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IMPACT OF REMOTE WORKING ON EMPLOYEE PRODUCTIVITY IN LEBANESE SMEs

Ghada Taher / Faculty of Management, Finance, and Economics, University of Sciences and Arts in Lebanon (USAL), Beirut, Lebanon/email: g.allami@usal.edu.lb

Mohamad Chami / Faculty of Business Management/ Lebanese International University/ Beirut, Lebanon / email: chmohamad4@gmail.com

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Abstract

The global workforce has undergone a profound transformation in recent years, with an increasing number of employees working remotely or with flexible schedules. This shift has been accelerated by technological advancements and the changing nature of work. The COVID-19 epidemic has also resulted in a significant shift in how individuals used to work. The move to remote working has changed the traditional workplace landscape and requires a comprehensive examination of its impact. While flexibility and autonomy are advantages of working remotely, there are potential disadvantages as well, including a possible decline in cooperation, isolation, and difficulties in controlling and monitoring worker performance. As a result, academic research and corporate concerns have shifted their attention to the effects of remote work on worker productivity. This paper explores the impact of remote working on employee productivity in Lebanon targeting Small & Medium Enterprises (SMEs) , examining both the benefits and challenges associated with this new way of working—a trend that is quite significant in today's world, even in Lebanon. Understanding the impact of remote working on productivity is crucial for establishing a healthy work environment as organizations increasingly adopt it. The findings suggest that while remote working can lead to greater flexibility and work-life balance, it also poses challenges such as communication barriers and feelings of isolation. Understanding the nuanced relationship between remote work, and employee productivity is essential for SMEs seeking to optimize their work arrangements and create an environment conducive to both individual well-being and organizational success. Providing a systematic analysis and theory-building of academic research to make these discussions more informed and evidence-based needs to be a priority. Society and technology are now at a crossroad where WFH is changing the workplace and must be better understood.

Keywords: remote, employee productivity, Lebanon, Small & Medium Enterprises (SMEs)

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1.1 Introduction

In the wake of unprecedented global events and the accelerating pace of technological advancements, the concept of remote work has evolved allowing employees to perform their tasks outside the traditional office setting (Sarika et al., 2024), hence the landscape of the modern workplace has undergone a paradigm shift. Besides, COVID-19 pandemic has impacted the whole world and negatively affected both social and business life in all countries. Therefore, organizations tried to ensure the continuity of their operations by implementing new working styles. Working from home, or remote working, was one of those new work styles, and the most critical concern questioned how it affect the productivity of employees. This paradigm shift in work dynamics raises critical questions about the implications of remote work on productivity.

What drives us to conduct this study, first after Covid-19 has ended, is that this phenomenon of working from home is still present in most companies, and Lebanon are not excluded, in another word this does not apply only to Lebanon, but is a phenomenon that now exists in many countries of the world, with remote work having become more ingrained and having been a much better experience than expected, the fluctuating nature of the working environment has not only changed how organisations operate (Charalampous et al., 2021), surveys indicate that attitudes towards remote work have shifted (Barrero et al., 2021; Brynjolfsson, Horton, Ozimek, Rock, Sharma and TuYe, 2020; Bartik, Cullen, Glaeser, Luca and Stanton, 2020; Ozimek, 2020; Bick, Blandin and Mertens, 2021), for example, the U.S. labor market experienced a massive increase in remote and hybrid work during the COVID-19 pandemic. At its peak, more than 60% of paid workdays were done remotely compared with only 5% before the pandemic. As of December 2023, about 30% of paid workdays are still done remotely (Barrero, Bloom, and Davis 2021; Federal Reserve Bank of San Francisco, 2024). People report being very satisfied with their remote work experience, being willing to give up about 5% of pay for the ability to work remotely 2-3 days per week, and being likely to look for other work should the remote work benefit be removed (Barrero et al., 2021). Similarly, (Mas & Pallais, 2017) find that call center workers are willing to take an 8% pay cut to work from home. A large-scale online survey launched by Euro found including more than 85,000 people across the European Union and beyond, suggested that almost 4 in 10 employees started e-working remotely (Euro found, 2020). Also, Umoh et al. (2020) stated that "remote work has become more prevalent." In 2021, a Gallup survey (Saad & Jones, 2021) shows that 52% of the US workforce already worked from home. In comparison, an average of 12.3% of workers in the European Union are now working remotely (Sava, 2022). Corbin (2017) suggested that gaining control over when and how working becomes essential for many individuals. Particularly, 51% of employees said that they would leave their organisation, if a new job could offer them flextime,

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

and 37% said that they would go for a new job if they would be able to have flexibility in their work location.

1.2 Research Problem

Thus, the workplace's transformational change proposes that CEOs and organisations who have previously been resistant to e-working practices (Boell, et al., 2016; Simons, 2017) will now have to reconsider and embrace them. In Bloom's (2021) research, 70% of the firms interviewed (e.g., Apple, Google, Citi, and HSBC) plan to implement hybrid working so that their employees can divide their time between collaborating with colleagues on-site and work from home (WFH). Many firms in Australia are also experimenting with the hybrid model, where workers spend two to three days a week in the office, and two to three days WFH (Productivity Commission, 2021). It appears that this model is also preferred by most workers who are able to WFH (Bloom, 2021). Also, Gifford (2022) notes that newspaper articles on WFH in the UK have increased from 150 per month pre-pandemic to almost 6,000 a month. The second motivation to conduct this study, there is a lack of such studies in the Lebanese context to the knowledge of the authors regarding the impact of remote working on employees' productivity in Lebanese SMEs.

So, a study must be conducted to find out the effect of remote work on employee productivity. This paper aims to provide a nuanced analysis of the effects of remote work on work-life balance and employee productivity in Lebanese SMEs which represent 95% of the companies in Lebanon (Ministry of Economy & Trade, 2014). Consequently, the paper seeks to contribute the ongoing discourse surrounding the efficacy and consequences of remote work, offering insights that can inform organizational policies, management strategies, and individual approaches to foster a harmonious coexistence between work and personal life. Provide a foundation for informed decision-making and the development of strategies that optimize the benefits of remote work while mitigating potential drawbacks, while remote work offers the potential for flexibility and autonomy, concerns have been raised about potential drawbacks such as decreased collaboration, isolation, and challenges in monitoring and managing employee performance.

1.3 Research Question

This study seeks to answer the question: What are the effects of remote control on employee productivity in Small & Medium Enterprises in Lebanon? The consequences of remote work on employee productivity have become a focal point of scholarly inquiry and organizational concern. A continuing debate questions the effectiveness of the unexpected change in working circumstances and enforced WFH, the challenges it can bring, as well as the potential missed opportunities due to the lack of the "watercooler moment". Working from home has challenged

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

the very definition of 'productivity' as the "hours spent on business applications" in the digital economy (Bond- Smith & McCann, 2022). The short-run and long-run labor market and productivity effects of remote work are fascinating, and, Labor, productivity, innovation, and DEI scholars no doubt will study the impact of WFH for years to come (Nieuwerburgh, 2023).

Literature review:

2.1 Remote working definition's

Although the concept of remote working has recently appeared on the agenda of the business world, it is a system implemented in the Information Technology industry before the pandemic (Gelisim et al., 2021). Telecommuting was first coined in 1973 as the substitution of telecommunications and/or computers for commuting work (Niles, 1994), with early literature focusing on the use of technology to relieve workers from the burden of commuting (Huws, 1990). Definitional issues were hindering academic research into the topic (Sullivan, 2003), hence telework offered an alternative terminology, capturing those who worked away from the office. In early 1980, the accessibility of Wi-fi and internet-based tools paved the way for workers to connect over different locations, thus, minimizing the cost and time (AlMarar et al., 2021). Moreover, the prevalent use of cloud services and access to work applications facilitates workers to perform work responsibilities outside the usual work premises (Organisation for Economic Co-operation and Development, 2011). This gives rise to alternative ways of establishing work known to many as "remote work," "telework," or "WFH" (Ali et al., 2010; Monteiro, Straume, & Valente, 2019). Later, telework was defined as "work arrangements in which an employee regularly performs officially assigned duties at home or other sites geographically convenient to the residence of the employee" by the US Office of Personnel Management in 2010 (Vega et al., 2015).

Today, the term telework is generally used to refer to a broader form of telecommuting that involves working from a range of alternative locations outside the main office, a closely related term virtual work is used to describe individuals, groups, or organisations that do not interact face-to-face because of geographic dispersion, instead they interact using technology (Allen et al., 2015). Remote working is also considered to be broader than telecommuting and denotes any form of work not conducted in the main office, and may include work at branch locations and other business units (US Office of Personnel Management, 2013).

Since the onset of the COVID-19 pandemic, the term remote working has been commonly used to refer to work conducted primarily at home due to lockdowns or social distancing measures, and is thus often used interchangeably with work from home (WFH).

2.2 Remote working benefits and challenges

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

Nowadays remote working is preferred by employees, as there are so many great reasons to embrace remote work! For instance, remote work offers employees greater flexibility (Gajendran et al., 2015; Jansen Perry et al., 2018), flexibility was one of the most cited advantages of remote working, with many valuing jobs that allow them to balance their work and personal lives more effectively, this flexibility can lead to increased job satisfaction and a greater ability to manage workloads, ultimately contributing to higher productivity levels (Timeular, 2023. Besides the other benefits was autonomy (Allen et al., 2015; Charalampous et al., 2019; Naotunna & Zhou, 2018), productivity (Gajendran & Harrison, 2007; Gajendran et al., 2015; Khalifa & Davidson, 2000; Mann & Holdsworth, 2003), job satisfaction (Charalampous et al, 2019; Gajendran & Harrison, 2007; Mulki et al, 2008), and decreased stress (Allen et al., 2015; Gajendran & Harrison, 2007). Nieuwerburgh (2022) argued that part of the positive productivity effects may be coming from employees working more hours. Or it could result from finding a better work-life balance including getting more sleep, resulting in less stress and better-quality work per hour worked.

In contrast despite the benefits associated with remote working, several drawbacks have been identified. Many have argued that remote work makes it harder for firms to establish and maintain corporate culture. WFH may also makes it harder for new/young employees to receive mentorship, develop professional norms, and absorb corporate culture. Young employees may be building less human capital as a result. If some of that human capital is embodied in the worker and not in the firm, the under-investment due to remote work represents a negative externality from remote work (Becker, 1962). A loss of corporate culture or employee mentoring may make recruiting talented employees harder. Other drawbacks, loss of communication, decreased support, the need to always be "on," and added stress due to disrupted work-life balance (Mann & Holdsworth, 2003; Bartel et al., 2012; Allan et al., 2015; Charalampous et al., 2019). The most frequently reported disadvantage is the loss of social and professional communication, which has resulted in feelings of isolation and loneliness (T. Judene et al., 2021). (Emanuel et al., 2022) find that in-person proximity increases feedback from co-workers among software engineers, which is particularly important for young and female engineers. This advantage was lost when offices closed. Online feedback is not a substitute but a complement to in-person feedback. Impaired communication may also affect the clarity of tasks and expectations (Bailey & Kurland, 2002; Jansen-Perry et al., 2018), decrease performance and productivity (Golden et al., 2008; Allen et al., 2015), and reduce job satisfaction (Cooper & Kurland, 2002; Dahlstrom, 2013).

2.3 Employee Productivity in Remote Work Settings:

Productivity is a cornerstone of organizational success, and the transition to remote work has prompted a reevaluation of traditional metrics. Examining the mechanisms through which remote

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

work may enhance or impede productivity is essential for organizations seeking to optimize their workforce in a virtual environment.

The relationship between remote work and employee productivity has been a central focus of academic inquiry (Sarika et al., 2024). Early studies explored the impact of telecommuting on job performance, emphasizing factors such as task interdependence and communication technologies (Bailey & Kurland, 2002; Gajendran & Harrison, 2007). Recent research delves into the nuanced aspects of remote work, including the role of technology, leadership, and organizational support in influencing productivity outcomes (Grant, 2013; Bloom et al., 2015). Several studies have shown that remote working can lead to increased productivity. For example, large enterprises have reported significant benefits of mandated home working, with reports of up to 70% increase in productivity for companies with above $1b revenues (CapGemini, 2020). Such gains are attributed to less commuting time, flexible work schedules, and adoption of effective virtual collaboration tools. But even for small businesses, research shows that effective remote work practices can improve productivity, especially when managers trust remote workers and allow them more autonomy (Parker et al., 2020).

According to Connect Solution, 77% of remote workers report being more productive when working from home (Timeular, 2023). Remote workers often face fewer distractions than onsite employees, allowing them to focus better on their tasks and be more productive (Stream, 2023). Additionally, remote work eliminates factors like logistics, work fatigue, transportation costs, and commute, which can drain an employee's productivity when working physically (Ibrahim, 2021). As the paper mentioned before, there is currently little data to support either way on the productivity differences between remote and on-site employees. For most jobs in the modern service-sector economy, it is challenging to attribute output to individual workers (or even to teams). Research has mostly focused on a few occupations where that attribution is easier (call centers, patent officers, software developers, scientists), but a reasonable question is how representative these industries are for jobs that are less routine or more team-based, and hence for the economy as a whole. At a sectoral level (Fernald & Li, 2021) show that all productivity growth came from industries where remote work was feasible, as measured by the (Dingel & Neiman, 2020) occupational telework ability scores. Looking at productivity during the early part of covid, (Bloom et al., 2022) find a modest decline in total factor productivity (TFP), with reductions within-firm and small gains across firms, from less productive firms shrinking. Several micro studies find gains in productivity from remote work in specific settings. (Roberts & Ying, 2015; Emanuel & Harrington, 2022) find that call center workers are more productive when they work from home. Bloom et al., (2022) find that hybrid work increases productivity among software developers in a randomized control trial in China. Lines of code written increase by 8% and self-

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

assessed productivity increases by 1.8%. Job satisfaction increases and attrition decreases by 35%. (Choudhury et al., 2021) study patent officers who are randomly assigned from a WFH to a work-from-anywhere program. The added geographic flexibility increases their productivity by 4.4%. (Aksoy et al., 2022) finds self-reported productivity gains over the covid episode of 7% across 30,000 workers in 27 countries surveyed in July 2021 and Feb 2022. These self-reported productivity gains are strongly positively correlated with the numbers of days worked from home, and with employers' expected remote work days after covid. This suggests that self-assessed productivity at least directionally lines up with employers' perceptions and contains valuable information about productivity.

There also is evidence that remote work reduced productivity. (Gibbs, et al., 2021) finds that forcing skilled professionals at an Asian IT firm to work from home led to a 10%- 25% decline in productivity. In their comprehensive survey of employers, (Barber et al., 2021) report a 20% average decrease in productivity during the pandemic as a result of WFH. In their survey of NABE economists, (Bartik et al. 2020) report a nearly 30% decrease in productivity from WFH. Morikawa (2020) presents survey evidence showing that most employees consider themselves less productive at home, but that productivity increases as employees become more familiar with WFH technology. (Lin et al., 2022; Yang, et al. 2022) find short-run increases in productivity. Longer term, teams become more "siloed" and exhibit less synchronous communication. Although (Kruger, et al., 2020) report greater output of finance academics during COVID-19, this is likely because of greater input of hours and the particular task of completing papers early in the pandemic. In their study of finance academics, (Barber et al., 2021) find that feelings of isolation and the inability to obtain feedback as a result of WFH decrease research productivity. Based on the proceeding discussion and empirical evidence, the paper hypothesized the following:

H1: There is a positive relationship between remote working and employee productivity

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

Methodology

Study Design

This study utilized a cross-sectional design to examine the relationship between remote working and employee productivity in Lebanese small and medium-sized enterprises (SMEs). The cross-sectional nature of the study allowed for the collection of data at a single point in time to assess the prevalence and associations between remote work practices and productivity outcomes across various demographic and professional groups.

Study Population

The study population consisted of employees working in Lebanese SMEs across different industries. Participants were drawn from a diverse range of sectors, including Food & Beverage, Finance and Insurance, Health & Medicine, Education, and others, to ensure a broad representation of experiences and perceptions related to remote work.

Inclusion and Exclusion Criteria

Inclusion Criteria:

- Employees aged 18 years and above.
- Individuals currently employed in SMEs in Lebanon.
- Employees who have experience with remote working, either partially or fully, during the study period.

Exclusion Criteria:

- Employees who have never engaged in remote work.
- Individuals working in large enterprises with more than 250 employees.
- Employees under 18 years of age.

Data Collection

Data were collected through a structured self-administered questionnaire distributed electronically to employees across various SMEs in Lebanon. The survey included sections on demographic information, remote work experiences, and self-assessed productivity levels. The questionnaire was designed to capture a comprehensive view of the participants' perceptions of remote work and its impact on their productivity.

Study Instrument

The primary study instrument was a structured questionnaire, which included both closed-ended and Likert scale questions. The questionnaire was divided into several sections:

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

- Demographics: Gender, age, education level, employment status, income level, marital status, company size, and industry.
- Remote Work Practices: Questions related to the frequency, conditions, and overall experience of remote working.
- Productivity Measures: Self-assessment of productivity, including the amount of work completed, efficiency, quality of work outcomes, and achievement of team targets.

Data Analysis Plan

Data analysis was performed using SPSS software version 26. Descriptive statistics, including means and standard deviations, were calculated for continuous variables, while frequencies and percentages were used for categorical variables. Spearman correlation analysis was conducted to test the association between the remote work and the work productivity. Additionally, non-parametric tests (Mann-Whitney test and Kruskal Wallis test) were used to test the correlation between the remote work and the work productivity across different demographic and professional groups, with a significance level set at 0.05 for all statistical tests.

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

IMPACT OF REMOTE WORKING ON EMPLOYEE PRODUCTIVITY IN LEBANESE SMEs

Results & Conclusion

- Demographics and Work characteristics

The study sample consists of 100 respondents, with a balanced gender distribution (55% female, 45% male). Age groups are well-represented, with the majority between 34-44 years (35%) and 24-34 years (29%), ensuring a diverse perspective on remote work experiences. Educationally, 44% hold a Bachelor's degree, 37% a Master's, and 19% have a DBA/PhD, indicating a highly educated workforce. Employment status is nearly evenly split between full-time (44%) and part-time (43%), with a smaller group (13%) self-employed, reflecting various work arrangements. Income levels vary, with 29% earning above 2000 USD monthly, and 23% between 1000-2000 USD. This diversity allows for insights across different economic strata. Marital status shows 46% married, 31% single, and 23% divorced/other, highlighting the role of family responsibilities in remote work dynamics. Most respondents work in medium-sized enterprises (54%), with a good spread across industries, particularly in 'Others' (42%), Food & Beverage (15%), and Finance & Insurance (13%). This diversity supports a comprehensive analysis of remote work's impact on productivity across different sectors in Lebanese SMEs.

Table 1: Demographics and Work characteristics among the study population (N = 100)

		Frequency	Percent
Gender	Male	45	45.0
	Female	55	55.0
Age	18 - 24 years old	13	13.0
	24 - 34 years old	29	29.0
	34 - 44 years old	35	35.0
	44 - 54 years old	18	18.0
	≥ 55 years old	5	5.0
Education	Bachelors	44	44.0
	Masters	37	37.0
	DBA / PhD	19	19.0
Employment Status	Full-time employment	44	44.0
	Part-time employment	43	43.0
	Self-Employed	13	13.0
Monthly Income	Less than 300 USD	7	7.0
	300 to 500 USD	21	21.0
	500 to 1000 USD	20	20.0
	1000 to 2000 USD	23	23.0

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

IMPACT OF REMOTE WORKING ON EMPLOYEE PRODUCTIVITY IN LEBANESE SMEs

		Frequency	Percent
	Above 2000 USD	29	29.0
Marital Status	Single	31	31.0
	Married	46	46.0
	Divorced / Other	23	23.0
Company Size	Micro enterprise: 1 - 9 employees	13	13.0
	Small Enterprise: 10 - 49 employees	33	33.0
	Medium Enterprise: 50 - 249 employees	54	54.0
Industry	Food & Beverage	15	15.0
	Finance and Insurance	13	13.0
	Health & Medicine	12	12.0
	School, College, University, and Adult Education	10	10.0
	Hospitalization	8	8.0
	Others	42	42.0

Remote working

Table 2 provide a comprehensive overview of how employees in Lebanese SMEs perceive remote work across several dimensions, revealing both positive outcomes and areas for improvement.

A substantial majority of respondents (71%) believe that the quality of their work improves when they work from home. Opinions regarding the personal benefits of remote work are more divided. While 32% of respondents find remote work personally beneficial (25% agree, 7% strongly agree), a significant portion remains neutral (42%), and 26% disagree or strongly disagree. Remote work appears to be a motivating factor for a majority of employees, with 64% agreeing or strongly agreeing that it enhances their motivation to work better. Perceptions of productivity while working remotely are generally positive, with 54% of respondents feeling that they are productive (32% agree, 22% strongly agree). A majority of employees (54%) feel they possess sufficient technical knowledge to successfully complete their work remotely. The sense of having sufficient authority to carry out work tasks while remote is strong among respondents, with 63% agreeing or strongly agreeing. Clarity in work targets while working from home is confirmed by 58% of respondents, but 17% disagree. Finally, the perception of managerial concern for employee well-being during remote work is mixed. While 54% acknowledge this concern, 20% feel that their well-being is not adequately considered.

The overall remote working score, with a mean of 28.23 (SD = 3.99) out of a possible 40, reflects a generally positive experience with remote working among employees in Lebanese SMEs.

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

IMPACT OF REMOTE WORKING ON EMPLOYEE PRODUCTIVITY IN LEBANESE SMEs

Table 2: Remote working assessment among the study population (N = 100)

		Frequency	Percent
I feel that the quality of the work I do during working from home is better	Strongly Disagree	1	1.0
	Disagree	14	14.0
	Neutral	14	14.0
	Agree	17	17.0
	Strongly Agree	54	54.0
Working from home is personally beneficial for me at work	Strongly Disagree	5	5.0
	Disagree	21	21.0
	Neutral	42	42.0
	Agree	25	25.0
	Strongly Agree	7	7.0
Working from home motivates me to work better	Strongly Disagree	5	5.0
	Disagree	16	16.0
	Neutral	15	15.0
	Agree	30	30.0
	Strongly Agree	34	34.0
I am very productive while working from home	Strongly Disagree	13	13.0
	Disagree	21	21.0
	Neutral	12	12.0
	Agree	32	32.0
	Strongly Agree	22	22.0
I have sufficient technical knowledge in completing work during working from home	Strongly Disagree	17	17.0
	Disagree	10	10.0
	Neutral	19	19.0
	Agree	31	31.0
	Strongly Agree	23	23.0
I have sufficient authority in carrying out work during working from home	Strongly Disagree	8	8.0
	Disagree	14	14.0
	Neutral	15	15.0
	Agree	34	34.0
	Strongly Agree	29	29.0
I have clear work targets when working from home	Strongly Disagree	3	3.0
	Disagree	14	14.0
	Neutral	25	25.0

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

IMPACT OF REMOTE WORKING ON EMPLOYEE PRODUCTIVITY IN LEBANESE SMEs

	Agree	39	39.0
	Strongly Agree	19	19.0
My boss is concerned about my well-being during working from home	Strongly Disagree	8	8.0
	Disagree	12	12.0
	Neutral	26	26.0
	Agree	27	27.0
	Strongly Agree	27	27.0
Remote working (Score over 40)	**Mean (SD)**	**28.23 (3.99)**	
	Min - Max	**14 - 40**	

Productivity

Table 3 provides insights into the general productivity levels among employees in Lebanese SMEs, revealing a positive perception of their work output. A large proportion of employees (77%) agree or strongly agree that they do a considerable amount of work each day. Regarding efficiency, 60% of respondents agree or strongly agree that they accomplish tasks quickly and efficiently. High standards in task completion are acknowledged by 73% of respondents, with 39% agreeing and 34% strongly agreeing. The perception of the quality of work outcomes is positive, with 63% of employees agreeing or strongly agreeing that their work is of high quality. Achievement of team targets is seen positively by 60% of respondents, who agree or strongly agree that they consistently meet or exceed team goals.

The overall productivity score, with a mean of 19.11 (SD = 2.64) out of 25, suggests that employees generally perceive themselves as productive. The range of scores (12 to 25) indicates that while most employees feel confident in their productivity, some may face challenges that could benefit from targeted support.

Table 3: Productivity assessment among the study population (N = 100)

		Frequency	Percent
I do a large amount of work each day	Strongly Disagree	2	2.0
	Disagree	5	5.0
	Neutral	16	16.0
	Agree	22	22.0
	Strongly Agree	55	55.0
I accomplish tasks quickly and efficiently	Strongly Disagree	2	2.0
	Disagree	11	11.0
	Neutral	27	27.0

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

		Frequency	Percent
	Agree	44	44.0
	Strongly Agree	16	16.0
I have a high standard of task accomplishment	Strongly Disagree	4	4.0
	Disagree	8	8.0
	Neutral	15	15.0
	Agree	39	39.0
	Strongly Agree	34	34.0
My work outcomes are of high quality	Strongly Disagree	7	7.0
	Disagree	10	10.0
	Neutral	20	20.0
	Agree	34	34.0
	Strongly Agree	29	29.0
I always beat our team targets	Strongly Disagree	4	4.0
	Disagree	10	10.0
	Neutral	26	26.0
	Agree	34	34.0
	Strongly Agree	26	26.0
Productivity (Score over 25)	**Mean (SD)**	**19.11 (2.64)**	
	Min - Max	**12 - 25**	

Remote working and productivity

The Spearman correlation coefficient between remote working and productivity is r = 0.217, with a p-value of 0.030. This correlation is statistically significant at the 0.05 level, indicating a small but significant positive relationship between remote working and productivity. This suggests that as remote working practices increase, there is a slight but noticeable increase in employee productivity.

The scatter plot illustrates the relationship between remote working and productivity among employees in Lebanese SMEs (figure 1). The linear regression line has a slight positive slope, indicating a weak positive relationship between the two variables.

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

IMPACT OF REMOTE WORKING ON EMPLOYEE PRODUCTIVITY IN LEBANESE SMEs

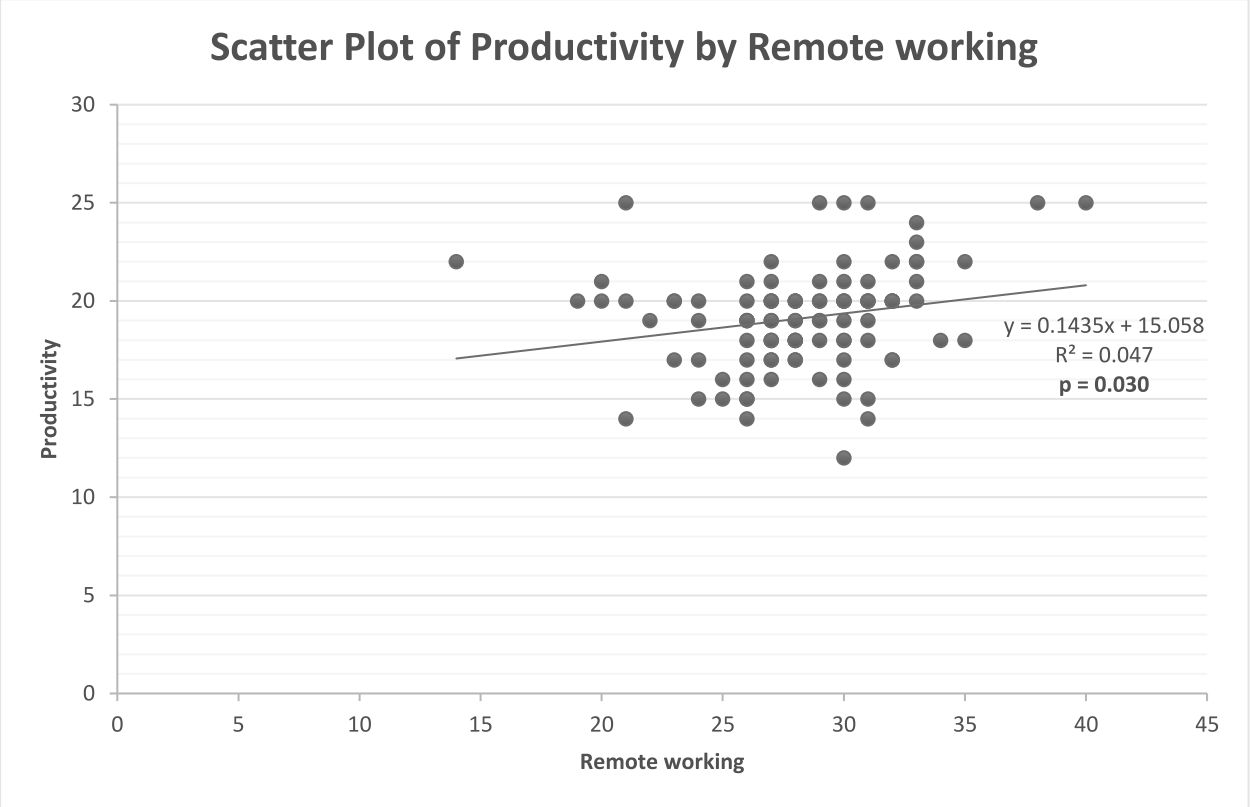

Figure 1: Scatter Plot of Productivity by Remote working

Analysis of remote working and productivity across different demographic and professional groups

Table 4 shows the analysis of remote working and productivity among employees in Lebanese SMEs across different demographic and professional groups.

When examining gender differences, the data shows that males report a slightly higher mean score for remote working (28.60) compared to females (27.93). However, this difference is not statistically significant ($p = 0.313$), suggesting that gender does not play a major role in influencing remote working practices. Interestingly, while females report higher productivity levels (mean = 19.49) compared to males (mean = 18.64), this difference is also not statistically significant ($p = 0.198$), indicating that both genders experience similar levels of productivity when working remotely.

ISSN: 2392- 5418 e-ISSN: 2520- 7423 DOI:10.59799/SQZH5356

IMPACT OF REMOTE WORKING ON EMPLOYEE PRODUCTIVITY IN LEBANESE SMEs

Age differences in remote working and productivity present a more nuanced picture. The youngest employees, aged 18-24 years, report the highest remote working scores (mean = 29.31), whereas those in the 44-54 years age group report the lowest scores (mean = 26.72). Despite these variations, the differences across age groups are not statistically significant (p = 0.324). In terms of productivity, the oldest group (≥ 55 years) reports the highest productivity levels (mean = 20.40), while those aged 44-54 years report the lowest (mean = 18.39). However, these differences are not statistically significant (p = 0.503).

Educational attainment appears to have no impact on both remote working and productivity. The mean remote working scores are consistent across different educational levels, with no significant differences observed (p = 0.911). Similarly, productivity levels do not significantly vary across educational categories (p = 0.779), indicating that the level of education does not play a major role in determining how well employees perform in remote work settings.

Employment status emerges as a significant factor in productivity, though not in remote working scores. Part-time employees report the highest remote working scores (mean = 28.98), closely followed by self-employed individuals (mean = 29.00), while full-time employees report slightly lower scores (mean = 27.27). However, these differences are not statistically significant (p = 0.187). In contrast, productivity is significantly higher among full-time employees (mean = 19.68) compared to part-time employees (mean = 18.33), indicating that full-time employment may provide a more structured environment conducive to higher productivity in remote settings (p = 0.020).

Income level does not significantly influence remote working or productivity. While those earning between 500 and 1000 USD report the highest remote working score (mean = 29.00) and those earning above 2000 USD report the lowest (mean = 27.07), these differences are not statistically significant (p = 0.421). Similarly, productivity scores show no significant variation across income levels (p = 0.437), although those earning less than 300 USD report the highest productivity (mean = 21.00).

Marital status does not significantly affect remote working or productivity. Single individuals report slightly higher remote working scores (mean = 28.97) compared to married individuals (mean = 27.78), but the difference is not statistically significant (p = 0.435). Productivity levels are consistent across marital statuses, with no significant differences observed (p = 0.898).

The size of the company does influence remote working (p = 0.241). Employees in micro-enterprises (1-9 employees) report the highest remote working scores (mean = 30.08) comparing

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to employees working in small and medium enterprises (mean = 28.73 and 27.48, respectively). The differences in productivity by company size are statistically significant (p = 0.012) and employees in micro-enterprises report the highest productivity levels (mean = 21.00) comparing to employees working in small and medium enterprises (mean = 18.48 and 19.04, respectively), indicating that the organizational structure and size can impact the productivity.

Industry-specific analysis reveals significant differences in remote working scores, with employees in the "Others" category reporting the highest scores (mean = 29.57) as well as “Food & Beverage” (mean = 29.00), comparing to those in Health & Medicine reporting the lowest (mean = 24.92). This indicates that certain industries may be better suited to remote work arrangements, potentially due to the nature of the work and the level of digital infrastructure available. However, productivity scores remain relatively consistent across industries (p = 0.352), suggesting that while the experience of remote work may vary by industry, the overall impact on productivity does not differ significantly.

In conclusion, while remote working practices are generally well-received across various groups, factors such as employment status, company size, and industry play crucial roles in determining productivity levels. Full-time employees and those working in smaller companies tend to report higher productivity, suggesting that these environments may be more conducive to effective remote work.

Table 4: Analysis of Remote Work and Productivity Across Demographic and Professional Groups

		N	Remote Work			Productivity		
			Mean	SD	P.value	Mean	SD	P.value
Gender	Male	45	28.60	3.45	0.313	18.64	2.38	0.198
	Female	55	27.93	4.39		19.49	2.81	
Age	18 - 24 years old	13	29.31	3.52	0.324	19.08	1.85	0.503
	24 - 34 years old	29	29.07	3.90		19.41	2.80	
	34 - 44 years old	35	28.00	4.04		19.06	2.67	
	44 - 54 years old	18	26.72	3.80		18.39	3.11	
	≥ 55 years old	5	27.60	5.55		20.40	1.14	
Education	Bachelors	44	28.14	3.98	0.911	18.86	2.83	0.779
	Masters	37	28.43	3.66		19.27	2.35	
	DBA / PhD	19	28.05	4.79		19.37	2.83	
Employment Status	Full-time employment	44	27.27	5.12	0.187	19.68	3.28	**0.020**
	Part-time employment	43	28.98	2.51		18.33	1.92	

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	Self-Employed	13	29.00	3.06		19.77	1.54	
Monthly Income	Less than 300 USD	7	28.00	4.08	0.421	21.00	2.71	0.437
	300 to 500 USD	21	28.48	3.83		18.90	2.61	
	500 to 1000 USD	20	29.00	2.32		18.95	2.95	
	1000 to 2000 USD	23	28.87	4.62		19.09	2.09	
	Above 2000 USD	29	27.07	4.44		18.93	2.83	
Marital Status	Single	31	28.97	4.15	0.435	18.90	2.47	0.898
	Married	46	27.78	4.37		19.26	3.09	
	Divorced / Other	23	28.13	2.82		19.09	1.86	
Company Size	Micro enterprise: 1 - 9 employees	13	30.08	5.87	0.241	21.00	2.24	**0.012**
	Small Enterprise: 10 - 49 employees	33	28.73	2.90		18.48	1.95	
	Medium Enterprise: 50 - 249 employees	54	27.48	3.92		19.04	2.91	
Industry	Food & Beverage	15	29.00	3.61	**0.015**	19.27	2.02	0.352
	Finance and Insurance	13	27.23	3.79		19.08	1.80	
	Health & Medicine	12	24.92	3.92		19.00	2.95	
	School, College, University, and Adult Education	10	26.20	5.41		21.00	3.40	
	Hospitalization	8	28.88	3.31		18.63	2.13	
	Others	42	29.57	3.28		18.74	2.79	

Bold: Statistically significance set at 5%

In conclusion, the analysis indicates that remote working is generally perceived positively across different demographic and professional groups within Lebanese SMEs, with a significant but modest positive correlation between remote work and productivity. Factors such as full-time employment, smaller company size, and certain industries show a stronger association with higher productivity levels in remote settings. While differences in gender, age, education, income, and marital status are minimal, the impact of employment status, company size, and industry highlights the need for tailored remote work strategies. These findings suggest that by considering these factors, SMEs can optimize their remote work arrangements to enhance employee productivity effectively.

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