

# THE IMPACT OF WORKING HOURS ON EMPLOYEE PRODUCTIVITY: CASE STUDY OF SABERTEK LTD, SOUTH AFRICA

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## ABSTRACT

*Improving and sustaining employee productivity has become a growing concern and challenge for organisations. Organisations overcome these challenges by focusing on employee productivity and harnessing a rich employee relationship by cultivating a conducive and happy working environment that can ensure a healthy work-life balance. The purpose of this study was to examine how the number of hours worked by employees can impact their productivity.*

*Sabertek houses 74 employees, 61 are blue-collar workers, of which 59 participated in this study. The study used the census as a sampling technique with a return rate of 97%.*

*Statistical analysis revealed that there were several significant relationships; the main relationship was between productivity and working hours (both standard and long working hours). The results revealed a positive and significant relationship between hours worked (both standard and long working hours) by an employee and their productivity. This indicates that the number of hours worked by an employee does impact their productivity. The findings varied per factor, with wages having the greatest impact on employees' productivity during both standard and long working hours, ceteris paribus. It is recommended that companies focus on employee engagement, rewarding employees, and re-evaluating employee work week schedules.*

**Keywords:** Working Hours, Productivity, Health, Stress, Well-Being, Job Satisfaction, Working Conditions, Wages.

## INTRODUCTION

The economic crises experienced in South Africa have left companies vulnerable; however, they continue to maintain high levels of production to sustain a degree of competitiveness. For companies to ensure a high level of productivity, more hours are required, and they would need to invest in their human capital. According to Dolton (2017), in some countries, employees work on average 70% more hours per year than in other countries. Achieving these high production goals entails reaching production targets while ensuring that the levels of quality are at their best so that customers are satisfied with the outputs. However, reaching these production targets is not always possible due to the many factors that can impact the production rate. This study's main factor is working hours (both standard and long hours) and its impact on productivity.

Golden (2012) found that a mutual problem recognised in all the existing research literature is that there is no lucid theory of precisely how the different working time arrangements influence employee productivity, directly or indirectly. Therefore, this study would like to seek clarity on this relationship using electronics manufacturing organisation, blue-collar employees of Sabertek, as the understudy.

The terms "blue-collar" and "white-collar" are occupational classifications that distinguish workers who perform manual labour from workers who perform professional jobs respectively (Scott, 2018). Blue-collar workers were categorised by wearing uniforms, which are blue, and worked in trade professions, white-collar workers typically wore white, button-down shirts and worked in office locations (Scott, 2018).

According to the basics conditions act of South Africa, an employee should not work more than 45 hours a week of standard hours and nine hours in any day, if the member of staff works for five days or fewer in a week (Labour Department, 2012). There has been an increase in the interest and studies generated on productivity in the workplace (Bröchner, 2017). However, there is very little research on the direct impact of working hours on Productivity in South Africa, specifically in the electronic manufacturing industry. This relationship can vary from sector to sector. Manufacturing organisations such as Sabertek have emphasized their production as this is the central context of the organisation and has a direct impact on their bottom line. There are various forms and levels of productivity which have different applications. The forms include the following: total factor productivity and labour productivity, industry-level Productivity, firm-level Productivity, and individual Productivity (Bröchner, 2017). The most common and frequently used type of productivity is labour productivity and can be measured at industry level (Bröchner, 2017).

The company policy of Sabertek stated that employees were not forced to work longer hours per week but could choose to work more hours. Considering these are wage workers who receive the minimum wage, working more hours would mean increased income and a better quality of life for themselves and their families.

Additionally, the problem is the extent and impact of these different working hours' effects on productivity. Hence management at Sabertek, needs to understand this relationship to improve employee productivity and overall performance. Therefore, the research gap is to identify an association between the number of hours worked and the worker's productivity. The research purpose was to examine how these number of working hours actually affected employees' level of productivity.

The literature presented in this study highlights common factors that indirectly link the working hours to employee productivity, which underpins the research objectives. This paper presents a broad range of relevant literature from published management journal articles, economic journals, and other relevant reports and journals. The literature highlights research studies conducted on this relationship, presenting reviews from various countries to inform the discussion and create a holistic and broader understanding of these variables' relationship.

This research aims to examine the extent to which the number of hours an employee works can actually impact their overall productivity.

To further explain this direction, one needs to understand how working hours can affect employees' well-being or stress levels, which can eventually impact their productivity at work. Sabertek Employees work eight hours a day or 40 standard hours per week, but the length of their day can increase when working overtime or longer hours when required to meet production targets. Post-work activities include waiting in peak traffic or attending personal or family care, which means getting home and starting one's home routine later. When an employee's day is increased by working overtime, this leaves less time for their resting period. Eventually, this routine starts to leave workers tired, more stressed and feeling less healthy and unsatisfied as they have less family time or exercise time. This can potentially lead to health and stress-related

problems or an unbalanced work-life frustration, which can impact how productive an individual is at work.

According to Pencavel (2016a), employees require downtime from their jobs to restore their physical, mental, and emotional capacities. If there is inadequate time to repair due to a long week, their work performance suffers. Choi (2012) cites studies demonstrating that long hours of work cause people to be more stressed, adversely affecting their mental health leading to decreased levels of productivity. Further reporting that extending working hours causes poor lifestyle behaviours and has an adverse influence on physical health outcomes, and that working long hours can be a fundamental cause of diverse social problems (Choi, 2012). In another study, Pencavel (2016a: 1) states "*A case, during which workers were required to work all seven days yielded about ten per cent less output than weeks in which the same number of hours were allocated over six days; in short, seven days labour produces only six days' output.*"

It is imperative to understand how working hours can actually influence the workers' productivity so that management can control hours worked in the best interest of their employees but still achieve maximum output or desired production targets. This study will also aid employers with the knowledge of best practices, policy development, and creating an overall environment that works in favour of both the employee and the organisation without affecting performance or production.

## PRODUCTIVITY

Productivity at the workplace has gained much interest and insight, with many studies over the years (Bröchner, 2017). Subsequently and Bröchner (2017) adds that productivity at firms is now becoming both great concern and a challenge for management within the various industries. Productivity can be described in various ways that suit the context and nature of the discussion. The simplest and common definition is the output per unit of input, which is production output per labour hours or input divided by output (Beaton et al., 2009; Koopmans et al., 2014; Choi, 2012). Similarly, Böckerman & Ilmakunnas (2012) describes labour productivity within the context of the manufacturing sector as valued-added per hours worked, adding that the index of total factor productivity is also used as an index in manufacturing.

Productivity not only influences the organisation, but it affects the overall economy at large, which leads to productivity growth in South Africa. This shows that labour productivity has consequential implications for economic growth and welfare. This is because productivity is the measure of economic performance which utilizes resources such as workers and labour hours to produce goods and services (Ali et al., 2013). The total output for an economy is measured by productivity per hour multiplied by the number of hours worked per employee multiplied by the number of employees (Fadda, 2016).

Labour productivity is the key element of this study and is described as the total output produced or sales per employee at the firm level (Heshmati & Rashidghalam, 2018). This study will acknowledge labour productivity as the volume of output produced per unit of labour input. Labour productivity is a key driver of changes in living standards but and it is also an important measurement of economic performance (OECD, 2018a). Due to the vastness of the productivity definition, there can be various ways in which it can be measured; therefore the following section highlights the measures of productivity.

## Productivity Measures

The Organisation for Economic Co-operation and Development (OECD), discusses that productivity is most appropriately measured as the volume of output generated per number of hours worked (OECD, 2018a). Organisations calculate labour productivity as the ratio between each sector value-added and the total number of hours worked (OECD, 2018a). Productivity encompasses various dimensions, which makes it difficult to characterise it in any specific way or measure all of its dimensions.

Measuring worker productivity should depend on the setting for which management collects the data (Sauer mann, 2016). Performance measures can be a determinant of productivity. Due to a lack of reliable methods to determine employees' productivity, organisations often use specific performance measures, such as how different incentives affect employees' behaviour (Sauer mann, 2016). Employees can have different working hours therefore, it can be suggested that employers consider measuring employee productivity on their observed levels of performance. Performance measures can provide detailed information about worker productivity, and with reliable performance measures, the organisations can design appropriate contracts and work schedules to improve Productivity (Sauer mann, 2016).

The drawback of measuring productivity is using an incorrect measure which can lead to distorted results and negatively affect worker productivity (Sauer mann, 2016; Berniell & Bietenbeck, 2017). Therefore, it is important to understand the key productivity measures to correctly and appropriately plan for productivity improvements. This study will not measure productivity based on production outputs but by using working hours as the determinants that influence output level.

## Working Hours

The concept of labour contribution is the total hours actually worked by every person engaged in production. Hours worked is defined as the hours actually spent on productive activities (OECD, 2018a). According to Bannai & Tamakoshi (2014), the definition of working hours is time spent on work. This discussion includes a key concept namely overtime hours. Overtime hours refers to hours worked in excess of standard hours and overtime hours which can be paid (typically at an overtime premium) or unpaid (Schank, 2015). Overtime hours in this study is regarded as long working hours. Actual hours worked includes both standard hours and overtime worked, so actual hours worked on average can surpass standard hours (Schank, 2015). This paper considers standard working hours (40 hours per week), short hours (less than 40 hours per week) and long hours (over 40 hours per week).

**Standard Working Hours:** According to Schank (2015), standard hours refers to the specified weekly working time, determined by law, collective bargaining agreement, or individual contracts. Common terminology used besides working hours includes normal working hours, standard working hours, and the standard workweek. The general standard workweek should comprise 40 hours per week, since the International Labour Organisation (ILO) established this in 1930 (Angrave & Charlwood, 2015). However, it is important to keep in mind that this standard time is not consistent throughout the world. Bannai & Tamakoshi (2014) explain that the definition of long working hours can be affected by a variation in standard working hours. An example would be the Koreans, who had the longest standard working hours (more than 40 hours per week) which was eventually reduced (Choi, 2012). Standard working hours varies both between and within countries around the world. The discussion of long

standard working hours will overlap in this section, since countries like Japan and Korea refer to long hours, not as overtime but actual standard hours worked, which is thought to be excessive.

In recent years, many countries have implemented compulsory reductions in the standard number of hours that employees work. Portugal's average number of working hours is higher compared to other European countries. Portugal reduced its standard working hours from 44 hours to 40 hours per week, while France had reduced their standard hours from 39 hours to 35 hours per week (Lepinteur, 2018). Similarly, Korea's annual working hours have reduced but are still considered to be working longer hours than their counterparts (Choi, 2012).

Due to the excessive standard working hours in Korea, the Korean government has implemented a strict ruling to reduce the number of working hours. The Labour Standard Act of South Korea allows Korean employees a maximum of 12 hours of overtime per week if agreed by both employers and employees; an infringement of this law would mean up to two years of imprisonment and a fine of approximately 10 million Won (Choi, 2012). This is R 123 782.29 in South African currency. The hours reduced from the standard 48 hours per week in 1953 to 44 hours in 1989 and finally, in 2003 the mandatory standard hours are 40 hours per week (Choi, 2012). These new mandatory hours only applied to firms with 1000 employees, but this changed in 2011 to firms with 5 or more employees (Choi, 2012).

Similarly, in Japan, working hours have been reduced partially in retort to apprehensions regarding the excessive number of hours of work between the 1980s and 1990s (Hamermesh et al., 2017). Japan decreased their standard hours of work per week from 48 hours down to 40 hours, intending to diminish employers' inducements to request longer workweeks (Hamermesh et al., 2017). The literature discussed considers standard working hours between 35 - 40 hours and long working hours as greater than 40 hours per week. This paper will discuss the parameter of long hours in the next section.

**Long Working Hours:** Conceptualising long working hours is important since many countries consider long working hours to be different as previously mentioned. Literature suggests that there are three ways to describe long working hours: firstly the hours that exceed statutory standard hours, secondly hours surpassing the maximum hours of work beyond which there are undesirable consequences on workers and thirdly hours surpassing those which workers prefer to work (Park et al., 2012). This study defines long working hours as employees working greater than 40 hours per week or 8 hours per day. Some countries define long working hours as working 50 hours a week or more, such as in Japan and South Korea, the USA (United States of America), Australia, New Zealand, and the United Kingdom (OECD, 2013).

Statistics show that close to 50% of the Korean population works long hours while New Zealand and Australia follows with 23.6% and 20% of their population respectively working excessive hours (Bannai & Tamakoshi, 2014). Lastly, France shows 14.7% of their population who work long hours, while an estimated 22.0% of workers worldwide are working greater than 48 hours/week (Bannai & Tamakoshi, 2014). Americans are known for their excessive working hours, with Latin Americans working 50.4 hours per week and the U.S. Americans work an average of 49.3 hours per week (Valente and Berry, 2016). It is clear from the statistics that individuals in the USA work longer hours than those in most of the European countries.

In 1980-2007, Korea was known to have the longest working hours, however, in 2008, Mexico became the country with the longest working hours therefore, Korea moving to second place (Bannai & Tamakoshi, 2014). According to Dolton (2017), working hours have gradually been decreasing in most countries, however, fewer working hours does not mean inferior total output or lesser productivity. The study focus is on weekly hours worked by employees.

The sections to follow will provide more insight and place into perspective the relationship between working hours and its impacts on productivity.

**Synthesising the Relationship of Productivity and Working Hours:** This section discusses the various dimensions of working hours in relation to employee productivity. According to Sauermann (2016), working hours is a direct measure of worker productivity. This direct measure of worker productivity enhances the evaluation of how the number of working hours could also affect employee performance. Golden (2012) points out a concern recognised in literature, in which there is no lucid theory of precisely how the different working times influences employee productivity, either directly or indirectly.

### **Long Working Hours and Productivity**

The influence of working hours on productivity is important to consider and understand, as this can have serious repercussions for regulating working time and managing the overall organisation (Collewet & Sauermann, 2017). Organisations can consider fluctuating workloads, due to customer demands, as a determinant of the level of output produced by employees. When the level of demand increases, work intensity will increase, therefore employees need to work longer hours to achieve production targets. This section seeks to determine the impact that long working hours would have on employee productivity.

Genda et al. (2015) highlights the correlation between the number of hours worked per employee and productivity output is synchronised with output fluctuations in several countries. In the manufacturing industry, the number of hours worked between blue-collar and white-collar employees can differ. As previously discussed, the terms "blue-collar" and "white-collar" are occupational classifications that distinguish workers who perform manual labour from workers who perform professional jobs, respectively (Scott, 2018). According to Genda et al. (2015) in 1988 white-collar employees worked a greater number of hours as opposed to blue-collar workers, but this has since changed.

It is common knowledge between employers and employees that working longer hours can improve levels of employee performance. Employees working long hours are motivated by the organisation's appraisal to notice their individual Productivity (Genda et al., 2015). Typically, white-collar workers work longer hours to prove to their managers they are hardworking (Genda et al., 2015). However, blue-collar workers work on a schedule, therefore leaving little room to control their work hours. This means fixed work schedules restricts blue-collar workers to set working hours with no affordability of flexible working hours.

There is a growing assumption that working long hours demonstrates perceived individual success and status. For example, Americans perceive working longer hours as an indicator of individual success, therefore perceiving longer working hours to be both rewarding and satisfying (Valente & Berry, 2016). Working longer hours than necessary eludes to showing one's employer their work ethic and job commitment, hoping to attain higher earnings and recognition. Excessive working hours at some point becomes risky and creates a conflict which can disrupt the quality of one's life and overall performance and Productivity (Golden, 2012).

Theoretically, there are two opposing effects of long working hours on employee productivity. First, longer hours lead to greater productivity as more hours means producing more and second, longer hours lead to fatigue, which can marginalize Productivity (Collewet & Sauermann, 2017). Similarly, Golden (2012) states that extended working hours for full-time workers often yield less output, known as diminishing marginal productivity. This means that an extra hour of work per worker could lead to a decrease in productivity.

This phenomenon is depicted in the study by academics who explores the dependent nature of productivity on working hours, describing it as a non-linear relationship (Pencavel, 2016a). A non-linear relationship means that a change in one variable does not correspond with a constant change in the other variable. The study shows the relationship between weekly output and weekly hours of work is nonlinear, the output should rise with hours, however productivity decreases as the number of hours increases (Pencavel, 2016a). This study demonstrates that long working hours would diminish employee productivity and therefore reduce output. This study's drawback is that these observations were done under the circumstances of war with munition workers.

The study showed weekly working hours and Productivity of both the 100 and 40 women who worked the same labour for 56 and 26 weeks, respectively. In this study, productivity is being measured by output and the number of hours is being measured by the number of hours worked. The study further recorded that the weekly working hours had changed due to the change in product demand, illnesses, injuries, and even material shortages (Park & Park, 2017). This shows that productivity is being influenced by other factors, regardless of the number of hours worked.

Several other authors have found that productivity was invariant to working hours and documented a relationship between productivity and working hours (Garnero et al., 2014; Eden, 2016; Lee & Lim, 2017; Lee & Lim, 2014). In theoretical studies, Garnero et al. (2014) found a non-linear relationship through estimations of the different effects for short part-time, long part-time, and full-time workers. Similarly, empirical studies by scholars showed that this nonlinear relationship existed by suggesting that there are two contrasting effects known as the "learning effect" and "fatigue effect" (Lee & Lim, 2017; Lee & Lim, 2014).

A reduction of work hours can increase productivity by reducing fatigue and permitting more leisure. However, it can also restrict learners from having enough time to be proficient or learn a skill, therefore, leading to a reduction in Productivity (Lee & Lim, 2014). This study is similar to Eden's (2016) analysis, who derived the basis of their study using week time structure, by assessing the literature on the relationship of working hours and productivity, which focused on finding an efficient way to reduce worker fatigue. Eden (2016) has focused their study on which days of the week the workers were most productive.

This fatigue effect arises as a major factor that affects most employees who work long hours. Collewet & Sauermann (2017) recently studied call centre agents and found that as the hours increased the agents' handling of average calls also increased. This showed that agents became less productive due to fatigue. The skill effect is similar to the learning effect, which improves a worker's performance (Lee & Lim, 2017). Skills improve overall output where employees work sufficiently long hours and become effective at their job (Lee & Lim, 2017). They are mentally and physically inclined towards their jobs, which leads to making fewer mistakes when operating machines, making them more proficient at their job. Here, long working hours have a positive relation to productivity. Full-time workers are more productive on an hourly basis than part-time workers which suggests that productivity is developed through practice (Lee & Lim, 2017). However, full-time workers are also more prone to losing productive time from stress and fatigue than part-time employees.

Lee & Lim (2017) recognised that a reduction in long working hours can lead to an increase in productivity, however, there is no resolve in how the changes in working hours influence productivity. Huang et al. (2002) cite empirical studies which date back to 1988 and 1997, that showed the relationship between working hours and employee productivity was used

to determine the influence of short standard working hours on employment. The following section discusses the impacts of standard working hours on employee productivity.

### **Standard Working Hours and Productivity**

The section discusses different studies to establish the relationship that exists between standard working hours and employee productivity. Studies by Park and Park (2017: 2), estimated a "*Causal effect of standard working hours on productivity, indicating that there is an increase of 1.5% of output per worker based on the standard 40-hour workweek at a manufacturing establishment of the study.*"

Suggestive evidence indicated that the output per worker increased due to the improved efficiency in the production process rather than to the growth in capital input, further implying that working hours were inefficiently long before the reduction of output (Park & Park, 2017). Furthermore, long working hours impact workers by causing dangers to their health and safety and upsetting the work-life balance (Park & Park, 2017). However, since Korea is known to have longer standard hours, a reduction in working hours for Koreans can induce a decrease in productivity, which could impact their economy's welfare.

Park & Park (2017) studies indicates that there is a distinct negative correlation between the average working hours per employee and the value added (GDP) per hour worked (labour productivity) in 35 OECD countries during 1990-2016. This implies that global countries whose standard working hours have decreased are more likely to have higher labour productivity, but this remains an assumption. However, there is no adequate evidence to conclude that shorter standard working hours would enhance productivity as the effort to reduce working hours and increase productivity can be due to other external factors (Park & Park, 2017). However, the concern of the employer is that the profitability of their business can be affected by a reduction in working hours. According to Choi (2012), the impact of reduced working time means labour cost remains high and also results in a cut in working time on actual labour productivity. More studies would need to be conducted to improve the understanding of standard working hours' impact on labour productivity.

Park & Park (2017) further analysed this relationship of working hours and productivity. Park & Park (2017) used data from Korea's mining and manufacturing survey on 11692 establishments with more than ten employees, resulting in a positive impact of the 40 hours workweek on productivity. The results showed a labour productivity increase of 1.6% for establishments with 20, 50, 100, 300 employees (Park & Park, 2017). Lastly, this standard had no impact on sectors whose average regular working hours was less than 40 hours a week (Park & Park, 2017).

The improvements in labour productivity were not clear before implementing the 40-hour workweek but became apparent after the implementation of the 40-hour workweek (Park & Park, 2017).

A Korean scholar focused on how long hours reduces labour productivity but was not conclusive about the actual relationship of working hours and labour productivity as this was due to the limitations in this study (Choi, 2012). These two studies have shown to have contrasting perceptions of long working hours and productivity. The researcher holds the view that long working hours should potentially increase the amount of output produced however with factors such as fatigue setting in this would eventually decrease productivity at some given point in time.

However, Choi (2012) cited from previous research that labour productivity is low despite long actual/standard hours worked. Research showed that labour productivity in Korea per hours



worked (average hours worked) is 61.9% and places Korea 28th amongst the other Organisation for Economic Co-operation and Development (OECD) countries (Choi, 2012). However, these findings lead the researcher to question whether a reduction of hours worked will improve productivity sizeably, also since labour work time reduced from six days to five days there needed to be more motivation for employees to be productive (Choi, 2012).

A point to note is that if five working hours were added to 35 standard hours, the impact of productivity outputs would differ from an extra five hours being added to a standard workweek of 48 hours (Pencavel, 2014). There is a popular and growing belief that working shorter hours will increase productivity, but it can only influence individuals' quality of life. This leads the researcher to the understanding that multiple thresholds exist between the linkage of working hours and productivity. There are opposing thoughts on work hour reductions of standard hours, however, the common conclusion that working hour reductions will not significantly impact productivity. These studies reveal that the initial level of work hours plays a critical role in the extent to which the firm would see an increase in Productivity (Lee & Lim, 2014).

Organisations in some countries like Hong Kong and Japan, they believe working long hours enables a competitive edge. Man and Ling (2014) argue that longer standard hours can affect Hong Kong's business competitiveness in the world. Thus, empirical research based on the relationship between working hours and productivity has grown, since there are increased concerns over the impacts of working long hours on workers' health and Productivity (Man & Ling, 2014). This indicates that Hong Kong has a preconceived notion that regular working hours might not be suitable for all business organisations and can affect workers' efficiency and productivity.

Shorter workweeks attribute to solving the working hours issues, however, that is not applicable in all cases especially with blue-collar workers. In manufacturing, blue-collar workers are paid hourly. In contrast, there is a greater possibility for white-collar employees to have flexible working hours and be able to reschedule their working hours than for blue-collar workers (Genda et al., 2015). Blue-collar employees who work in factories environments have a greater restriction on their time schedules, and neither the firms nor employees have the liberty to change the work hours in this setting.

The relationship between the two variables can be biased, as there are various influencing factors that could affect both working time and Productivity (Collewet & Sauermaun, 2017). This suggests that working hours and productivity should not be considered in isolation for a realistic outcome of the study.

## **RESEARCH METHODOLOGY**

The research design of this study followed a case study approach using quantitative analysis methods. The research was deductive and correlational. A quantitative research design is useful when a researcher aims to identify factors that influence an outcome, studies an intervention, or attempts to uncover the best predictor of outcomes (Creswell, 2014). The time frame was cross-sectional, and research was conducted on 59 out of the 61 blue-collar employees at Sabertek, using a self-administered questionnaire. Sabertek houses a total of 74 employees with 61 blue-collar workers. The sampling frame included all blue-collar employees were recruited to participate in the study, receiving a return rate of 97%, with only two employees being absent during the study.

A research instrument is a tool used to gather primary data, and in quantitative studies can be in the form of surveys, questionnaires, tests, and experiments (Kothari, 2004). This study was

conducted using a survey method. A survey method allows for the collection of standardised data from large sample sizes and is highly feasible to collect and analyse the data (Saunders, 2016). A questionnaire has the ability to yield data that is valid, reliable, and practical in its application (Kothari, 2004). The questionnaire was the main tool utilised in this study to collect data and was designed by the researcher. A structured process was adopted to design this instrument, which included reviewing the relevant literature and identifying ways of measuring productivity and addressing all objectives of the research study.

Testing instrument validation and reliability is important. Validity in quantitative research refers to drawing meaningful and valuable inferences from the survey instrument, while reliability refers to whether all the constructs are consistent with item responses and whether there was consistency with test administration and scoring (Cresswell, 2014). To test a score of reliability, statistics uses the coefficient alpha or Cronbach alpha. According to Morera and Stokes (2016), the Cronbach alpha is used to ascertain the internal uniformity or average correlation of items in a survey instrument to measure its reliability. The rule of thumb suggests that a coefficient with values exceeding 0.70 indicate adequate internal reliability (Morera and Stokes, 2016). The study's reliability ranged from 0.6 to more than 0.7, except for wages that were 0.5, which is considered acceptable as the questionnaire was newly constructed. The overall reliability of the questionnaire is 0.72, which indicated that the questionnaire was acceptable and reliable for the study.

According to Saunders et al. (2016) prior to using the questionnaire, it will need to be tested with respondents similar to those that will complete it. A pilot test of the instrument was administered to 10% of the total population, which was seven blue-collar workers in a different manufacturing organisation, to determine the appropriateness, reliability, and relevance of the questionnaire.

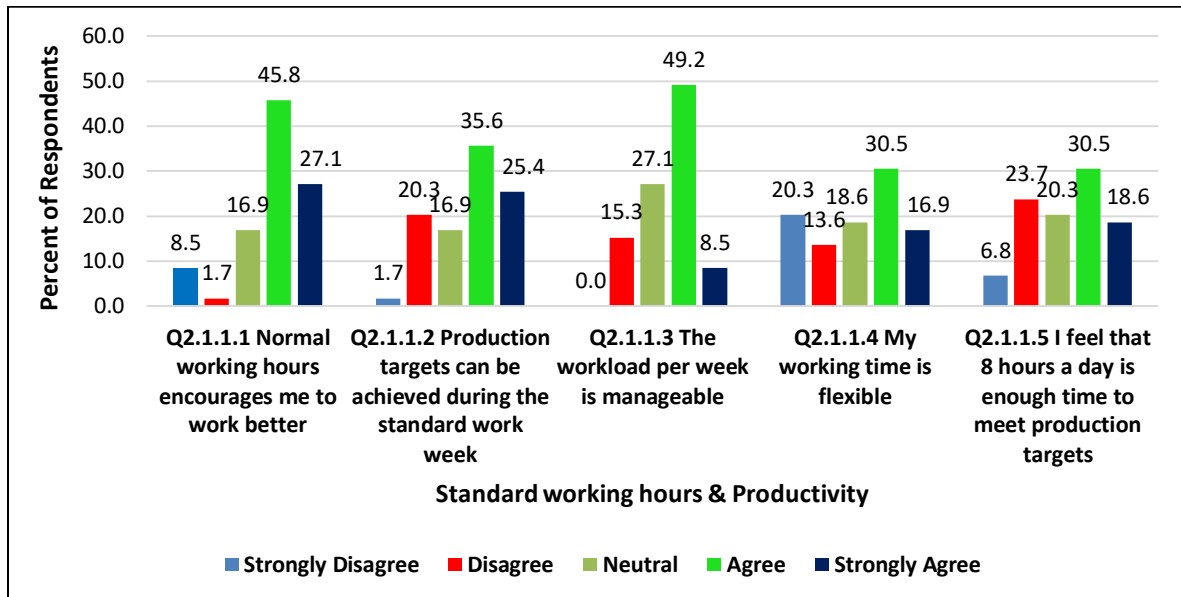
The raw data was checked and cleaned using a computer software package, SPSS (Statistical Package for the Social Science) version 25.0. The researcher ensured that all questionnaires were completely answered before collection, which ensured the likelihood of high-quality results. The analytical process used descriptive and inferential statistical techniques. Statistical techniques used to analyse the data and find the nature and direction of the relationships and statistical significance included: Chi-square ( $\chi^2$ ) test, Pearson correlation coefficient, and simple linear regression model. Chi-square test ( $\chi^2$ ) indicates whether the observed patterns were due to chance and compares the anticipated frequency and the detected frequency (Sekaran & Bougie, 2013).

This test denotes whether a significant relationship occurs between two nominal variables, besides this test the Fisher exact probability test can also show whether a relationship exists between variables (Sekaran & Bougie, 2013). The traditional approach to reporting a result necessitates a statement of statistical significance. A p-value is generated from this statistics test and the significant result is indicated with "p < 0.05," therefore, a p-value less than 0.05 is considered statistically significant. The Pearson correlation coefficient indicates the direction, strength, and significance of the bivariate relationships among all the variables that are measured at an interval or ratio level and a simple regression analysis is used where one independent variable is hypothesised to affect one dependent variable.

## ANALYSIS

### Standard Working Hours (SWH) & Productivity

This section analyses the scoring patterns and the significance of the differences tested between working standard hours per week and productivity (Figure 1).



**FIGURE 1  
STANDARD WORKING HOURS & PRODUCTIVITY**

Patterns observed was that of: "Normal working hours encourages me to work better" has total higher levels of agreement (72.9%) compared to that of statements "Production targets can be achieved during the standard workweek (60.1%)" and "The workload per week is manageable (57.7%)". There was a considerable difference of 12.8% between responses of agreement towards statements and 15.2% between statements. This means that employees have agreed that working hours encourage them to work better and be more productive. However, not as many respondents have agreed to meet production targets within the week or manageable weekly workload. The reasons for such response rates could be due to the nature of the production schedules at Sabertek and the constant change of customer demands and scope of work that is required to be manufactured. There is an indication in literature that there is a positive relationship between standard working hours and Productivity (Ali et al., 2013). However, production targets are not always met during the standard workweek. Work can be regarded by employees as intense, demanding and stressful when total work hours remains the same (Chesley, 2014). Yu (2014) supports that regardless of constant working hours, work intensification is a significant contributor to increased time pressure.

The highest percentage of total disagreement is 33.9% for statement "My working time is flexible" which means that their working time is fixed. Further, the second-highest level of disagreement, 30.5% was towards the statement "I feel that 8 hours a day is enough time to meet production targets" which means that 8 hours per day is not enough for the employees to meet all their production targets set by Sabertek. This could potentially be due to the 78% of the

workforce working at Sabertek for 0-10 years, this implies that they are new and since they are learning, this could potentially slow down their productivity. The older staff can troubleshoot problems more effectively if and when they arise or work faster and more efficiently due to their years of experience at Sabertek. Therefore, it should be suggested that they should transfer their skills to newer employees so that production targets are better met during the standard working time. The skill effect is similar to the learning effect which improves a worker's performance (Lee & Lim, 2017). Skills improve overall output where employees work sufficiently long hours and become effective at their job (Lee & Lim, 2017). They are mentally and physically inclined towards their jobs which leads to making fewer mistakes when operating machines, making them more proficient at their job.

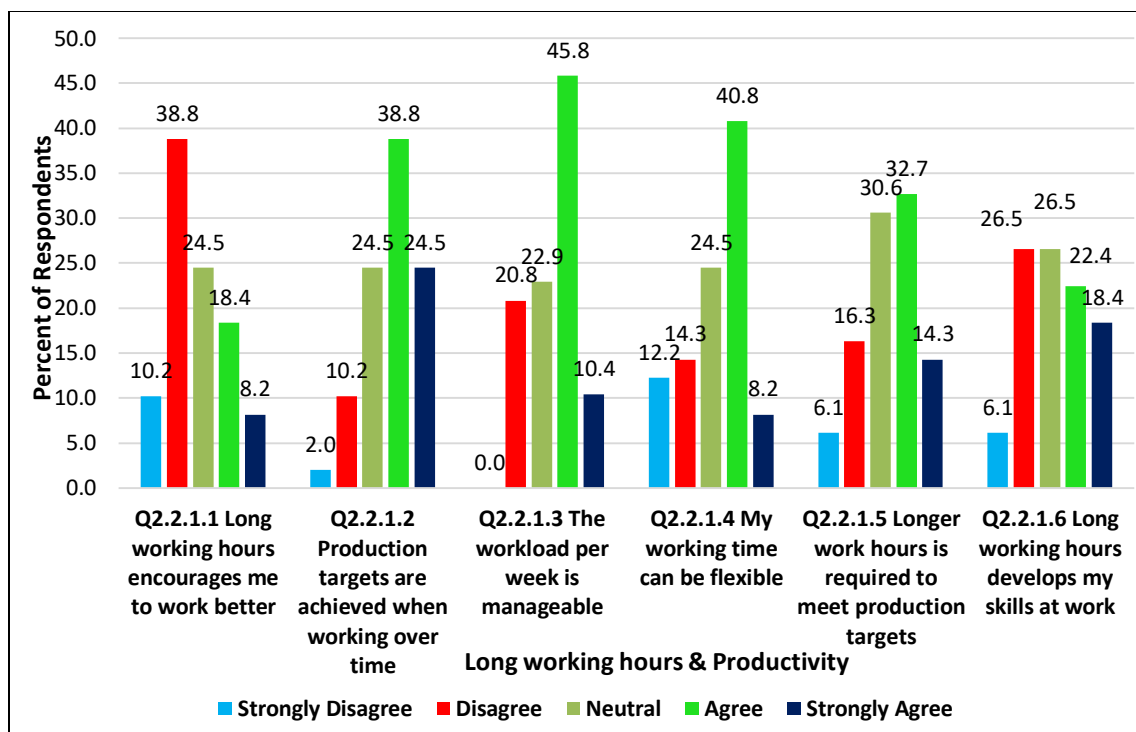
The statements: "*Normal working hours encourages me to work better*", "*Production targets can be achieved during the standard workweek*" and "*The workload per week is manageable*" (p values = 0.000, 0.001 and 0.000 respectively), have found to be significantly associated with productivity during standard working hours. The results have shown that all three statements are strongly significant. This means that the responses are not happening by chance but there is a likelihood of occurrence. This illustrates a high level of confidence, showing that employees are more likely to be encouraged to work better during their normal working hours. Thus, making them productive during normal working hours. Similarly, employees can achieve their scheduled production targets during the week and that the workload which is given can be managed during their normal working hours. It is clear that if the week's production schedule is efficiently planned, it can enable employees to be productive. Encouraging and motivating employees would reduce levels of presenteeism. Presenteeism refers to when employees are at work but not being productive (Beaton et al., 2009). The level of significance for statements and was not within the range of  $p < 0.05$  and were not significant.

The results imply that normal working hours encourages employees to work better and meet production targets since the workload per week is manageable. This further implies that workers concentrate more during standard working hours, hence higher chances of increased productivity. However, production targets are not always met due to the intensity of work that might be scheduled.

### **Long Working Hours (LWH) & Productivity**

This section analyses the scoring patterns and the significance of the differences that is tested between working longer hours per week and productivity.

The results indicate the highest rate of disagreement of responses (38.8%) were for "*The workers do not agree that long working hours makes them want to work better.*" This implies that working longer hours does not encourage employees to work any better or different. Typically, it has been established that in manufacturing productivity does not necessarily improve when hours are lengthened (Golden, 2012). Collewet & Sauermann (2017) explain that workers experience fatigue after several hours worked so that the marginal effect on an extra hour's productivity per worker decreases. In addition, working longer hours per day or per week can eventually weaken an employee's job performance, including productivity per hour (Golden, 2012).



**FIGURE 2**  
**LONG WORKING HOURS & PRODUCTIVITY**

This is followed by the second highest disagreeable response from employees (26.5%) to "Long working hours develops my skills at work," found that working the extra hours have not improved employee skills. This contrasts to literature findings that suggest that working long hours could potentially develop employees' skills. Skills improve overall output where employees work sufficiently long hours and become effective at their job (Lee & Lim, 2017). Workers are more productive hourly which suggests that productivity is acquired through practice (Lee & Lim, 2017). This could be attributed to the fact that 78% of the employees are employed for ten years or less, hence they are new and still learning.

There is, however, a greater total agreement of respondents (63.3%) to which indicates that workers can to complete the scheduled production targets. This implies that long working hours is required for employees to meet the demands of the customers. This is followed by (56.2%) and (49%) in total agreement, that the extra workload is manageable.

The high response rate towards flexible time is due to workers not being forced by management to work overtime even though there is scheduled overtime. However, it should be noted that flexible workplace practices can significantly reduce or weaken productivity in the workplace (Golden, 2012). Employees can decline to work overtime and choose when they would like to work overtime. This could be the possible reason for the high rate of overtime workers 83% versus the 17% who do not work overtime.

In addition, the Chi -test performed is statistically significant, with all the p values less than 0.05. This implies that LWH is strongly associated with productivity. Workers who work overtime can meet production targets and improve their working experience. Long working hours are necessary for any manufacturing environment to ensure that all productivity targets are met. In the case of the 11.9% of the night shift workers, their productivity is hindered by the efficiency of the machine's capacity of output. There are many factors of a work place

environment that can affect an employee's Productivity (Naharuddin & Sadegi, 2013). Factors of work environment that affects employees includes information technology and the flexible ways of organizing work processes (Naharuddin & Sadegi, 2013). Realistically, working hours alone does not impact productivity, other common factors impact this relationship in the manufacturing environment.

The pattern recognised here is that wages is the factor which most affected the staff followed by health and stress levels. Based on Figure 2 above, there is a 46% difference in response to wages followed by that of health and stress levels. There was no significant difference in health and stress levels ( $p = 0.069$ ), but there was a strongly significant difference by wage ( $p = 0.001$ ). This indicates that the employees who work the standard hours have indicated that they were not satisfied with their wages and their wages was a contributing factor to their level of productivity.

In addition, Heshmati & Rashidghalam (2018), note from a world bank enterprise survey in 2013, that wages significantly and positively affect labour productivity. Health and stress levels are shown not to affect the employee's levels of Productivity at Sabertek. This means when employees are not exposed to high levels of stress during their standard hours then they can be more productive.

In the study, when assessing perceptions of employees on work-life balance, it was found that employees strongly believe that employee wellness is important for work-life balance. However, wages seem to matter most on the hour's workers are prepared to commit in their jobs. Oswald et al. (2015) have suggested that increases in the size of monetary compensation can raise performance levels and therefore, employee productivity. However, they also suggest that sometimes non-monetary compensation can also be a motivation for some, such as recognition (Oswald et al., 2015).

Wages was found to be the most statistically significant and that productivity during working time is reliant on a better wage. This is also potentially because employees only receive the minimum wage. The solutions to working hours are to either work fewer hours for the same pay or have flexible hours, however, this would not work with the blue-collar workers. Employees should be given the choice of going home early during the week or work the standard hours for increased pay. King and van den Bergh (2017) have suggested that workers are not given the choice to work fewer hours or receive higher pay as this could reduce this issue of working overtime or just working normal hours with a higher pay.

The results reflected in this section are aligned with the responses from employees for the previous sections. This shows that workers are not happy with their salaries and only work longer hours to increase their salaries and improve their quality of life. Rewarding employees would definitely increase levels of productivity as previously established this factor is significant to the study.

## **DISCUSSION**

### **Standard Working Hours & Productivity**

There is a moderate relationship between standard working hours and productivity with a correlation of 0.449. This is followed by a relationship between standard working hours and well-being and job satisfaction 0.340 and lastly a moderate relationship between productivity and well-being and job satisfaction with a correlation of 0.405.

Meanwhile, the other factors have been found to have no relationships with working hours or productivity. The results' analysis shows a positive correlation between standard working hours and productivity ( $r = 0.449$ ) and is significant at 0.000. This means one unit of increase in standard hours will increase productivity. This is a direct proportion relation. Previously respondents have indicated that their normal working hours encourages them to work better. This means that there are greater levels of productivity achieved during eight hours per day and vice versa. Similar studies by scholars found results that indicate a positive correlation between working hours and productivity ( $r = 0.699$ ) and is significant at 0.10 (Ali et al., 2013). This shows that when working hours is not appropriate and according to the ability of the employees, their productivity is affected in manufacturing organisations (Ali et al., 2013).

In addition, the following factors: Health and stress levels, well-being and job satisfaction and working conditions and environment all have positive and significant relationships with LWH and Productivity. These relationships will be discussed in detail.

The analysis of the results shows a positive relationship between LWH and Productivity ( $r = 0.5425$ ) and significant at 0.000. This means one unit of increase in long working hours will increase productivity and vice versa. Respondents have indicated that their overtime affects levels of productivity. A decrease in the number of hours worked will reduce productivity while an increase in working hours will increase productivity at the same rate. Considering productivity increases with longer working hours, it is possible that diminishing marginal returns can occur. Collewet & Sauermann (2017) have found that productivity increases with increased hours, but at some point, it starts decreasing due to workers' fatigue.

Sauermann (2016) have shown that by increasing working time by 1% this leads to an increase in output. While Collewet & Sauermann (2017) found that output is proportional to hours worked, Pencavel (2015); Dolton et al. (2016) found evidence of decreasing returns to increasing hours. The reasons for this deviation from the study results is due to the different measures of productivity being used, also the nature of the job is different and constantly changing.

The results show that an increase in working hours results in an increase in productivity. The slope for the hours greater than 40 is slightly greater than the one for standard 40 hours. This means that the greater than 40 hours slope is showing slightly higher productivity. This implies that working long hours will increase output.

The  $R^2$  this regression is 0.275 which 27.5% and indicates that the fit is not so close to the regression line. However, there is a positive correlation between the dependent and independent variables. This implies that as one variable increases, so does the other. In addition, the significance value is less than 0.05 ( $p < 0.001$ ) that the coefficients in the equation are zero. Since  $p < 0.001$ , it indicates that the coefficient for the dependent variable is not zero, and it does significantly impact the model. This implies that the predictors accurately predict the dependent variable and an association between long working hours and employee productivity.

There is a positive correlation between working long hours and productivity. There are 60.2% of employees that work overtime more than 4 times per month from the 83% of the total staff who work overtime which indicates that workers will work overtime and produce more output. This study's previous findings have shown that happiness and job satisfaction levels are high at Sabertek, besides employees being satisfied with their working conditions. This all contributes to the reason employees are productive even when working long hours several times a month.

The study findings oppose the literature findings that indicated that long working hours lead to decreased employee productivity. This could be due to the complexity and intensity of work which could differ from the studies in the literature.

There are 83% of the staff that works overtime which would lead to increased levels of output. However, output levels are increased there is a chance of this decreasing at some given point in time. Longer hours lead to fatigue which can have a marginal effect on productivity, which is known as diminishing marginal Productivity (Collewet & Sauermann, 2017; Golden, 2012). This means that at some point an extra hour of work per worker could lead to a decrease in productivity.

Employees Productivity and the hours worked are both positively and significantly related. Employees will be productive during standard working hours and long working hours, but more productive when working over 40 hours per week. However, to enhance employee productivity-influencing factors needs to be addressed, for example ensuring a conducive working environment.

The study was conducted at Sabertek, to examine how working hours impacts employee productivity. Several other variables were considered understanding how they would influence this relationship. There were 59 out of 61 blue-collar respondents to a manually distributed a questionnaire with a 0.72 reliability factor. There were 83% of the respondents who worked overtime and 61.2% indicated their overtime worked was 4-5 times per month. Smoking and drinking behaviours were found to have no impact on employee productivity and were therefore not considered in the study. Findings also indicated that 78% have been employed for 0 to 10 years while 22% have been with the organisation for over ten years.

The 97% response rate has yielded the following results:

The relationship between standard working hours and productivity were both statistically significant and positively correlated. There was a statistical significance between wages and standard working hours and employee productivity but no correlation. Standard working hours and productivity showed positive correlations were statically significant with well-being and job satisfaction.

The relationship between long working hours and productivity were both statistically significant and positively correlated. There was a statistical significance between wages and long working hours and employee productivity. Long working hours and productivity were positively correlated and statically significant with health and stress levels, well-being and job satisfaction and working conditions and environment, however, there were no correlations with wages.

## CONCLUSIONS

Seeking strategies that will build an effective and productive workplace that engages employees is both time consuming and can vary between organisations. The study concludes that as working hours increases so does Productivity, but Productivity would decrease at some point due to the stress and health levels and other factors mentioned in the study, impacting workers ability to be productive. Blue collar workers are not given the freedom of flexible working hours or remote working freedom. Working less hours in a week could impact their overall income as the blue-collar workers earn minimum wage.

Suitable and practical recommendations have been made to Sabertek to address the shortcomings identified in the research and problem statement. Workers can be compensated by



improved remuneration policies or rewards programs which would reduce workers wanting to work longer hours than required. Effectively, Sabertek can consider revising work week schedules. Workers leave early on a Friday. Sabertek can consider changing this by allowing workers to leave earlier midweek instead. This may provide a period of rejuvenation for the workers during the week. Production outputs can be tested using this suggestion through proper implementation and structures in place. This would also allow for blue collar workers to have a work life balance and enjoy a better quality of life. In addition, employee engagement would be enhanced, and a conducive working environment would be created and sustained.

The limitations posed no direct bearing on the outcomes of the research. This study provides both clarity and informed discussions about working hours' impacts on employee's Productivity at Sabertek. Thus, the management at Sabertek can now use this rich literature to make informed decisions to effectively ensure sustained business performance through expansive operations and overall enhanced productivity of both the employees and the organisation.

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