The effect of mixed wage incentives on performance: an action research report*

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Abstract

The purpose of this paper is to analyse whether a mixed incentives scheme can positively influence company performance. The research report documents the design and implementation of a mixed wage incentives scheme to an apparel manufacturer in Serbia. The scheme was designed as a combination of individual- and group-based incentives with the wage fund based on group performance and allocated based on individual performance. The effects on performance were measured continuously over a period of forty-four months through labour productivity when applying individual, group, and mixed incentives, respectively. The results show that mixed incentives resulted in significant labour productivity increase, and outperformed both the individual- and group-based wage incentives schemes. The scheme promotes cooperation, team effort, information, and knowledge sharing, while maintaining individual accountability. Apart from the effect on performance, mixed incentives implementation positively affected employees' attitude towards work, their motivation to improve, and learn new skills.

Keywords: compensation; pay for performance; mixed wage incentives; labour productivity
JEL Codes: J24, J31, J33

1. Introduction

Exploring the ways of encouraging employees to achieve higher levels of performance is one of the key issues in organizational research (Spink 2000; Garbers/Konradt 2014). Financial incentives are often used to increase motivation to attain higher levels of performance (Bonner/Spirinkle 2002; Gardner/Van Dyne/Pierce 2004; Govindarajulu/Daily 2004). Numerous studies have demonstrated the incentive effects by which performance-related pay can have significant effect on performance (Johnson/Hollenbeck/Humphrey/Ilgen/Jundt/Meyer 2006; Gielen/Kerkhofs/Van Ours 2010; Pearsall/Christian/Ellis 2010; Garbers/Konradt 2014; Lucifora/Origo 2015; Pendleton/Robinson 2017; He/Li/Feng/Zhang/Stur-

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man 2021). Wage incentives, where success is rewarded and failure penalised, have been suggested as a tool that can help transition from planned economies to market economies by promoting labour market (both internal and external) mechanisms such as labour utilization and labour allocation, and enabling the accumulation of skills needed for economic advancement (Flanagan 1992; Woźniak-Jęchorek/Pilc 2020). Pay for performance (PFP) incentives are a significant motivational factor that can inspire employees to put in more effort (Millea/Fuess 2005), and estimates suggest that 90 % of employers have designed some form of incentives scheme that links employees' wage level with their performance (Gerhart/Fang 2014). PFP can be defined as 'pay that varies with some measure of individual or organizational performance' (Milkovich/Newman/Gerhart 2013:686). With the increased significance of teamwork (Kozlowski/Ilgen 2006), the question of who should be rewarded becomes more important (Garbers/Konradt 2014), and the way the incentives scheme is designed can significantly influence the effect it has on the company's operation. All incentive plans have a common feature of an 'established standard against which worker performance is compared to determine the magnitude of the incentive pay' (Milkovich et al. 2013:340). Durham and Bartol (2000) argue that there are three sources of financial stimulus that affect the way an incentives scheme can be designed, namely individual, team (or group), and organizational ones. While organizational-based incentives remain under-researched (Garbers/Konradt 2014), both individual- and group-based incentives have been researched extensively (see e.g., Rankin 2004; Rynes/Gerhart/Parks 2005; Pearsall/Christian/Ellis 2010; Barnes/Hollenbeck/Jundt/DeRue/Harmon 2011; Garbers/Konradt 2014; Nyberg/Maltarich/Abulsalam/Essman/Cragun 2018). The choice between individual- and group-based incentives is strongly influenced by the level of team task interdependence, i.e., the degree to which a group relies on coordinated effort and skills of team members (Saavedra/Earley/Van Dyne 1993; Pearsall at al. 2010). While both schemes have positive effects on performance (see e.g., Jenkins/Mitra/Gupta/Shaw 1998; Rynes et al. 2005; Nyberg et al. 2018), they are often criticized for their respective drawbacks. Individual incentives are often denounced for leading team members to focus on their personal performance and competition, detracting from cooperation and collaboration, while purely group incentives may lead to social loafing and free-riding (Shaw/Gupta/Delery 2002; Barnes et al. 2011). Mixed incentives combine the advantages of individualistic and group plans so that they should ascertain their combined effects on both team and individual effort, while seeking to address the drawbacks these plans have when implemented in isolation. Several researchers suggest a hybrid scheme that incentivizes effort at both individual and group levels (e.g., Beersma/Hollenbeck/Humphrey/Moon/Conlon/Ilgen 2003; Johnson et al. 2006; Barnes et al. 2011); however, they did not provide empirical evidence to back their claims up. On the other hand, results from em-

pirical research have been inconsistent, with some authors claiming that mixed incentives can outperform individual and group incentives (Beersma et al. 2003; Guthrie/Hollensbe 2004; Pearsall et al. 2010; Blazovich 2013), while others report worse performance under mixed incentives and possible detrimental effects (Barnes et al. 2011; Ladley/Wilkinson/Young 2015). Certain studies show that the application of mixed incentives can significantly improve performance in terms of productivity, profitability, quality of service and customer satisfaction, innovativeness, and communication, but they lack the in-depth analysis of 'why' mixed incentives affect individuals and teams (Emery/Fredendall 2002; Fredendall/Emery 2003; De Spiegelaere/Van Gyes/Van Hootegem 2018; Klindžić/Galetić 2020). Even if the studies go deeper into analysing the mechanisms that underline the influence mixed incentives have on performance (Libby/Thorne 2009; Tian/Tuttle/Leitch 2017), they are mainly performed in laboratory settings which cannot fully reflect the behaviour of employees that is likely to arise in a field setting (Nyberg et al. 2018).

The focus of this research is to document the design of a mixed incentives scheme and its implementation in an apparel manufacturer in Serbia. We measured the performance of the company under individual, group, and mixed incentives, respectively, which allowed us to examine the effects of different reward structures. The results of this study show that a mixed incentives scheme positively influences performance (measured by labour productivity), and that it can outperform individual or group incentives schemes regarding labour productivity. In addition, we tried to expand our understanding of underlying mechanisms to allow for a deeper comprehension of mixed incentives' motivational factors, and how these factors can remedy issues inherent to individual and group incentives.

The remainder of the paper is organized as follows: Section 2 gives the theoretical background of individual, group, and mixed incentives; Section 3 describes the research methodology; Section 4 presents the results of the study, followed by Section 5 with the discussion and implications; finally, Section 6 concludes the paper, and presents the limitations of the research.

2. Theoretical background

2.1 Individual and group incentives

Individual incentive plans are 'incentive compensations that are tied directly to objective measures of individual production' (Milkovich et al. 2013:682). As such, they reward individual performance, and promote individual accountability, and consequently equity, in reward distribution. When this reward is attainable and valued by employees, they should increase their individual performance (Locke/Feren/McCaleb/Shaw/Denny 1980; Pearsall et al. 2010). They are the most used incentives scheme today (Berg/Appelbaum/Bailey/Kalleberg

1996; Bayo-Moriones/Galdon-Sanchez/Martinez-De-Morentin 2017), suitable in situations when it is relatively easy to measure individual output (Gielen et al. 2010). They are useful when individual tasks are not interdependent, or when contribution to group output does not require direct interaction among team members (e.g., pooled interdependence) (Saavedra et al. 1993), and when 'speed' (or quantity, a function of effort) is prioritized over 'precision' (or quality, a function of skills) (Beersma et al. 2003). Garbers and Konradt (2014) found that individual financial incentives are positively related to performance, and while several studies show that individual incentives can significantly impact performance (Lazear 2000; Bandiera/Barankay/Rasul 2007), others report a more moderate effect (Freeman/Kleiner 2005). Individual incentives, however, have been heavily criticized for their drawbacks. Pfeffer (1998) claims that individual incentives can undermine both individual performance and the performance of the organization, subvert teamwork, and encourage short-term focus. By putting forth individual performance, individual incentives might detract workers from team performance, which can reduce the effectiveness of workers in situations where tasks require cooperation (Mohrman/Cohen/Morhman 1995). Incentivizing individual performance effectively puts employees in a competitive structure, where they perceive their goals as negatively related to those of other individuals, keep valuable information to themselves, and in extreme situations might even impair the progress of others to gain some advantage at the expense of the collective (Johnson et al. 2006). In addition, in situations where task interdependence is high, individual incentives may foster injustice and dissatisfaction as one's own performance is dependent on cooperation with other team members who might be underperformers (Garbers/Konradt 2014). Boeri, Lucifora and Murphy (2013) argue that most objective measures used in individualistic schemes deal only with part of the output, claiming that pay based on objective measures can be misleading. Milovich et al. (2013:343) indicate that this type of incentives system 'often focuses only on one small part of what it takes for the company to be successful'. This ends in employees increasing the quantity of output (speed), as they behave rationally and do more of what gets paid, but also in workers refusing to learn more tasks (Wilson 1992; Trisolin 2011; Milovich et al. 2013). On the other hand, the impact of individual wage incentives on quality (accuracy) is rather small (Burgess/Propper/Ratto/Tominey 2017). Additionally, employees may start wasting other inputs, e.g., raw materials (Flanagan 1992). Finally, individual wage plans such as piece-rate rewards reduce the willingness to suggest new production methods or support innovations for fear of subsequent adjustments of performance standards (Wilson 1992).

Employees often work within teams, where individual performance is combined to determine collective performance (Gupta/Shaw 2014; Ployhart/Nyberg/Reilly/Maltarich 2014). Group incentive plans are 'based on some measure of group

performance rather than individual performance' (Milovich et al. 2013:681). Gomez-Mejia and Balkin (1992) argue that team-based incentives are more useful in practice compared to individual-based incentives, as they are easier to administer. In addition, the authors claim that measurements at a team-based level are more reliable than at the individual level, as they optimize collective performance. In a cooperative reward structure, individuals perceive that their goals are positively related to those of other individuals in the situation, and team members tend to establish positive relations with each other, interact and help each other more, and share information on how to perform tasks in a better way (Johnson et al. 2006; Libby/Thorne 2009; De Spiegelaere et al. 2018). Literature reports several potential benefits of using group incentives, such as higher motivation and commitment, lower absenteeism and labour turnover, and greater identification of workers with organizational goals (Perkins/White/Jones 2016; Kato/Kauhanen 2018). In their extensive meta-analysis of different collective PFP types, Nyberg et al. (2018) showed that group-based incentives have a positive effect on both behavioural and perceptual (e.g., employees' attitude and teamwork, communication and knowledge transfer), and financial and operational outcomes (e.g., productivity, efficiency, and revenue). These effects have been shown to be higher in situations where tasks are more interdependent, i.e., where contribution to group output requires direct interaction among group members (e.g., sequential, reciprocal, or team task interdependence) (Lawler/Cohen 1992; Saavedra et al. 1993; Nyberg et al. 2018). Saavedra et al. (1993) argue that task interdependence should be followed by goal and feedback interdependences, and that the group performance will reach its peak in a situation where task, goal and feedback interdependence are congruent (e.g., group task interdependence requires goal setting on a team level and providing aggregated feedback). In addition, the effect on performance will be greater if the perception of task interdependence among group members is high (Christensen-Salem/Walumbwa/Hsu/Misati/Babalola/Kim 2021). More studies report performance improvement under group incentives, although the effects are not as high as with individual incentives, and they might deteriorate over time (Gielen et al. 2010; Lucifora/Origo 2015). One of the main drawbacks of group-based incentives is an increased possibility of 'free-riding' (or social loafing) due to reduced individual accountability and perceived inequity when team members contribute unequally, but receive the same reward (Nyberg et al. 2018). The possibility of free-riding is contingent on the size of the team, as larger teams have weaker bonds and fewer social interactions, while smaller teams are more likely to cooperate, and the free-riding problem is easier to identify (Ugarkovic 2007; Garbers/Konradt 2014). Possible mechanisms to remedy free-riding are, e.g., peer-pressure and mutual monitoring, which should lower the differences in performance among group members (Beersma et al. 2003). However, this performance equalization might be the result of a phenomenon known as a

'minimum effort game', where high performers lower their effort to adjust it to low performers, rather than the other way around (Ugarkovic 2007). Another potential mechanism is to increase equity in reward distribution through the introduction of an individual component to a group-based reward system (Rynes et al. 2005; Garbers et al. 2014). The higher the degree of equity introduced to a group-based scheme, the more it approximates an individual-based scheme (Nyberg et al. 2018). Another issue discussed in the literature is the cost of backing-up behaviour associated with teamwork, where backup providers neglect their own taskwork, while backup receivers tend to decrease their taskwork in subsequent tasks (Barnes/Hollenbeck/Wagner/DeRue/Nahrgang/Schwind 2008). Additionally, group-based schemes fail to capture measures such as helping and coordinative efforts (Arnold/Tafkov 2019). Bailey, Berg and Sandy (2001) argue that employees may lose some direct incentives to put more effort when a plant moves from an individual piece rate to a group piece rate or bonus system, since high performers usually earn less when they are moved into teams.

2.2 Mixed incentives

At the team level, motivational states are influenced by both individual- and group-based factors (Pearsall et al. 2010). This stresses the need for both these factors to be considered when designing an incentives scheme. Mixed incentives are hybrid incentive schemes that combine the advantages of both individualistic and group plans, while also trying to minimize their flaws. They measure and award performance on both individual and group levels (Mohrman et al. 1995). Although fairly common in practice, and intuitively appealing, the literature on mixed incentives remains scarce (Tian et al. 2017; Nyberg et al. 2018; Klindžić/Galetić 2020). Several authors suggested a hybrid scheme that motivates employees to attain higher levels of performance at both individual and group levels (e.g., Beersma/Hollenbeck/Humphrey/Moon/Conlon/Ilgen 2003; Johnson et al. 2006; Barnes et al. 2011). However, these suggestions are often without sufficient empirical evidence. In addition, many studies focus on the coexistence of individual- and group-based wage incentives rather than the proportion of total pay provided by each (Nyquist et al. 2018). Certain studies confirm that implementing mixed incentives can have comparable results regarding team performance under both strong and weak team identity (Blazovich 2013). It has been found that mixed incentives can have a direct effect on labour productivity, both in traditional groups and self-directing teams, and they can also have a positive effect on profitability and customer satisfaction (Emery/Fredendall 2002; Fredendall/Emery 2003). Klindžić and Galetić (2020) showed that a combination of individual and group incentives can positively influence both non-financial (quality of services, and innovativeness) and financial (productivity, and to a lesser extent profitability) indicators of organizational performance. De Spiegelaere et al. (2018) argue that group-based incentives can boost the

extent to which employees share ideas, but only when combined with efficient upward communication and parallel individual rewards that provide employees with a sufficient sense that their additional endeavours will prove to be worth the effort.

However, from the analysis of the broader literature it is evident that empirical results are often inconsistent. While some authors claim that mixed incentives can outperform both individual- and group-based incentives (Beersma et al. 2003; Guthrie/Hollensbe 2004; Libby/Thorne 2009; Pearsall et al. 2010; Blazovich 2013), others argue that mixed incentives are inferior regarding performance compared to group incentives (Barnes et al. 2011; Ladley et al. 2015). Barnes et al. (2011) and DeShon et al. (2004) argue that mixed incentives might lead to social dilemmas in situations where there is a choice between individual and group tasks, where workers tend to place individual interests above those of the group, and consequently work faster, but less accurately. On the other hand, Pearsall et al. (2010) argue that mixed incentives do not split team member attention between two disparate demands, while Tian et al. (2017) add that a sequential design of adding an individual component to the group component (rather than the other way around) might result in a greater focus on group objectives. Finally, Lawler and Cohen (1992) claim that combining team and individual merit pay makes sense in situations where interdependence among team members is not very high, and mixed incentives are good for the participative nature of work teams, as they motivate work teams to monitor their performance and learn about leveraging points for improving performance, while Pearsall et al. (2010) provide evidence that mixed incentives work better in teams with high levels of task interdependence. These inconsistencies can be attributed to the way mixed incentives systems are conceptualized and measured (Nyberg et al. 2018). For example, different authors propose different ways to distribute compensation under a mixed incentives scheme: group incentives generate a bonus or compensation pool at the group level, and allocate it based on individual contribution (e.g., skill level, performance, attendance, peer evaluations, etc.) (Emery/Fredendall 2002); different types of behaviour are incentivized differently, e.g., employees are motivated individually for a number of pieces and cooperatively for a number of defects (Johnson et al. 2006); the fixed part of wage is based on group performance, and the variable part on individual (or vice versa) (Johnson et al. 2006); 50 % of compensation is based on group performance, the other 50 % based on individual performance (Barnes et al. 2011). These conceptual differences make drawing conclusions challenging. In addition, inconclusive results may suggest that the effects of mixed wage incentives might be determined by the context of its application (Nyberg et al. 2018).

In addition to the general lack of literature, another drawback is scarcity of mixed incentives research in real-life environments. Mixed incentives are often

researched in laboratory settings which often suffer from severe restrictions, such as small financial motivation, inconsequential tasks, participants (often students) executing artificial tasks with no real motivation to perform, and time restrictions (Nyberg et al. 2018). Moreover, participants lack motivational forces associated with the prestige of a job, career advancement, or being fired (Nyberg et al. 2018). And although laboratory experiments provide evidence that mixed incentives positively affect performance, they usually don't provide enough data to understand the underlying mechanisms of mixed incentives and determine 'why' they affect productivity (Emery/Fredendall 2002; Fredendall/Emery 2003; Garbers/Konradt 2014).

3. Research methodology

This paper reports the implementation of a mixed incentives scheme in a real-life environment. In addition to this, it is important to determine whether the implementation is successful, and if so, how this success was achieved. Consequently, we formulated three research questions:

RQ1: How can a mixed incentives scheme be effectively implemented in practice to achieve performance improvement?

RQ2: Can mixed incentives outperform individual and group incentives in a real-life environment?

RQ3: What are some of the underlying mechanisms that define the effect mixed incentives have on performance, and how task, goal, and feedback interdependence affect the success of the scheme?

3.1 Research approach and steps

To answer the proposed research questions, a research project was undertaken in Company X that lasted for forty-four months. The research can be typified as action research, a variant of case research, since it was conducted through 'an unfolding series of actions over time in a given group' (Coughlan/Coghlan 2002). Action research was appropriate for several reasons. First, it required the engagement of the research team with the practitioners to facilitate the implementation and constant, iterative reflection of the outcomes of the proposed actions (Westbrook 1995; Reason/Bradbury 2001; Coughlan/Coghlan 2002; 2009). Second, the group members were expected to understand how and why their actions can improve the workings of the system (Coughlan/Coghlan 2002). And third, the project was considered important, and it was expected that sustainable change will come out of it (Reason/Bradbury 2001). A longitudinal approach to action research was considered important to track the implementation process in

detail and determine the sustainability of the proposed actions (Hendry/Huang/Stevenson 2013).

Action research involves cycles of diagnosis, planning, action, and evaluation of the results (Coughlan/Coghlan 2002; 2009). In this project, there were two of these cycles. The first cycle included a diagnosis of current issues in the company (baseline period), including the low productivity and morale among employees that needed to change; the planning of the new group-based wage incentives system; the action on the implementation of the new group-based wage incentives system; and the evaluation of the action outcomes. The second cycle included diagnosis based on the evaluation of previous cycle outcomes, which included short-term productivity gains that deteriorated over time, and dissatisfaction with the newly introduced group-based wage incentive scheme; the planning of the new mixed incentives scheme; the action of implementation of the new mixed incentives scheme; and the evaluation of project outcomes as reported in this paper.

According to Hendry et al. (2013), two key themes should be addressed to ensure high-quality outcomes of action research: (i) effective roles and relationships; and (ii) appropriate data collection methods. With respect to (i), the project was strongly supported by the general manager of the company, whose presence ensured commitment from both researchers and employees, and all decisions were made by mutual agreement between researchers and employees. With respect to (ii), we utilized structured data collection methods and archival data that were mainly used to diagnose current issues in the company and evaluate baseline productivity; semi-structured interviews with the foreman and workers to assess the understanding of proposed interventions and satisfaction with their implementation; semi-structured interviews with managers and minutes of meetings to capture their intentions and satisfaction with the proposed interventions; and quantitative data on performance to assess the effects of the interventions.

Labour productivity was used as an explicit measure of performance (Garbers/Konradt 2014). Labour productivity was measured for the organization as a whole, as the goal was to improve the performance on a company level. Labour productivity is calculated as a ratio of earned hours (time credited to a group of workers for each product) to actual hours (time a group of workers spends at work). Labour productivity was measured continuously throughout the project.

3.2 Selection of Company X

The research focuses on a single company which can be appropriate if it provides 'an opportunity to observe and analyse the phenomenon previously inaccessible to scientific investigation' (Yin 2017). The research was conducted over a considerable period of time and tries to explain the phenomenon in a

real-life setting, which further supports the rationale for a single case study approach (Yin 2017).

Company X (real name obscured for confidentiality reasons, all other data are real) is a *typical* large apparel manufacturer operating in Serbia and struggling with legacies of planned economy, expected to benefit from wage incentives implementation. It was established in 1948. under public ownership, and by the beginning of the project the company employed 3,174 staff working in three shifts. The company represents a team-based organization, with manufacturing divided between two manufacturing plants (Plant 1 and Plant 2). The plants are divided into three sections: cutting, sewing, and adjusting. Each section is divided into brigades (e.g., the sewing section in Plant 1 consists of nine brigades, while the adjusting section consists of four brigades) with each brigade numbering 20–25 workers. The main processes (e.g., cutting, sewing, adjusting) consist of several sequentially interdependent operations, i.e., each brigade member performs a different step of the process, and the brigade performance requires all steps to be performed successfully and in the right order. The company's main product is men's shirts, with a share of over 70 % of total production. Roughly 80 % of the production is exported through lohn jobs for commissioners from Western Europe. Lohn production typically increases the technological delay by separating the commissioner (who provides materials, and technical documentation and sets technical parameters and quality indicators for finished products) and the manufacturer (who commits himself to manufacturing products in a timely manner and according to set technical norms) (Bugnar/Mester 2008). Consequently, no technological advancements or equipment acquisitions were observed during the project, nor systematic personnel training. At the beginning of the project, the initiative for restructuring was considered, where 70 % of publicly owned capital would be offered for sale. The management of the company, together with employee representatives, analysed the situation prior to privatization, and concluded that the company should prepare itself for coming changes. Among other things, 1,304 employees were made redundant, as were a further 803 a while later, as the first privatization attempt was unsuccessful. These employees were to leave the company voluntarily. One of the main issues observed during the analysis performed by the management was low production efficiency, as well as low morale of the employees to deal with this issue, which is why it was decided that employees' effort should be incentivised in a more appropriate way, and this project was initiated.

4. Wage incentives implementation: an overview of two research cycles

4.1 Group-based incentives scheme introduction

Diagnosis of the current issues in the company

Through analysis, the company management concluded that the costs of labour were higher than the value of production. The general manager stated that the current wage scheme was often abused by employees, and that '*the company often pays money that is not earned*'. Initial analysis identified key issues such as low labour productivity and high absenteeism. According to the general manager, '*workers have sufficient skills to perform well, but are not incentivized through their wages to put more effort in*'. Production workers were individually incentivized based on the number of operations performed during the day and were uninterested in the work of their colleagues. Although factual task interdependence was high, the perception of interdependence was low, as goals were set and reported individually. The base wage was paid for standard performance (standard number of operations), based on the standard time needed to perform the operation. Workers could receive a bonus (or pay reduction), depending on the number of operations performed during the day. This type of system promoted speed over accuracy, and the case was often that while the productivity of individual workers was high (and workers were awarded for that), the productivity of the brigade as a whole was low. Effectively, the company was in a position to award high performers, while company goals were not being met. Periods when there was no work were paid as overhead. High absenteeism caused some operations not to be performed, which led to an increase in in-process inventory (often as a consequence of hoarding of the output after the operations where workers were present), and consequently longer lead times. Furthermore, there were situations where workers on key operations were absent, leading to zero throughput of the brigade.

In addition, workers were narrowly specialized, with the ability (or willingness) to perform 2–7 operations, and reluctant to switch to other operations if necessary. The total number of operations depends on the product, e.g., the process of sewing a men's shirt consists of 33 different operations in total. This lowered the flexibility of the process. Workers were reluctant to accept job enlargement (performing a larger array of operations), because they thought it might jeopardize their speed and affect their potential bonuses, in two ways. First, performing new operations implies lower speed, at least for some time until the worker becomes proficient, and consequently lower bonuses. Second, knowledge sharing is perceived to increase competition for certain operations, due to knowledge-based psychological ownership, as workers perceive that they will lose their competitive advantage since it is possible that a worker with higher speed will appear, which will negatively affect their financial reward (Zhang/Min 2021).

Additionally, knowledge hiding is more prominent in environments where perceived task interdependence is low (Fong/Men/Luo/Jia 2018).

Workers believed that their task was to come to their workplace, where they should be provided with jobs that would enable them to perform operations they are familiar with. Three informal groups of workers were recognized: the first group consisted of workers who do their work responsibly, but are uninterested in the way business is organized; the second group consisted of workers who do their work responsibly, and are interested in the way business is organized (this group strongly supported change initiatives in the company); and the third group consisted of workers who were either strong supporters of the current system, or were looking for a way potential new systems could be put to their individual use. In addition, due to the long duration of the social programme, workers that are declared redundant but were still employed at the company showed to be disinterested to improve, were acting passively at best, but often undermined other workers in their attempts to be more productive.

Planning of the new group-based wage incentives scheme

The idea behind the wage incentives scheme based on group performance of the entire brigade was to stimulate team effort on delivering finished goods, rather than performing individual operations, as this is what generates revenue on the market. The aim was to secure the output and improve the performance of brigades, and of the company as a whole, by setting goals for a group (i.e., brigade). The group incentives scheme was based on gain-sharing, with the effects being shared 50–50 between workers and the company, for several reasons. First, there is evidence that gain-sharing can have a significant impact on labour productivity (Cable/Wilson 1989; 1990). Second, gain-sharing plans can reduce absenteeism (Arthur/Jelf 1999). Third, because of the flaws of the individual incentives scheme used during the baseline period, the general manager claimed that '*the company endured losses due to paying high performance of individuals in situations where group output has been unsatisfactory, and that the part of potential gains should cover for suffered losses'*.

A group-based wage incentives scheme was discussed with workers' representatives, led by a critical team member (CTM), considered to be an exceptional worker by coworkers and management alike. At first, workers were reluctant to accept the new scheme, since the mechanisms of the scheme were not entirely clear to them, especially performance tracking and feedback. The CTM admitted that she did not fully understand the scheme, and asked '*will the proposed wage incentives scheme provide higher wages if she puts in more effort?*'. The additional question posed to researchers was '*would they implement the proposed wage incentives scheme if they owned Company X?*'. Upon receiving positive responses, she stated that as far as she was concerned '*this explanation*

is currently sufficient, that she believes the researchers and management, and that she and her co-workers are willing to behave accordingly'.

Implementation of the new group-based wage incentives scheme

Prior to the implementation of the new wage system, workers claimed they all put an equal amount of effort when performing their job, and that they will all benefit from the new system. The goals were set, and performance was measured solely on group level, for each of the brigades, which served as a basis for wage calculation. Labour productivity was measured based on the time needed to produce the output rather than the number of pieces, as different products required different amounts of time. Standard performance was determined based on average production for the year prior to project initiation. Performance that was above standard was incentivized through wages.

The performance for each of the brigades was publicly displayed, under the assumption that it will increase productivity on several accounts: (i) brigades who want to perform better will reorganize themselves in order to increase efficiency through better division of labour, training, and team-work; (ii) under performers in well-performing brigades will be identified and helped to perform better, or will be requested to leave the brigade; (iii) besides an incentive effect, the group-based wage system will have a sorting effect (see, e.g., Nyberg et al. 2018), as over performers in under-performing brigades will be motivated to improve the performance of the group, or will request to be transferred to well-performing brigade; and (iv) well-defined standards and their monitoring will enable decision making based on facts.

Evaluation of group-based wage incentives scheme implementation

The first result of the new wage system implementation was lead time reduction. According to the foreman '*it took three weeks from work order release to first finished products prior to the new wage system, while with the new wage system, it takes only three days for finished products to exit production*'. As a result of the group-based incentives scheme design, workers were interested in learning to perform all the operations, as their wage was dependent on the number of finished products.

The quantitative data showed an increase in productivity in approximately six months since the introduction of the new wage system. While many workers decided to put more effort in, the results can also be attributed to high performers taking over tasks of low performers, which lead to an increase in group output. This is the result of a more comprehensive perception of task interdependence, as workers became aware that the result, and subsequent reward, depends on the collective effort of the group. However, such a perception of task interdepen-

dence was not sufficient to sustain results which started to deteriorate over time. Although performance measurement and feedback in group-based incentive schemes were not fully understood by workers at the beginning, ways to abuse them soon became evident. In a sequential task interdependence setting it is not important who is performing the task to reach the group goal, as long as all of the tasks are completed in the correct order. As feedback is given to a group, it is hard to assess what is the individual contribution of each group member to the group goal, and whether each individual did what he or she was supposed to do. This gives an opportunity to workers to act rationally by using this situation to their individual benefit. Non-distinguishable contributions of individuals to the group led to free-riding. The issue was amplified by the relatively large size of the group, as many group members perceived their contribution to group goals as trivial. Before group incentives were introduced, the workers claimed that they were all equally contributing to the company's output, which led to the initial acceptance of the wage plan, resulting in an initial increase in labour productivity. However, there was a possibility that differences between the performance of individuals within the group could be significant. Even then, it was assumed that low performers will raise their average performance and expertise close to that of high performers (Larson/LaFasto 1989; Gordon 1992). This might be true for situations where there is a relatively high level of conscientiousness among workers, regardless of the ability of the worker to perform well. Moreover, pro-group (as opposed to pro-individual) behaviour should be dominant among group members, meaning that low performers are ready to exert greater effort, even when their ability is low (Thürmer/Kunze 2022). However, when this is not the case, as group incentives offer the opportunity to 'obscure' poor performance of individuals behind the good performance of the group, dissatisfaction of high performers might arise. Even when employees decided to engage in backing-up behaviour, this resulted in back-up receivers lowering their effort (He et al. 2021). Additionally, subjective views of back-up givers were that back-up receivers often had sufficient skills to perform well, but consciously refused to put in more effort, and in the end, they would still be rewarded if the group performed well. High performers perceived the group incentives scheme as inequitable. While the results showed that group incentives might motivate workers to put in extra effort and learn new skills in the early stages of implementation, labour productivity deteriorated over time, as claimed by Lucifora and Origo (2015). The perceived inequity of the group-based wage incentive scheme, as suggested by Nyquist et al. (2018), discouraged high performers to improve their performance further. When asked why they were not putting more effort in, as it would increase their wages, they answered: '*we have to put a significant amount of effort in, but receive only a part of the reward, as the results are distributed between all members of the group, regardless of their contribution to the goals, and the company which claims 50 % of the results. It*

is better for us to do as little as possible and conserve our energy for additional work outside of the company which is more lucrative'. This resulted in a 'minimum effort game', where high performers reduced their performance to the level of low performers. Several issues affected this outcome. First, the lack of trust was evident among the members of the brigade, with a constantly present threat that someone would choose to underperform. Although an increase in perceived task interdependence should increase opportunities for trust development (De Jong/Dirks/Gillespie 2016), the lack of trust can be attributed to three causes: (i) legacy of previous time, when perception of task interdependence was low, which had previously been related to low trust in teams (Langfred 2007); (ii) negative perception of others' abilities and effort decreased trust among team members (Rico/Alcover/Sánchez-Manzanares/Gil 2009); and (iii) obscured individual contribution. Second, because of the absence of objective individual performance indicators, as the results were reported to the group, the brigade was reluctant to single out low performers as it might upset social relationships, although subjective feeling of who they are was present. Consequently, high performers chose the strategy of non-confrontation and non-resentment.

4.2 Mixed incentives scheme introduction

Diagnosis based on evaluation of group-based wage incentives scheme implementation

Two main conclusions were drawn from the results of the implementation of the group-based wage incentives scheme: (i) only short-term productivity improvement was attained, which could not be sustained over time; and (ii) workers were dissatisfied and thought that individual contribution of each group member was not equal. There were complaints that it should be taken into account that some workers are putting in more effort than others, and that high performers are disadvantaged by the group incentives scheme. It was expected that group incentives would stimulate collective effort, but the results were different. Instead of the best possible performance being achieved by all members of the brigade, the result was a lower performance by the entire brigade. The management was facing a crisis, claiming that they '*have to deal with two issues now, as the productivity was low, and the workers are dissatisfied*'. The general manager stated that '*returning to the initial state is out of the question, that the current situation, although some success was evident in the beginning, is unsustainable, but solutions should be sought within the wage incentives framework […]. We are aware of the downsides of group wage incentives, and we should try to remedy them […]. However, we believe that setting goals at the level of the brigade should be continued, as only finished product can bring revenue to the company, and the company can pay only what is earned […]. The project should be continued until the solution is found, as this is a unique opportunity to reach*

an agreement with the workers, stabilise the company and increase chances for successful privatisation', and insisted on project continuation.

Planning of the new mixed wage incentives scheme

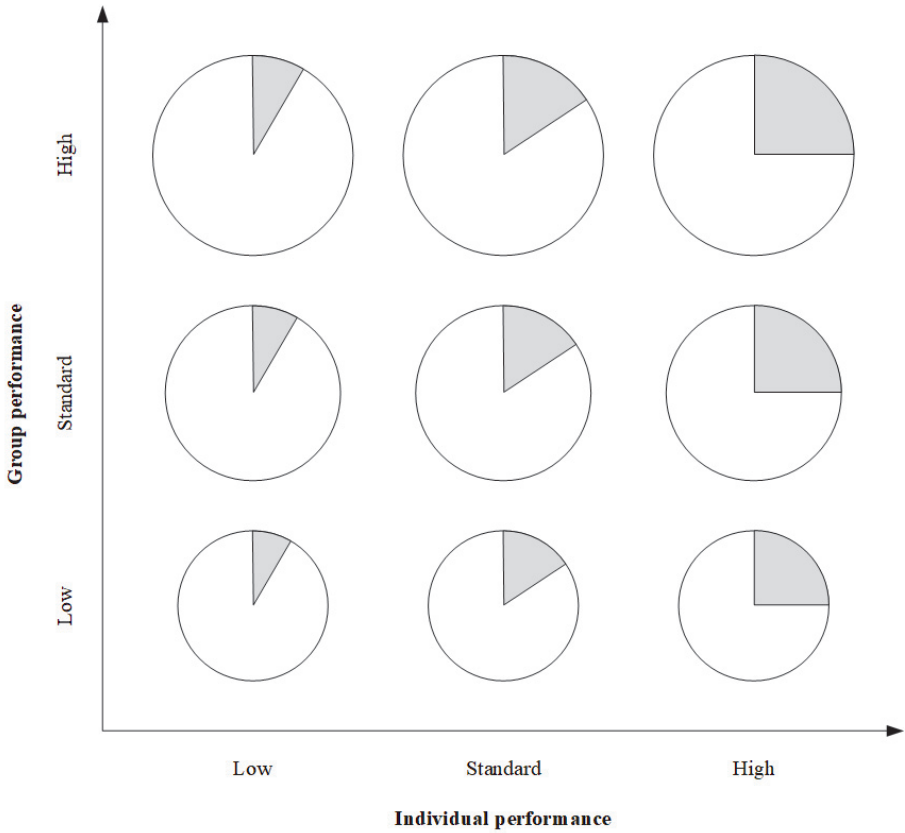
As a result of experience from the previous phase, it was decided that the group incentives scheme should undergo some changes towards a mixed incentives scheme:

- Group performance was used for calculating a wage fund for the entire brigade, considering that only a finished product, as a result of the group effort, generates sales;
- Feedback was adjusted by introducing individual performance, to capture the individual contribution of each worker to group output and split the wage fund in a more equitable way.

Figure 1 gives a graphical representation of the way the new incentives scheme was conceived[1]. The total wage fund was calculated by using group performance, represented by the surface area of circles. However, the distribution of the wage fund was based on the relative individual performance of each worker (dependent on the individual performance of a brigade member and the performance of all other members of the brigade), represented by the angle of a sector of a circle. If a brigade performs low, and an individual performs low (both group and individual output below-standard effort), both the surface area of the circle and the angle of a sector of a circle will be small, meaning that an individual will get a small portion of a small wage fund. If an individual increases performance above standard, while the brigade as a whole maintains below-standard performance, the surface area of a sector of a circle will be broader, i.e., the individual will get a larger portion of a wage fund, which is why the individual is motivated to put more effort in. If the individual maintains low performance, while the group puts more effort in, the surface area of a circle will be broader (greater wage fund), while the angle of a sector of a circle will be narrow, meaning that the individual will get only a small portion of a greater wage fund, relative to other group members. This stimulates the entire brigade to put more effort in. If both the brigade and the individual put in the above-standard effort, both the surface area of a circle and the angle of a circle section will be broader, meaning that the individual will get a larger portion from a greater wage fund. In comparison with a situation where the group underperforms, but the individual overperforms (lower right part of the figure), the angle of a circle section will be the same, but an individual's wage will be higher since the surface area of a circle (i.e., wage fund) will be greater.

1 Formal notation that further explains the proposed mixed incentives scheme is given in Appendix A.

Figure 1. Graphical representation of new mixed incentives scheme



Implementation of the new mixed wage incentives scheme

The implementation started in the fourth month of the third year of the project. The incentives system was adjusted so that a greater portion of the effects of productivity improvement was allocated to workers (the effects were shared on a 50–50 basis between workers and the company during the group-based wage incentives scheme). To track individual performance, performance measurement on a personal level had to be reintroduced, in addition to group level performance tracking. This requirement for a more detailed record keeping of both group and individual performance was perceived as a justified effort, since it introduced balance to the wage plan. It also introduced quality in performance metrics, which is positively associated with direct peer monitoring, which is in turn positively associated with higher group goal commitment (Gomez-Conde/Lopez-Valeiras/Malagueño/Oyadomari 2022). This modification led to high performers earning more compared to the group incentives scheme. Furthermore,

good workers were still interested in achieving the highest possible group performance, since this increases the wage fund of the entire sewing brigade.

In the first year of the mixed wage incentives scheme implementation, the output increased from 6.7 units during the baseline period to 9 units per present worker per day.

Evaluation of project outcomes

Labour productivity was measured for forty-four months continuously. The entire period was divided into three sub-periods (SP) to analyse the change in productivity, as well as the factors that influenced that change:

- SP1 (fourteen months): January of year one (Y1) to February of year two (Y2) – baseline period (individual incentives).
- SP2 (thirteen months): March of year two to March of year three (Y3) – group incentives scheme.
- SP3 (seventeen months): April of year three to August of year four (Y4) – mixed incentives scheme.

Figure 2 shows labour productivity in Company X for the designated period. Labour productivity for each month was measured against the first year's labour productivity average, represented with the value of 100 on *Y* axis, calculated based on the archival data from the company. The first darker column denotes the introduction of the group incentives scheme, while the second denotes the introduction of the mixed incentives scheme.

Figure 2. Labour productivity in Company X for the designated period

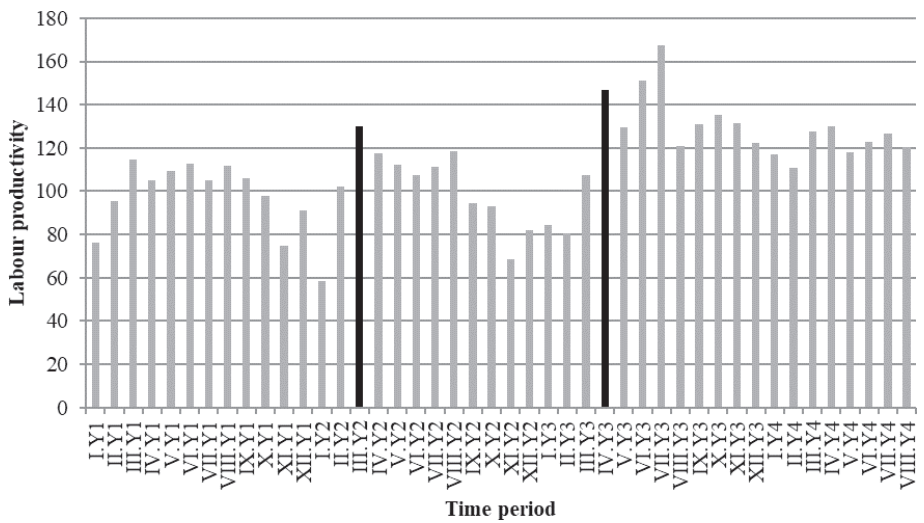


Figure 2 shows that the introduction of the group incentives scheme resulted in an initial increase in labour productivity. This period lasted for approximately six months, where workers showed enthusiasm towards the new wage plan. However, soon afterwards the workers showed dissatisfaction with the new wage plan, and perceived it as '*inequitable since some workers are putting more effort in productivity improvement than the others*'. This led to good workers shirking, levelling their performance to low performers, as a decrease in perceived 'fairness' of the scheme leads to a decrease in individual, and consequently group performance (Arnold 2021). This resulted in a productivity decrease, starting with September of year two. The subsequent introduction of the mixed incentives scheme resulted in a significant increase in labour productivity[2].

Adding individual accountability forced low performers to put in more effort, which lowered the risk of disrupting social relationships. The graphical representation of the final scheme helped employees to better understand the underlying mechanisms. Both low and high performers are motivated to increase their effort for two reasons: (i) if every member of the brigade performs well there will be more money in the wage fund to be distributed among members of the brigade; and (ii) if each worker performs well individually, the portion of wage fund he receives will be larger. This increased the performance of the entire brigade, which provided for group goals not to be jeopardized by the individualistic component of the mixed incentives scheme. The perceived equity of the scheme amplified the sorting effect in several ways. Measuring individual contribution to group goals enabled low performers to be justly divided into two groups: ones that do not have the ability to put in more effort (e.g., due to low skills), and ones that willingly refuse to put in more effort. This has been seen by high performers as an opportunity to try and make strategic use of the system. They were willing to train and share knowledge with low ability workers, as more effort from them would increase the wage fund, and to back them up if needed as this behaviour will be captured, acknowledged, and rewarded as individual contribution to group goals. Additionally, they were inclined to segregate low effort workers based on an objective measure of their performance, which limited risky interactions with unreliable group members, and facilitated communication. This approach strengthens the group and makes it more appealing for high-performers from other brigades, but it also makes high performers more appealing to high-performing brigades. While a higher perception of task interdependence was already achieved in the previous period, changes in feedback helped in strengthening it, as the relationship between the goals, effort, and the reward was more transparent and objective. In addition, the objective insight

2 To test if productivity improvement can be attributed to the introduction of mixed incentives scheme, appropriate statistical tests were performed in SPSS Statistics software package, as shown in Appendix B.

into individual contribution to group goals also contributed to higher levels of trust among group members. Moreover, both high and low performers were more open to job enrichment, job enlargement, and job rotation. As putting more effort has its limits (one can only work hard to one's limits), employees were open to initiatives that could help them improve their performance by working 'smarter', rather than 'harder', which is why continuous process improvement projects were considered for the future.

5. Discussion and implications

The results of the study show that mixed incentives can improve the performance of a company and support the claims that mixed incentives can outperform both individual- (piece-rate) and group-based (gainsharing) wage incentives by providing empirical evidence. The proposed scheme exploits the merits of both systems by effectively creating the environment of cooperation and competitiveness. While team members cooperate and see their individual goals as positively related, they also compete, as higher individual effort will ensure a larger portion of the wage fund. The individual component introduces equity in reward distribution, which motivates employees to achieve company goals, but it also lowers the possibility of free-riding (Nyberg et al. 2018). One of the main concerns regarding mixed incentives is how employees allocate their effort, which is influenced by the way they perceive task and reward interdependence. The key role in resolving this issue is the way the incentives system is designed, as the right combination of task, goal, and feedback interdependence should be achieved. The results confirm that wages should depend on both individual and group performance, as suggested by Pearsal et al. (2010). The design proposed by Johnson et al. (2006) and Barnes et al. (2011) can impose a 'social dilemma' on an employee to choose between individual and team performance, as allocating the effort to one or the other can provide at least some benefits, e.g., at least 50 % of the reward according to Barnes et al. (2011), or full reward (i.e., variable part of the wage) if the employee allocates all of the effort to individual performance, as reported by Pearsal et al. (2006). This can effectively lower the perception of task interdependence among group members and focus workers on short-term goals. Moreover, the wage plan design suggested by Pearsal et al. (2006) and Barnes et al. (2011) might not be suitable in settings where tasks are sequentially interdependent, such as Company X, as the sole focus on individual performance, with the prospects of reward, can jeopardize team goals, and discourage cooperation and helping behaviour. For example, group output can still be at risk in the case of, e.g., absent workers, if present employees decide to allocate all of their effort to individual performance and get rewarded for it. We argue that it is important that perceived task interdependence is congruent with factual task interdependence. A higher perception of task interdependence was attained with a group-based wage plan, it was congruent with goal interde-

pendence, but was not followed by adequate feedback interdependence, which influenced the sustainability of the results. Saavedra et al. (1993) argue that for sequentially interdependent tasks, the best results would be achieved if the goals are set for the entire group, but feedback is provided individually. However, this might obscure the level of achievement of group goals, effectively decrease the perception of task interdependence, and put greater focus on individual goals. Moreover, aggregate feedback during the group-based wage plan also failed, as it obscured individual contribution. The results of this study show that the best option might be to provide feedback both to a group and individually, in order to achieve balance in effort allocation. The proposed scheme extends the general proposition by Emery and Fredendall (2002), with a wage fund based on group performance, that is later allocated based on individual performance, by giving detailed insight into the design of the scheme. It presents one of the ways (i.e., based on individual contribution to group goals) a wage pool could be distributed among group members. Moreover, the graphical interpretation of the scheme (Figure 1) shows how employees' wages would behave depending on their performance, both individually and as a group. This gives a better understanding of the incentives scheme, and can help employees to decide on their own effort allocation strategy. The workers have no choice but to perform their tasks in a way that contributes to the mutual wage fund, knowing that high performance that does not benefit the mutual goal will not be recognized. This means that individual goals cannot be achieved without achieving group goals, since they are strongly connected.

The results of our study confirm claims made by Johnson et al. (2006) that the transition from a fully competitive to a fully cooperative system might be hard, as some of the team members tend to behave in a way more consistent with previous reward structures, while other team members put the fact that individual performance is obscured to their favour, by lowering their effort. Following Johnson et al. (2006), mixed incentives could be used as an intermediary step in this transition. This does not mean that the transition is unfeasible, but rather that there are some preconditions to be met before it. The transition might be more successful in situations where differences in performance among team members are relatively small to begin with, and conscientiousness of group members is on a relatively high level. Group incentives might be more effective with self-directing teams, where interdependence among team members is not formally imposed, but is more natural.

The results have several important implications. First, the paper documents the implementation of the mixed incentives wage plan, and the effects on labour productivity, which can be a useful tool for managers trying to improve the performance of their companies. Second, the transparency and equity of the proposed scheme can change employees' attitudes towards work. As results show, the workers were ready to put in more effort when this effort was recog-

nized. Moreover, the scheme promotes the acquisition of new skills, which is important as there are limits to working 'hard', which is why employees seek opportunities to work 'smart', i.e., to put less effort while obtaining the same results. Mixed incentives favour the blend of performance pay and skill-based pay over job-based pay, by rewarding an above-average performance and individual employee learning, rather than specific tasks being executed. As such, mixed incentives meet a wider array of company goals, in addition to increasing labour productivity, such as adaptation to new technology, employee advancement, etc. The final implication comes from the empirical setting of the research, namely a large company operating in a transitional economy going through a restructuring process. We believe that wage incentives in general can help companies in transitional economies to overcome legacies of planned economy in several ways. First, by tying employees' results (both on individual and group level) to company goals (number of units sold on the market). In such a way, mixed wage incentives can facilitate the transition, help companies act competitively on the market, and promote labour market mechanisms. Second, mixed incentives can be used in regions with cheap labour, in situations where increased operational costs cannot be compensated through an increase in product prices, as higher wages can be reimbursed with the effects of greater labour productivity.

6. Conclusion

Mixed wage incentives have been considered to motivate employees to attain higher levels of performance. However, the literature on mixed wage incentives remains scarce, with inconsistent research results obtained mainly in laboratory settings. In response, this study provides a full insight into the implementation of a mixed wage incentives scheme in an apparel manufacturer in Serbia. The results of longitudinal action research show that significant improvements in performance, measured through labour productivity, were obtained. Moreover, the results show that the mixed incentives scheme outperformed individual- and group-based schemes, provided the right combination of task, goal, and feedback interdependence is achieved. In addition to greater labour productivity, mixed incentives implementation positively affected employees' attitude towards work, motivation to improve, and learning new skills.

This research has several limitations. Although the longitudinal character of the study ensures the validity of the results, the focus on a single company presents a major drawback, and the generalizability of results would benefit from more similar studies. The way the mixed wage incentives scheme is designed can also impose limitations, as different approaches to incentives scheme design can yield different results. The incentives scheme is applied in a specific setting where tasks are sequentially interdependent, and future research should resolve whether the proposed mixed incentives scheme would yield similar results in

settings with different types of task interdependence (e.g., pooled, reciprocal, or team interdependencies). In addition, the effects of mixed incentives on performance were compared to specific types of individual- and group-based incentives, namely piece-rate and gain-sharing. Finally, the focus of the study was to test the ability of mixed incentives to improve labour productivity. Further research should focus on the effect of other performance measures, both financial and/or operational, as well as behavioural.

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Appendix A: Formal notation for the proposed mixed incentives scheme

Surface area of a circle (i.e., wage fund) *P* in Figure 1 is a function of standard time needed to produce one piece of a product *j*, and number of type *j* products produced, as expressed by the following relation:

$$\boldsymbol{P = f(t_j, N_j)} \quad (1)$$

Wage fund can be calculated by multiplying standard time *t* needed to produce one piece of a product *j*, and number (*N*) of type *j* products produced, for all *p* products produced by the brigade:

$$\boldsymbol{P = \sum_{j=1}^{p} t_j N_j} \quad (2)$$

The angle α of a section of a circle (i.e., part of a fund that goes to the individual) is a function of individual's performance (*IP*), but also the performance of all other members of a group:

$$\boldsymbol{\alpha = f(IP_1,\ IP_2, \ldots,\ IP_i, \ldots, IP_n)} \quad (3)$$

Angle is calculated as a ratio of performance of an individual *i* to the performance of all *n* members of the group:

$$\boldsymbol{\alpha = \frac{IP_i}{\sum_{i=1}^{n} IP_i} * 360} \quad (4)$$

Wage of each individual employee is a function of group performance (i.e., wage fund), individual performance, and hourly labour cost (*HLC*), as expressed by the following relation:

$$\boldsymbol{W = f(P, \alpha, HLC)}(5)$$

Wage of an individual is calculated as a portion of a wage fund denoted by angle α, multiplied by hourly labour cost:

$$\boldsymbol{W = \frac{P}{360} * \alpha * HLC}(6)$$

Appendix B: Formal notation for the proposed mixed incentives scheme

In order to test if productivity increase can be associated with the mixed incentives scheme, additional statistical analysis was conducted. Table 1 shows the basic descriptives for labour productivity for all three SPs.

Table 1. Labour productivity in Company X for all three sub-periods

Sub-period	Mean	Std. Deviation	N
SP1	97.186	16.7177	14
SP2	100.569	18.0888	13
SP3	129.965	14.0565	17
Total	110.850	22.0572	44

While there is a small increase in mean labour productivity in SP2, compared to SP1, there are also greater fluctuations in labour productivity in SP2 (as shown by increased standard deviation). Fluctuations are a result of initial productivity increase in the first half of SP2, a consequence of workers' enthusiasm towards the new group incentives scheme, followed by a significant decrease in productivity, a consequence of workers' dissatisfaction with the perceived inequity of the new wage plan. The results show that the highestt mean labour productivity has been achieved in SP3, after the introduction of the mixed incentives scheme. The decrease in standard deviation shows the stability of mixed incentives, exhibiting more constant effort among workers to improve productivity (Figure 2).

We opted for the Kruskal-Wallis test as a non-parametric alternative to a one-way between-groups analysis of variance. The results are given in Tables 2 and 3.

Table 2. Productivity ranks for all three sub-periods

	Sub-period	N	Mean Rank
Productivity	SP1	14	13.36
	SP2	13	16.27
	SP3	17	34.79
	Total	44	

Table 3. Kruskal-Wallis statistics for all three sub-periods

	Productivity
Chi-Square	25.726
df	2
Asymp. Sig.	.000

Results show statistically significant difference in labour productivity across all three SPs (χ^2=25.726, p=0.000), meaning that observed differences are beyond chance. The mixed incentives scheme managed to remedy some of the issues identified with individual incentives and group incentives. It enhanced the transparency of the group, by taking away the opportunity for low performance to be obscured behind the performance of the group, even with relatively large groups. It also addressed the issue of free-riding and raised conscientiousness of team members with the fact that everyone's effort will be recognized more easily.