9% showed a different distribution in the postdataset (cross-case), whereas the difference was 28.6% in the Kruskal–Wallis test (p<0.05) in the predataset. As each organization operated in a different business environment, and the only identified common element between the case studies during the research window was the implementation of OCT, the increased similarities in the working practices of the companies seem to be related to OCT. Thus, the findings of these three case studies can likely be generalized to other organizations implementing OCT.

TABLE 4. EXPECTATIONS AND PERCEIVED BENEFITS, RATED ON A 1–7 LIKERT SCALE (STD. DEV. IN PARENTHESES)

	Expectations (senior managers)	Perceived benefits (senior managers)	Perceived benefits (all)	Number of active users in postdata collection
Case study 1	4.6 (1.4)	4.1 (1.5)	3.9 (1.6)	39.4%
Case study 2	4.6 (1.6)	4.4 (2.0)	4.7 (1.9)	65.6%
Case study 3	5.8 (1.1)	4.6 (1.8)	4.6 (1.6)	75.4%

TABLE 5. CONTRASTING ACTIVE USERS AND CONSERVATIVE USERS ($P<0.05$)

	Senior managers (S)	Middle managers (M)	Specialists (Sp)	Combined dataset (S+M+Sp)
Case 1	N/A	N/A	N/A	Increased awareness of NPD process and increased interactions and collaboration based on OCT usage
Case 2	Perception of senior managers support increased, along with perception of interorganizational collaboration and contribution and knowledge acquisition and assimilation	Increased knowledge acquisition due toincreased intraorganizational awareness	Increased knowledge acquisition due to OCT usage	Increased senior management commitment
Case 3	Increased awareness and increased senior management support	Increased intraorganizational awareness of various ideas and interactions, in general, and increased intraorganizational awareness of the organization's NPD strategy	Active users identified increases in awareness of various intraorganizational ideas and knowledge, as well as increased knowledge acquisition and assimilation	More complex information, positive expectations of OCT

V. CONCLUSIONS

The present study adds to the current social media literature by discussing expectations and drivers of the utilization of social media tools. Without a deep understanding of the drivers of the implementation and utilization of such tools, OCT might not be successful, and some of its benefits may remain unclear.

Interestingly, interactions with external parties as part of the respondent's job did not have a significant impact on expectations. Positive expectations of OCT seem, to some extent, to be based on individual characteristics and roles, such as communication habits and relationships with other organizational members. In addition, familiarity with social media tools seemed to be correlated positively with expectations. The organizational members who utilized social media communal tools either in their spare time or in work considered the benefits greater than those who did not utilize these kinds of tools in their lives. In the present study, increased transparency was one of the main drivers of the implementation and utilization of social media tools. As reported elsewhere, increased awareness of intraorganizational knowledge is considered a benefit [6, 7]. The results also indicated that senior managers have positive expectations of OCT and that they expect it to provide organizational-level benefits

The present study has a number of limitations. Although the datasets included organizational members with different functions, the small number of companies included might challenge the generalizability of the results. In addition, in each case study, the dataset was biased towards NPD, and that bias should be recognized when interpreting the findings. However, the results suggested that expectations were statistically significantly associated with familiarity with social media tools rather than with internal roles and functions. Therefore, the bias toward NPD in the datasets might not be important.

Due to the limitations in the datasets, the findings of the present study are not exhaustive, and therefore further research should be performed. Long-term benefits of social media tool adoption on specific areas, such as financial performance, as well as variations in benefits between industries, should be studied. Implementing OCT requires investment. Successful implementation of OCT requires consideration of both short- and long-term benefits.

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