VILNIUS TECH
Vilnius Gediminas Technical University

Business: Theory and Practice
ISSN 1648-0627 / eISSN 1822-4202
2022 Volume 23 Issue 2: 288–301
https://doi.org/10.3846/btp.2022.16449

COMPANIES CAN LOSE TIME OVER CONFLICTS: AN ANALYSIS OF INTERNAL INDIRECT CONFLICT COSTS

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Received 3 February 2022; accepted 20 June 2022

Abstract. Consequences of conflict are widely researched qualitatively, but quantitative data on the costs of conflict are lacking. This study aims to explore conflict costs by categorizing and testing them and providing preliminary quantitative data. The focus lies on internal indirect conflict costs, which are measured in terms of lost time. This research is based on self-reports of 675 survey participants, who evaluated the amount of time they spent on internal indirect conflict costs of a personal conflict. The costs are analysed in form of their explanatory power, as well as the extent to which they are affected by conflict duration and strength. All identified internal indirect conflict costs were positively correlated. The duration and intensity of the conflict affect the amount of time wasted, meaning that groups with shorter duration or weaker intensity differ from higher groups. The results indicate that conflict costs lead to remarkable costs for organizations. To remain competitive, managers need to balance the opportunities and difficulties of conflicts and carefully manage their costs. This study contributes to the unexplored research area of conflict costs and is one of the first research findings to scientifically analyse the topic.

Keywords: conflict costs, conflict duration, conflict strength, conflict, internal indirect conflict costs, lost time.

JEL Classification: D23, M12, M54.

Introduction

Conflict is an inevitable part of human interaction (Wang et al., 2007) thus, it is a permanent component of our daily lives and workplaces (Buss, 2011; Canary et al., 2001). There is no one definition of conflict, but in this research, conflict takes place between two or more interdependent people and can be defined as "perceived incompatibilities or discrepant views among the parties involved" (Jehn & Benderksy, 2003, p. 189). Scholars often differentiate task, relationship and process conflict (Jehn, 1995, 1997). Considering relationship conflict, research results are consistent and mostly claim that it has negative effects on team performance (De Dreu & Weingart, 2003; Jehn & Bendersky, 2003; Vodosek, 2017; Wit et al., 2012; Shaukat et al., 2017) and team functioning, as it reduces the satisfaction among team members (Jehn & Bendersky, 2003; Wit et al., 2012; Jehn, 1997), decreases the cooperation, commitment, communication (Jehn & Bendersky, 2003), and advice-seeking (Marineau et al., 2018), reduces trust levels towards each other (Wit et al., 2012; Ismail et al., 2012), and increases emotional exhaustion (Benitez et al., 2018). Researchers present competing views on task conflict, ranging from negative effects on team performance (De Dreu & Weingart, 2003; Vodosek, 2017; Puck & Pregernig, 2014; Woerkom & Engen, 2009), none at all (Wit et al., 2012), to positive outcomes (Jehn & Bendersky, 2003; Pazos & Canto, 2013; Pelled et al., 1999; O'Neill et al., 2013; Yousaf et al., 2021; Marineau et al., 2018). For process conflict, most research underlines the negative effects on performance outcomes (Jehn, 1997; Wit et al., 2012; Vodosek, 2017; Greer et al., 2007, 2011) and claims it to increase uncertainty, dissatisfaction, higher intentions to quit, and, finally resulting in higher turnover rates and decreased well-being (Jehn, 1997; Jehn & Bendersky, 2003; Wit et al., 2012; Kuriakose et al., 2019). Given the range of conflict consequences, the question arises as to what this means to companies in concrete terms. One approach to present conflict consequences in a tangible way is the determination of conflict costs. Conflict costs reflect the various types of costs triggered by conflicts. Many scientists agree that conflict costs exist, and highlight their importance (De Dreu, 2008; Buss, 2011; Riaz & Junaid, 2011; Freres, 2013; Lipsky & Avgar, 2008; Katz & Flynn,

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2013; Dana, 2001; Brockman, 2014). Findings on conflict costs mostly refer to the identification of cost variables and their categorization (Buss, 2011; Freres, 2013; Levine, 1998; Riaz & Junaid, 2011) or the quantification of individual costs (Chartered Institute of Personnel and Development [CIPD], 2011; Canada Pension Plan [CPP], 2008; Katz & Flynn, 2013; Kreisman, 2002; OPP & CIPD, 2008). However, it must be emphasized that the existing literature (Freres, 2013) is very limited and that the findings show significant differences. Regarding the categories, there are approaches to three (Buss, 2011), four (Levine, 1998) or even eight (Freres, 2013) categories, which mostly include similar cost variables. A weakness in terms of cluster development is the lack of definition of conflict costs (Freres, 2013) and the clusters up front. Quantitative results on actual costs mostly refer to costs arising from litigation (Murtha, 2005; CIPD, 2011) or turnover (Conbere, 2000; Kreisman, 2002). In addition, studies have measured how much time people spend on conflicts, mostly with a focus on Human Resources (HR) employees or managers (CPP, 2008; OPP & CIPD, 2008; Murtha, 2005; Katz & Flynn, 2013; Thomas & Schmidt, 1976). Considering these cost measurement approaches; they all refer to serious debates with drastic consequences. Time must have passed to give the conflict room for escalation to trigger outcomes such as management or HR involvement, turnovers or lawsuits. However, when looking at conflict consequences, they appeared much earlier in the form of trust reduction (Wit et al., 2012; Ismail et al., 2012), dissatisfaction (Jehn & Bendersky, 2003), emotional exhaustion (Benitez et al., 2018) or reduced well-being (Kuriakose et al., 2019). These are conditions that take place at a personal and individual level prior to conflict escalation and are not taken into account by any of today's quantitative data. Our study has two main objectives. First, to establish a theory of conflict costs by clearly defining and distinguishing concepts, terms and variables. In this way, our work can serve as a fundamental building block for future research on the topic of conflict costs. Second, we introduce the measurement of conflict cost variables, which have hardly been studied so far. These are internal indirect conflict costs, which refer to costs incurred at the individual and very personal level. Here in particular, measurement is a major challenge, which we propose to circumvent in the context of wasted time. At the beginning of our research and based on extensive literature research, we defined the concept of conflict costs as well as our newly identified clusters and allocated all cost variables accordingly. In our quantitative analysis, we focus on internal indirect conflict cost variables that can be measured in the form of lost time. In order to obtain the required data, we conducted a survey with 675 participants and performed correlation testing and Kruskal-Wallis tests. We investigated how lost time is related to conflict duration, severity and cost variables. We explored different conflict durations and severities and how the time lost on internal indirect conflict costs varies among these groups. In addition, we investigated cost variables in terms of their correlation and overall time contribution. Our goal is to demonstrate that, as soon as a conflict arises, people spend time on it, mostly in a variety of different forms, instead of working on their ordinary tasks. In the discussion, we propose multiplying the lost time results with hourly salaries to come up with opportunity costs. Opportunity costs indicate how much time and money companies spend on conflicts rather than consistent value-adding activities. Our study does not aim to assess whether conflicts are bad. Rather, our aim was to show that conflicts always entail opportunity costs. In times where cost management, human capital and efficiency increases are at the center of discussion in almost any organization, we see an urgent need to start the research on conflict costs and to consider the findings in future organizational planning.

1. Theoretical foundation

1.1. Literature review

An extensive literature review found only 12 articles relevant to the topic of conflict costs (Freres, 2013). Our literature review in GoogleScholar, ScienceDirect and Ebsco with the search terms of "Conflict Costs" and "Measurement of Conflict costs" also only indicated very limited results of 10 research papers that were complimented by evaluating the bibliography of the identified papers. In the study of Freres (2013), eight themes that capture conflict costs were identified. These are medical health, individual psyche, wasted time, counterproductive work behavior, team behavior, customer relationships, human resources and organizational development, followed by legal and dispute costs (Freres, 2013). They were able to obtain quantitative data for four categories. Individual psyche refers to a decrease in motivation, satisfaction, commitment, and diligence. Freres (2013) identified two studies that confirmed a respective decline (Harris, 2008; Porath & Pearson, 2009). In summary, approximately half of the respondents stated that they had decreased their work effort (48%), quality (38%), and time at work (47%), whereas more than half reported losing working time because of worrying about the conflict (80%) or avoiding the defender (63%) (Porath & Pearson, 2009). Porath and Pearson (2009) stated that 66% of survey participants reported performance declines, and Harris (2008) commented on productivity reductions of 5–20%. According to Freres (2013) time can be wasted because of absenteeism, presenteeism, pretension to work, and conflict management. Different studies point out that managers lose time due to conflict involvement, which can reach 20% for managers, 18% for CEOs, 26% for middle managers (Thomas & Schmidt, 1976) 30–40% for managers (Murtha, 2005) and 38% for C-level executives (Katz & Flynn, 2013). Studies are also available on HR personnel, where HR employees spent between 1–5 hours per week on conflicts (OPP & CIPD, 2008; CPP, 2008). The comprehensive study of CPP (2008) provides data at the employee level, stating

that they lose 2.8 hours per week on conflicts and people in Germany even 3.3 hours (CPP, 2008). The theme of human resources and organizational development comprises predominantly quantitative data on turnover costs, which account for 25–240% of annual salary costs (Conbere, 2000; Kreisman, 2002). Finally, there are financial data on legal and dispute costs, such as >$100.000 per case (Murtha, 2005) or an average of £750 of legal fees and £1000 of management time (CIPD, 2011). Riaz and Junaid (2011) clustered conflict costs into direct costs, productivity costs, continuity costs and emotional costs (Levine, 1998), as well as eight hidden costs of Dana (2001). Buss (2011) established three conflict cost categories, separated into costs for an organization, employees, and clients. Additional quantitative findings are in line with the presented results, stating that American workers spend almost three hours per week on conflict, and that this number is exceeded in Germany (Toussaint et al., 2019). Despite the different categorization approaches, there are many similar conflict cost variables (see Table 1).

Table 1. Conflict cost variables

Legal Fees		Organizational Culture	
Compensation Claims	(Buss, 2011; Freres, 2013)	Unpleasant work environment	(Buss, 2011)
Legal Fees	(Freres, 2013; CIPD, 2011)	Avoidance culture	(Buss, 2011)
Fees of lawyers and other professionals	(Levine, 1998; Riaz & Junaid, 2011; Harris, 2008)	Quality and frequency of decision making	(Dana, 2001; Freres, 2013; Riaz & Junaid, 2011)
Harassment Cases	(Buss, 2011)	Less organizational citizenship behavior	(Freres, 2013)
Incivility, Grievances, Litigation, Discrimination Claims	(Freres, 2013)	Loss of ongoing relationship	(Levine, 1998; Riaz & Junaid, 2011)
		Miscommunication	(Buss, 2011)
Customers & market		Sickness	
Customer Service & customer complaint handling	(Freres, 2013)	Sickness costs	(Buss, 2011; Riaz & Junaid, 2011; Dana, 2001; OPP & CIPD, 2008; CPP, 2008; Freres, 2013)
Image, reputation & branding	(Buss, 2011; Freres, 2013)	Health insurance premium	(Freres, 2013)
Missed opportunities	(Buss, 2011)	Physical & psychological disabilities	(Freres, 2013)
Individual Consequences		Wasted Time	
Loss of Trust	(Buss, 2011; Freres, 2013)	Waste of Time/ Lost time	(Levine, 1998; Riaz & Junaid, 2011; Dana, 2001; Harris, 2008; OPP & CIPD, 2008; CPP, 2008)
Loss/ less commitment	(Buss, 2011; Freres, 2013)	Pretension to work	(Freres, 2013)
Loss/ lower motivation	(Buss, 2011; Freres, 2013; Riaz & Junaid, 2011; Dana, 2001)	Absenteeism	(Buss, 2011; Freres, 2013; CPP, 2008; Riaz & Junaid, 2011; Dana, 2001; Harris, 2008; OPP & CIPD, 2008)
Aggressive behavior, stress & loss of sleep	(Buss, 2011)	Searching for alternative employment & resignation	(Harris, 2008)
Less satisfaction, diligence & morale	(Freres, 2013)	Disruptions	(Riaz & Junaid, 2011; Dana, 2001)
Pain of being held by emotions	(Levine, 1998; Riaz & Junaid, 2011)	Time spent resolving a conflict	(Freres, 2013)
Change resistance	(Freres, 2013)	Presenteeism	(Buss, 2011; Freres, 2013)
Loss of Staff		Reduced outputs	
Difficulty to attract talent	(Buss, 2011)	Productivity loss & underperformance	(Buss, 2011; Conbere, 2000)
Departure of staff / turnovers/ loss of employees	(Buss, 2011; Dana, 2001; Freres, 2013; Riaz & Junaid, 2011; CPP, 2008; OPP & CIPD, 2008)	Only doing the minimum/ working to rules/ dropping voluntary activities	(Conbere, 2000; Harris, 2008)
Severe Consequences			
Sabotage/ Stealing	(Buss, 2011; Freres, 2013)		
Vandalism	(Freres, 2013)		
Violence	(Freres, 2013)		
Accidents	(Buss, 2011; Freres, 2013)		

1.2. Cluster development

In our research, conflict costs are the financial costs caused by conflicts that negatively affect an organization's overall financial performance. A company can either achieve its desired outcomes, but with reduced revenue due to the additional financial costs of conflict, or achieve lower outcomes due to the extra costs (Audi et al., 2009). Owing to the rather inconsistent state of literature regarding the clustering of conflict costs and a lack of precise definitions, we created and defined four new conflict cost clusters, based on newly identified cost variables. We analyzed the existing conflict costs presented in the current research (Buss, 2011; Riaz & Junaid, 2011; Freres, 2013) and evaluated whether they could be classified as conflict costs, according to our definition. Suggested cost variables, such as lower satisfaction and motivation (Buss, 2011; Freres, 2013) or conflict outcomes as the destruction of the organizational culture and disintegration of team dynamics were excluded, as no direct relationship with firm performance was found. Instead, we conclude that these are conflict consequences that result in conflict costs, such as decreased performance, productivity, and quality. In addition, we cross-checked the identified cost variables with the conflict consequences (De Dreu & Weingart, 2003; Jehn & Bendersky, 2003; Vodosek, 2017) and analyzed whether new conflict costs had to be added, which was, however, not the case, because all relevant costs were already stated in one of the existing conflict cost articles (Freres, 2013; Buss, 2011; Riaz & Junaid, 2011). We identify and present a list of all conflict cost variables in Table 2. In a second step we analyzed the cost variables for common criteria that could be used for a logical clustering approach. We identified that all costs were either internally or externally driven and could either be classified as direct or indirect costs, leading to the four clusters introduced in Table 2. This approach allowed all cost variables to be assigned to a cluster in a logical and unambiguous way. Internal direct costs are costs with a direct effect on a company's business revenue or desired outcomes, involving internal stakeholders such as employees. Managers are expected to be aware of these costs, as they can be detected by monitoring regular key performance indicators, such as revenue and quality levels. No deeper analysis or interviews are required to measure the expenses. These costs include various legal costs, such as litigation and discrimination claims, or loss of performance and quality.

Table 2. Conflict cost clusters

	Direct	Indirect
Internal	*Internal Direct* Direct effect on companies' business revenue or desired outcome and correlated to internal stakeholders	*Internal Indirect* Solely indirect effect on companies' business revenue or desired outcome and correlated to internal stakeholders
External	*External Direct* Direct effect on companies' business revenue or desired outcomes and correlated to external stakeholders	*External Indirect* Solely indirect effect on companies' business revenue or desired outcomes and correlated to external stakeholders

Table 3. Conflict costs

Internal Direct		Internal Indirect	
Legal & Dispute Costs	Vandalism	Wasted time worrying about conflict (L)	Attacking behavior (L)
Discrimination claims	Sabotage	Wasted time dealing with conflict (L)	Psychological & physical disease (L)
Grievance	Performance declines	Time spent resolving conflict (L)	Sick leave (L)
Compensation settlements	Decreased Quality	Pretending to work (L)	Less diligence
Litigation	Inability to meet deadlines	Absenteeism (L)	Voluntary departure from team
Theft & Damage	Loss in productivity	Presenteeism (L)	Voluntary departure from organization
Fees of lawyers & professionals	Increased supervision costs	Decreased time at work (L)	Decreased work effort
Accidents		Avoiding behavior/ shun contact (L)	Change resistance
		Extra time gathering information (L)	Bad quality decision making
		Counter-productive work behavior (L)	No decision making
External Direct		External Indirect	
Legal suits	Customer complaint handling	Employer Reputation	Damage to brand image
Compensation claims	Loss of ongoing relationship	Difficulty to attract talent	

Note: (L) – Variables measured in terms of lost time.

Internal indirect costs indirectly affect companies' business revenues or desired outcomes and internal stakeholders. These costs are generally less visible and more difficult to measure, because they require analysis, in-depth observations, or interviews. Fewer companies are expected to possess a profound understanding of the actual costs they pay. Many of these costs are correlated with time, such as lost time, because people deal with or worry about conflict.

External direct costs demonstrate direct effects on a company's results but imply external stakeholders, such as customers. They comprise legal suits, compensation claims, and overall complaint-handling. External indirect costs have indirect impacts on a company's financial results and are triggered by external stakeholders.

2. Hypotheses formulation

The existing quantitative data on the measurement of conflict costs are far from providing a complete picture. Even in our study, it is not possible to measure all conflict costs holistically, as the measurement approaches vary widely. We deliberately focus on internal indirect conflict costs, which can be measured in terms of lost time. Here, we distinguish ourselves from the existing studies in two ways. First, we focus on the amount of time each employee spends on a conflict. This means that all respondents were personally affected by a conflict and provided their information on the time lost to an individual conflict. It is not a question of how much time managers and HR employees spend on conflict management of their employees (Thomas & Schmidt, 1976; Murtha, 2005; Katz & Flynn, 2013; OPP & CIPD, 2008). Second, we explicitly asked about different conflict cost variables compared to other studies that only asked, in general terms, how much time employees spent on conflicts (CPP, 2008). Thus, we want to show that conflict costs arise at a personal level in the form of lost time. With our hypotheses, we plan to demonstrate how much the lost time differs depending on conflict duration and severity, and how much individual cost variables contribute to the total amount of lost time.

2.1. Conflict duration and strength

An underlying assumption for all our hypotheses is that conflict demands time spent on the conflict instead of other activities (De Dreu, 2008; Toussaint et al., 2019; Freres, 2013; Levine, 1998).

There is limited research on the effects of the duration of conflict (Meier et al., 2013). However, Illies et al. (2011) have shown that conflicts lead to an immediate and short-lived negative feeling, which disappears after a few hours. This is further reinforced by the fact that daily, non-chronic, or independent conflicts have immediate consequences, in the form of emotions such as anger (Andersson & Pearson, 1999). This leads to our assumption that, even in the case of short conflicts, people spend time on conflict costs, such as worrying about a conflict or resolving it. We expect longer conflicts to be prone to a prolonged storming phase, which demands more time spent on more conflict costs for the following reasons. The storming phase, referring to interpersonal conflicts, is in a more ideal work environment overcome, followed by a period of norming and performing (Tuckman, 1965). However, researchers have already indicated that, in the case of a storming phase not being overcome, the negative consequences of conflict continue (Bettenhausen & Murnighan, 1985). Deutsch (1969) states that unresolved destructive conflict is likely to expand and escalate over time, becoming independent of the initial causes of the conflict. Expansion can involve different attributes of conflict, such as the number of motives and people involved, the costs participants are willing to accept, the size and number of issues involved, and the overall intensity of negative attitudes. Finally, this is supposed to lead to a shift away from conflict resolution towards more confrontive and competitive behavior (Deutsch, 1969). Other studies have found that conflicts have the potential to result in an incivility spiral, harm the work climate (Andersson & Pearson, 1999), or extend stress-related activations if people do not stop thinking about a conflict (Brosschot et al., 2006). The longer a conflict occurs, the more time is expected to be spent on single cost variables, and more costs are assumed to arise.

H1a: As time loss occurs over the duration of all conflicts, total time loss increases as the duration of the conflict increases.

Scientists have not yet developed a generally accepted method for measuring conflict intensity (Diederich, 2003). A widely used model are the conflict stages of Pondy (Spaho, 2013; Lebrague et al., 2020; Turner et al., 2017). Pondy (1967) defined five conflict stages, starting with latent conflict, derived from a situation of scarce resources, drives for autonomy, or divergent goals. At this stage, the conflict is not yet on the surface, but the potential for conflict is given. At this stage, we expect people to start spending time in a conflict. This time is most likely still limited and only spend on a few conflict cost variables, like worrying about a conflict. In each of the following stages, we expect employees to spend more time on conflict as the conflict becomes stronger. The second stage is perceived conflict, where the parties involved recognize a disagreement among each other, but are not yet confronted with intrapersonal or emotional components, such as anxiety or tension. In the stage of felt conflict, conflict parties start to be affected by the conflict on a personal level and feel the conflict, for example, in the form of anxiety, discomfort or stress. At this stage, the presence of several conflict cost variables is assumed. Because of emotional involvement, we assume that costs such as counterproductive work or offensive behavior begin to emerge. The fourth stage, called manifest conflict, is characterized by more severe behavioral changes and reactions, such as aggression, resistance, or even violence. Conflict aftermath represents the last conflict stage in which the conflict continues or

even intensifies until it is resolved, or the relationship ends. In the last two stages, we suppose that all costs can potentially be present and that prolonged time is lost on them.

H1b: As time loss occurs for all levels of conflict severity, the total time loss increases with the severity of the conflict.

2.2. Internal indirect conflict costs variables

Considering conflict Consequences like decreased well-being (Jehn & Bendersky, 2003; Kuriakose et al., 2019; Wit et al., 2012), performance declines (Vodosek, 2017, 2007; Puck & Pregernig, 2014; De Dreu & Weingart, 2003), reduced satisfaction (Jehn, 1997; Jehn & Bendersky, 2003; Wit et al., 2012) or increased turnover intention (Jehn & Bendersky, 2003), we expect a number of conflict costs to be triggered simultaneously. For example, in the case of the desire to leave a company, we would expect the person to reduce their time at work and, depending on the emotional involvement, to get involved in counterproductive work, sick leave or the pretension to work. In the case of decreased well-being, we would suppose that a person worries about a conflict, is involved in it, but potentially also requires more time to gather information. We could not find any scientific evidence dealing with the extent to which conflict consequences or costs can occur in isolation or in parallel. However, there are a large number of studies that describe different conflict consequences simultaneously (Jehn & Bendersky, 2003; Wit et al., 2012). We assume the same phenomenon is applicable to conflict costs. By examining the individual cost variables for possible correlations, we present confirmed results on the relationship between the variables. In our research, we state a correlation from 0.1 onwards. This reflects a small correlation, followed by a medium correlation starting at 0.3 and a large correlation of 0.5 (Cohen, 1988).

H2a: The internal indirect conflict cost variables, measured in lost time correlate.

Previous studies have focused on individual cost variables, such as legal costs (Murtha, 2005; CIPD, 2011), turnover costs (Conbere, 2000; Kreisman, 2002), or the general lost time of managers, HR staff, or employees (Katz & Flynn, 2013; CPP, 2008; Thomas & Schmidt, 1976). Here, it can be seen that the importance of individual costs differs significantly. Previously, no study has measured wasted time on such a personal level. Therefore, there are no insights into how individual cost variables behave and their contribution to the total amount. However, we assume that owing to the diversity of the individual cost variables, the respective amounts vary greatly.

H2b: The internal indirect conflict cost variables contribute differently to the overall conflict costs.

3. Methodology

3.1. Data collection

We tested the hypotheses using data gathered through an online survey distributed to German employees. The first part of the survey consisted of general demographic questions. The second part referred to a concrete conflict situation of the respondent. Each participant was asked whether they could think of a conflict situation in which they had been or were currently involved. All subsequent questions referred to the personal conflict situations of the respondents. If a person was unable to think of a conflict, participation was not possible. Survey participants were recruited via a panel provider located in Germany. In total, 1302 surveys were collected; however, 627 interviews were excluded because the members were unemployed, did not complete the survey, or they could not think of a conflict situation they had been or are currently involved in. As a result, 675 questionnaires met all the requirements and could be considered for statistical analysis. Comparing our study to similar studies, the number of participants exceeded that of many other studies (Thomas & Schmidt, 1976; Katz & Flynn, 2013; CIPD, 2011). Aiming at a confidence level of 95 percent and assuming a margin of error of 5 percent, the threshold for a representative survey of 45.3 million employed people in Germany is N = 385. Accordingly, the given sample of N = 675 can be considered as representative. In addition, we provide concrete information on how the data were collected, which is sometimes lacking in existing studies (Murtha, 2005; Conbere, 2000; Kreisman, 2002). Of the participants, 336 were women, and 339 were men. The age distribution is also evenly balanced, with only the over-60s being less represented. However, this is because of the average retirement age in Germany. Most participants (71%) were employees or managers at different hierarchical levels (24%), while only a minority (5%) were self-employed. The majority of the respondents (85%) stated that they work in small- to medium-sized companies and, roughly 15% reported working in companies with more than 10,000 employees.

Prior to the survey, a pre-test was conducted in the form of telephone interviews with 20 participants. The participants were asked to answer the questions and report any difficulties they faced in answering them. Problems ranged from technical problems to problems of understanding or definition. The results showed that no major adjustments were needed; however, some terms needed to be defined more precisely. A second round of the pre-test was not necessary, as most of the participants reported the same difficulties, and the methods of resolution had already been discussed with interviewees.

3.2. Measures and pretests

All variables used to test the hypotheses were derived from the specific conflict situations of each respondent.

Conflict duration was measured using a five-point Likert scale with only one Likert item. Respondents were

asked to rate the duration of their personal conflict on a scale ranging from very short to very long. A very short conflict duration is defined as a conflict occurring for one week or less, a short conflict with a duration of up to one month, a medium duration of 1–6 months, whereas long conflicts are defined as taking place for 6 to 12 months and very long conflicts longer than 12 months.

The measurement of conflict strength was based on the five conflict levels of Pondy (1967), reaching from very weak to very strong. A very weak conflict strength is based on the latent stage and is defined as an argument without noticeable consequences to the respondent. A weak strength is related to perceived conflict, referring to a disagreement, but with only very light consequences on the individual, such as shortly thinking about the conflict, but not yet facing any actual tension or anxiety levels. A medium conflict strength rests on felt conflict and describes conflicts, where employees are affected at an emotional level, by facing stress or anger. Manifest and strong conflict strength correlate such that individuals are faced with behavioral changes and stronger effects on their well-being. A very strong conflict can be seen as part of an aftermath conflict and describes a strong conflict that intensifies and can only be resolved by active intervention or the end of a relationship. Explanations were provided in short in the questionnaires.

We gathered data on the internal indirect conflict cost variables by measuring the time spent on a certain cost variable. Respondents were asked to rate how much time they spent within their specific conflict situation for each of the costs. This was done for the variables wasted time, time spent on the conflict, presenteeism, and different forms of less time at work up to sick leave and various forms of misbehavior (see also Table 2). The lost-time measurement was performed via a drop-down field from 0 to 50 hours. The scale named every number from 0 to 4, and then every second number was stated. The variables presenteeism, absenteeism, sick leave, and psychological and physical diseases were measured using the same scale, but in the form of days. Cronbach's alpha had a reliability coefficient of 0.9, indicating that the items were reliable.

4. Results and discussion

4.1. Data analysis

For Hypotheses 1a and 1b, we conducted Spearman's correlation test to evaluate whether a relationship was present between conflict duration or strength and internal indirect conflict costs. To test the two hypotheses, Kruskal-Wallis tests were applied using the five conflict duration categories or conflict strength categories respectively. In each case, internal indirect conflict costs represented the dependent variable. For our hypothesis testing, we used the median of lost time for all internal indirect conflict costs. Using the Kruskal-Wallis test, the aim was to evaluate whether the five groups of duration or strength deviated in terms of their overall amount of time lost. To precisely detect deviations among the groups, a post-hoc Bonferroni test was added. Hypotheses 2a and 2b focus only on internal indirect conflict costs. In the correlation matrix, using Spearman's correlation test, each internal indirect conflict cost was tested in terms of its correlation with all other costs (H2a). The means and total values of the different conflict cost variables indicate that they contribute differently to overall conflict costs (H2b). To find further statistical support for the hypothesis, we applied a Monte Carlo multinomial test to indicate whether the umber of survey replies for each cost variable differs from a normal distribution. In our case, a normal distribution means that all the survey responses per cost variable are equal.

The computed means, standard deviations, minimum, maximum, and total amount of lost time are listed in Table 3. The column "total" represents the sum of all the indicated time values by the 675 survey participants for each internal indirect conflict cost. Depending on the variable, the mean and total vary to a large extent. According to the survey results, most of the time was lost because of more severe conflict costs, such as diseases. Other costs, such as counterproductive work or pretending to work, contributed less to the overall costs. For all costs, there were participants who did not face any of the stated costs (minimum 0) and participants who expressed a maximum value of 50 hours or 50 days/ 1200 hours respectively.

Table 4. Means, Standard deviations, minimum/maximum and total amounts

	M	SD	Min	Max	Total
Wasted time due to involvement in conflict	3.96	4.16	0	50	2,944
Wasted time worrying about conflict	4.04	4.24	0	50	3,035
Pretended to work	1.94	2.59	0	50	905
Counter-productive working behavior	1.80	2.45	0	50	773
Additional time for information gathering	2.86	3.30	0	50	1,753
Lost time due to avoiding behavior	2.38	3.01	0	50	1,301
Lost time due to not listening purposely	1.64	2.04	0	50	584
Lost time due to personal attacks	2.15	3.03	0	50	1,163
Lost time due to pointing out mistakes	2.28	3.01	0	50	1,241
Less time at work	2.10	2.93	0	50	1,087
Wasted time solving a conflict	4.34	4.49	0	50	3,407
Sick leave to avoid conflict	30.22	129.51	0	1200	20,400
Psychological/ physical disease due to conflict	62.54	208.15	0	1200	42,216
Presenteeism	60.48	200.56	0	1200	40,824

The correlations of all the internal indirect conflict costs are presented in Table 5. We found consistent positive relationships among the majority of cost variables. However, the values did not exceed 0.7, indicating that all the variables could be maintained and were useful in explaining the overall conflict costs.

Spearman's correlation coefficient results indicated a general relationship between conflict duration and internal indirect conflict costs, as well as between conflict strength and cost variables. For conflict duration, the results indicated a medium (Cohen, 1988) correlation of $r_s = 0.32$, $p < 2.2e{-}16$, and for conflict strength, a medium to strong (Cohen, 1988) correlation of $r_s = 0.47$, $p < 2.2e{-}16$. We found support for Hypothesis 1a that the longer the duration of a conflict, the more time was spent on it. Most of the survey participants reported experiencing conflicts lasting up to one week or one month. The number of long conflicts was low. A Kruskal-Wallis test was used to explore the amount of lost time as the conflict duration increased from very short to very long conflicts. The test results showed that conflict duration significantly affects the overall amount of conflict costs, and that there is a significant difference between the conflict duration and the conflict cost amounts, $H(4) = 71.428$, $p = 1.134e{-}14$. Mean duration score of 5.52 is for very short conflicts, 11 for short conflicts, 15.2 for medium conflicts, 44.3 for long and 40.6 for very long conflicts (Table 6). The results of the Bonferroni post-hoc test show a significant difference between conflicts up to one week and all other conflict duration groups. As expected, in the case of short conflicts, absenteeism due to illness or to avoid conflicts was lower. In a second step, we aimed to understand which conflict cost variables caused most of the time losses per conflict duration category (Table 7). However, surprisingly these costs were still present and accounted for a significant proportion of the total costs. The remaining costs were distributed among variables, such as lost time worrying about a conflict, resolving it, or being involved in it. For

Table 5. Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Wasted time due to involvement in conflict													
2	Wasted time worrying about conflict	0.56**												
3	Pretended to work	0.26**	0.25**											
4	Counter-productive working behavior	0.27**	0.30**	0.34**										
5	Additional time for information gathering	0.52**	0.46**	0.31**	0.30**									
6	Lost time due to avoiding behavior	0.33**	0.41**	0.35**	0.35**	0.43**								
7	Lost time due to not listening purposely	0.14**	0.18**	0.36**	0.37**	0.26**	0.46**							
8	Lost time due to personal attacks	0.28**	0.38**	0.32**	0.32**	0.44**	0.44**	0.43**						
9	Lost time due to pointing out mistakes	0.35**	0.35**	0.30**	0.34**	0.46**	0.40**	0.39**	0.61**					
10	Less time at work	0.23**	0.30**	0.41**	0.32**	0.34**	0.38**	0.37**	0.33**	0.29**				
11	Wasted time solving a conflict	0.72**	0.52**	0.22**	0.24**	0.51**	0.30**	0.14**	0.33**	0.34**	0.22**			
12	Sick leave to avoid conflict	0.12**	0.21**	0.33**	0.27**	0.26**	0.39**	0.43**	0.42**	0.36**	0.48**	0.18**		
13	Psychological/ physical disease due to conflict	0.16**	0.27**	0.29**	0.22**	0.29**	0.32**	0.34**	0.44**	0.35**	0.35**	0.14**	0.64**	
14	Presenteeism	0.11**	0.26**	0.26**	0.27**	0.26**	0.32**	0.31**	0.41**	0.33**	0.33**	0.11**	0.48**	0.50**

Note: * $p < 0.05$, ** $p < 0.01$.

longer conflicts, the main cost drivers were absences due to psychological diseases or conflict avoidance. Interestingly, the amount of time spent worrying about a conflict, deliberately not listening or personal attacks, increased but did not increase dramatically even for conflicts lasting up to one year. Presenteeism is a conflict cost that is widely present for all conflict durations.

We conducted the same tests for the conflict strength Hypothesis (H1b) and only replaced conflict duration by conflict strength. We found support for this hypothesis, meaning that the total amount of lost time varied according to conflict strength. The majority of the survey participants rated their conflicts as weak-to-medium strength. The results of the Kruskal-Wallis test, $H(4) = 79.823$, $p = 2.2e{-}16$, indicate that the conflict costs per conflict strength group vary significantly. Applying a post-hoc Bonferroni test, the difference between the latent conflict strength and the remaining conflict strength groups was significant. Mean strength score of 8.69 is for latent conflicts, 5.15 for weak conflicts, 9.24 for medium conflicts, 31.6 for manifest and 79.7 for aftermath conflicts. We also performed a second step for this hypothesis by examining the mean values of individual conflict costs per conflict severity (Table 8). This picture is similar to that of conflict duration. Absence causes the most lost time, regardless of the conflict strength. However, it becomes apparent that the mean value of time people spend worrying, resolving, or being involved in a conflict is much higher in the case of aftermath conflict than in the case of all weaker conflict forms.

Table 6. Conflict duration and conflict strength

	Count	Mean	Rho	Chi-Squared	Df
Hypothesis 1a – Conflict Duration					
Conflict Duration			0.3210**	71.428**	4
Up to 1 week	317	5.52			
Up to 1 month	167	11.0			
1 to 6 months	110	15.2			
6 to 12 months	37	44.3			
Longer than 12 months	44	40.6			
Hypothesis 1b – Conflict Strength					
Conflict Strength			0.4669**	79.823**	4
Latent	83	8.69			
Weak	199	5.15			
Medium	303	9.24			
Manifest	63	31.6			
Aftermath	27	79.7			

Note: *$p < 0.05$, ** $p < 0.01$.

Table 7. Conflict duration and mean values of lost time

	Very short	Short	Medium	Long	Very long
Wasted time due to conflict involvement	2.26	3.86	5.99	9.59	12.9
Wasted time due to worrying about a conflict	2.53	3.72	4.73	10.5	15.9
Pretension to work	0.86	1.12	2.26	2.86	2.05
Counterproductive working behavior	0.69	0.71	2.05	2.35	2.8
Additional time for information gathering	1.5	2.07	3.28	5.95	8
Lost time due to avoiding behavior	0.877	1.65	2.34	5.43	6.57
Lost time due to not listening purposely	0.489	1.01	1.44	1.35	1.2
Lost time due to personal attacks	0.814	1.37	2.17	4.05	6.52
Lost time due to pointing out mistakes	0.946	1.6	2.55	3.89	5.99
Less time at work	0.836	1.62	1.93	4.43	4
Wasted time solving a conflict	2.47	5.12	6.06	11.9	15
Sick leave to avoid conflict	10.4	31.3	35.3	78.5	116
Psychological or physical disease due to conflict	24.2	49	78.8	286	162
Presenteeism	28.5	50	63.7	193	211

Table 8. Conflict strength and mean values of lost time

	Latent	Weak	Medium	Manifest	Aftermath
Wasted time due to conflict involvement	1.46	2.06	4.19	8.14	23.4
Wasted time due to worrying about a conflict	1.41	1.82	4.07	10.5	24.6
Pretension to work	1.05	0.693	1.15	2.71	5.93
Counterproductive working behavior	0.627	0.513	1.05	2.9	4.41
Additional time for information gathering	1.29	0.95	2.51	5.6	12.7
Lost time due to avoiding behavior	1.11	0.714	1.68	3.02	13.7
Lost time due to not listening purposely	0.759	0.412	0.97	1.41	2.07
Lost time due to personal attacks	0.699	0.588	1.51	3.43	11.6
Lost time due to pointing out mistakes	0.988	0.553	1.92	3.51	9.07
Less time at work	1.05	0.628	1.45	2.83	9.52
Wasted time solving a conflict	1.1	1.84	4.97	12.6	24.1
Sick leave to avoid conflict	25.2	11.6	21.8	57.1	215
Psychological or physical disease due to conflict	36.1	23.2	42	170	426
Presenteeism	48.9	26.7	41	159	334

We found support for Hypothesis 2a by performing Spearman's correlation tests for all internal indirect conflict costs measured in lost time. The minimum requirement for weak correlations between all the variables was met. However, the correlation matrix (see Table 4) presents medium to strong positive correlations for most internal indirect conflict costs, with most of the values between 0.2 and 0.5 and $p < 0.01$. This supports our assumption that conflict costs appear simultaneously instead of isolated in the form of individual costs.

In the first part of the Results section, we introduced Table 3 and the "total" column. The total amount of time lost varied significantly according to the different cost variables. While the 675 survey participants in total only lost 584 hours (which equals 24 days) due to not listening purposely, triggered by a conflict, the same participants reported that they had lost 42,216 hours (which equals 1759 days or 4.8 years) due to physical or psychological diseases. This range demonstrates that the conflict cost variables contribute differently to overall costs, supporting Hypothesis 2b. In addition, we performed a Monte Carlo multinomial test to test for normal distributions among survey responses. The test results indicated 10258185 events, 91.5269 chi^2 observations, and $p < 0.01$. The findings show that the total amount per group differs significantly from an even distribution, which means that each conflict cost variable contributes differently to overall conflict costs.

5. Discussion

We started with a definition of conflict costs, followed by a determination of cost variables and a new clustering approach. Looking at these results, to the best of our knowledge, it is the most detailed approach to present conflict costs holistically.

Considering the number of survey participants, our approach represents a very large sample size compared with many other studies (Thomas & Schmidt, 1976; Katz & Flynn, 2013; CIPD, 2011). By asking survey participants to answer all questions about a personal conflict situation, we aimed to get as close as possible to real conflicts and their time loss. We needed to rely on the participants' personal feelings, however, there were no comments about possible problems with this procedure, neither in the pretest nor in the study itself. In addition, our collected data refers to a very personal level, and we consider it advantageous to have these individual feelings and perceptions directly reflected in our data.

For our conflict categories, initial quantitative data on internal direct conflict costs are available mainly in the form of legal costs (Murtha, 2005; CIPD, 2011). There are also general findings on the amount of time employees lose due to conflict (CPP, 2008; Murtha, 2005), but it is not clear how this time is spent. The measurements are made at the level of very detailed individual cost variables to obtain information to show the exact extent to which people spend their time. As leading conflict costs, we can unambiguously point out sick leave to avoid conflicts, presenteeism, and psychological and physical diseases. This is followed by time actually spent on a conflict, either by worrying about it, dealing with it, or resolving it. Various studies have already emphasized the importance of lost time (De Dreu, 2008; Toussaint et al., 2019; Freres, 2013) due to conflicts, and we can reinforce these findings with the developed quantitative data. Further, we can add that the high correlations among the variables indicate that different cost variables are present at the same time, driving the overall costs.

Looking at the temporary aspect first, people indicated that even in cases of conflicts that lasted only up to one week, they spent an average of six hours on it. This time doubles in the case of conflicts lasting up to one month and even increases to 15 hours for conflicts of up to six months. Longer conflicts between 6 and 12 months result in 40–45 hours of time lost. It is important to emphasize

that these time figures apply to only one person. According to our definition conflicts involve two people or more, so that the time spent on a conflict is likely to double our increase even further, when considering all conflict parties. Of course, it is assumed that the second person is similarly affected. Various researchers (Bettenhausen & Murnighan, 1985; Deutsch, 1969; Andersson & Pearson, 1999) have already shown that in the case of longer conflicts that escalate, more resources, also in the form of people, are usually involved, so that the time figures can rise. Another aspect is that our data refer only to one conflict. The study results of CPP (2008) indicated that 85% of the surveyed employees said dealing with conflicts, and 29% reported doing so always or frequently. In Germany, this figure increased to 56%. These findings strengthen the assumption that many people face more than one conflict per year, which would further increase the time lost to conflict. Regarding conflict intensity, the amount of lost time is similar in the case of weak-to-medium conflicts. For all groups, a similar amount of time was spent on conflict. The time lost rises sharply with a certain escalation and reaches a stronger conflict strength.

To link lost time with financial terms, Insam's and Reimann (2009) approach was followed to multiply lost time with an average hourly salary. According to the Statistisches Bundesamt (2021), the average gross German hourly salary of a man in 2020 was 22.78€. If we multiply the six hours spent on short conflicts with the average hourly salary, this results in 137€ of conflict costs per person and per conflict. Conflicts lasting up to one month lead to costs of approximately 251€, whereas long conflicts between 6 and 12 months already cost organizations 911€ per person. By transferring time data into financial data, we present the potential costs of conflict to companies in a more tangible way. However, we want to highlight that these costs represent opportunity costs, which can cost an organization money. In addition, conflicts can yield benefits (Jehn & Bendersky, 2003; Pazos & Canto, 2013; O'Neill et al., 2013) that need to be considered.

5.1. Research and managerial implications

This study is a step forward towards holistic conflict cost measurement, relevant for academia and organizations, and is expected to increase awareness of the topic. Our research results emphasize the importance of including additional costs in the overall cost measurement. Businesses can do this using the questionnaire presented in our study to measure most indirect costs in terms of lost time and link them to average hourly wages. Thus, a broader variety of costs can be measured and used for further derivation. The results justify early conflict resolution approaches, encourage new management styles, and explain the relevance of conflict management training. In a permanent drive to stay competitive, companies are constantly looking for new ways to cut costs or stay efficient. Beyond the classical approach of production gains, the reduction of conflict costs can enable companies to outpace competitors and achieve a more sustainable competitive advantage. It is important to carefully evaluate conflicts and determine when they cause costs that should be reduced. In addition, conflicts can be consciously accepted and managed as they yield benefits. Our study identified time and strength as important variables influencing the course of a conflict and amount of conflict cost. This study can provide further inputs for managers to deal with conflicts and intervene when the intensity or duration of the conflict increases. Overall, this study should encourage academia and organizations to better investigate conflict root causes, actively manage conflicts, or present sustainable and successful conflict resolution methods. Within scientific research, the results can shed light on the continuous debate regarding whether conflicts have positive or negative effects. All conflict benefits and costs can be measured in monetary terms and presented in comparison, which enables researchers to draw unambiguous conclusions.

5.2. Limitations and future research suggestions

The first limitation of the investigation is that it was based on self-report measures instead of real group interactions. Self-reports could lead to individuals overestimating the time spend on conflicts and indicating greater time losses. Owning to the large and representative sample size and real conflicts of working individuals, the results are considered reliable. Future research should continue to study conflict costs and include observational or experimental techniques to gain greater insight and ensure a more uniform measurement by adding a researcher's perspective. Time indications could then be challenged, and the number of conflict parties considered. Still, it will never be possible to fully control the indicated information, as especially internal indirect conflict costs take place on a personal and individual level hard to measure for anyone else. In that case, it could also be beneficial to conduct the study at one company only to calculate the total amount of their conflict costs, irrespective of the conflict cost clusters. In our study, we focused on internal indirect conflict costs measured in terms of lost time, which can easily be expressed in monetary terms. The second limitation is that the research focuses on internal indirect conflict cost variables measured in lost time and do not provide a holistic cost overview. Future research should address this gap and analyze methods to measure all the conflict costs introduced in the four clusters. Most researchers differentiate relationship-, task- and process conflict (Jehn, 1997; De Dreu & Weingart, 2003) and report different effects of each conflict type. Thus, research can add this differentiation and assess the extent to which conflict costs vary across conflict types. Our study was conducted in Germany only and can be extended to other countries. Existing studies indicate that Germany has an active conflict culture with more people involved in conflicts (CPP, 2008). It can be beneficial to include other countries to see if conflict costs vary between countries and if national cultures influence the measurement itself or the results.

Conclusions

This work is the first research to take a holistic approach to the issue of conflict costs by providing clear definitions and a clear identification of variables based on previous research. We first present an approach that clearly defines conflict costs and distinguishes them from other conflict consequences, examines and categorizes conflict variables, and finally assigns them to one of four new conflict cost clusters. These are the dimensions of internal and external costs, as well as direct and indirect ones. In this way, we would like to set a basic building block for future work. We note that a single measurement approach for all conflict costs seems impossible and some focus is required. Our measurement is therefore limited to internal indirect conflict costs, which until now have been very little researched. These costs arise at a very personal and individual level and need to be measured at that level. In our study, we limit ourselves to the element of lost time by evaluating how much time people spend on conflicts instead of doing their actual work. Our study shows that even in short or rather weak conflicts, a significant amount of time is spent on it, increasing up to 45 hours in longer conflicts and up to 80 hours in stronger conflicts. It also presents that a number of different cost variables contribute to the total amount of time lost, while different types of absence cause largest losses. This is to draw the attention of both academics and businesses to the fact that conflicts, whether perceived as positive or negative, have opportunity costs that should be more carefully examined. Future research should investigate which types of conflict waste the most time and whether there are other variables that influence costs. Furthermore, this study only looks at a small fraction of the total costs, so a holistic view of costs remains to be developed.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Phyllis Dirrler and Szilárd Podruzsik. The first draft of the manuscript was written by Phyllis Dirrler and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Disclosure statement

The authors have no conflicts of interest to declare that are relevant to the content of this article.

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