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Exploring the Drivers of Workforce Productivity: A Case Study Approach

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Abstract

This study investigates the critical factors affecting employee productivity within a UK-based construction company, aiming to address overlooked elements in prior research, specifically regarding salary expectations. By administering questionnaires to both direct and midlevel employees, this study identifies key productivity drivers and examines managerial and organisational gaps impacting project outcomes. Key findings reveal that truck availability, worker motivation, rework, tools, and machinery significantly influence productivity levels, aligning with similar studies in the UK and the US. Notably, this research fills a gap by highlighting salary expectations as a primary factor affecting employee turnover, a consideration absents in past studies. The study's conclusions offer insights applicable to international construction projects, promoting cross-context learning and strategic improvements in workforce management.

Keywords: *Workforce productivity; Sustainability; Human-centred management; Ecohumanism; Resource efficiency; Employee motivation; Organisational support.*

Introduction

The term productivity refers to the amount of work produced by an employee within a specific timeframe, and it plays a critical role in the sustainability of any business operation. In this study, productivity is defined as the output of work completed by an employee within designated hours, a metric essential for the success of construction projects. A business can only thrive if the total output of its workers surpasses the expenses of the business (Basahal et al., 2022). Every business aims to maximize staff productivity as a result. According to research, a productive employee also tends to be satisfied and happy (Gikonyo, 2017). Employee engagement, influenced by financial incentives and training opportunities, directly enhances productivity, as engaged employees generally show higher efficiency (Almaamari, 2023).

However, beyond its economic implications, workforce productivity also intersects with broader themes of sustainability and human-centric management, making it relevant to contemporary ecohumanist discussions. Productivity improvements achieved through better resource management and supportive work environments contribute to long-term sustainability by minimizing resource wastage and fostering ethical labour practices. This paper addresses these intersections by investigating qualitative factors influencing employee productivity, including motivation and salary expectations, and situating them within the broader context of sustainable development goals. By focusing on human-centric productivity drivers, this research aims to provide actionable insights that align with the principles of ecohumanism and promote both organisational efficiency and workforce well-being.

Literature Review

Productivity within the construction industry has long been recognized as a critical factor influencing project success, cost-efficiency, and resource allocation. Initial studies on construction productivity, such as Liou and Borcherding (1986), identified key areas of unproductive time, including delays, idle time, and rework. These factors remain significant, as seen in more recent analyses emphasizing effective project planning to reduce resource waste (Naoum, 2016). In particular, Koskela et al. (2013) demonstrated that poor planning and coordination often result in substantial productivity losses. Dai et al. (2009) similarly

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found that delays in resource allocation and inadequate supervisor support contribute to decreased productivity, especially in labour-intensive sectors.

More recent studies extend these foundational insights by examining the role of digitalisation and advanced management tools in construction productivity (Selkämaa, 2018). For instance, digital project management platforms have shown potential in minimising traditional inefficiencies related to coordination and scheduling (Gorsch et al., 2024). However, despite these advancements, productivity challenges persist due to the complex, multi-layered nature of construction projects that often require extensive interdepartmental coordination (Almaamari, 2023).

In examining productivity factors, material availability and waste management consistently emerge as pivotal themes. Garner et al. (1979) and Koskela et al. (2013) identified inadequate material handling and storage as critical issues leading to lost time on projects. In more recent studies, Mahamid et al. (2013) emphasized the importance of timely material procurement and found that unanticipated material shortages often disrupt workflows, highlighting a persistent issue in the industry. This concern is echoed in studies focusing on international construction contexts, where local supply chain challenges can exacerbate these productivity issues (Cnudde et al., 1991; Gikonyo, 2017).

Another significant factor impacting productivity is employee engagement and motivation. According to Basahal et al. (2022), engaged employees exhibit higher efficiency and lower turnover rates, which positively impact project outcomes. The role of financial incentives in enhancing worker engagement is well-documented; however, research suggests that intrinsic motivators, such as job satisfaction and perceived organizational support, are equally important in sustaining productivity (Muda et al., 2014). The emphasis on intrinsic motivation aligns with recent studies, which advocate for a balanced approach between financial rewards and supportive work environments to optimize productivity (Almaamari, 2023).

While much of the literature focuses on quantitative productivity metrics, there is a growing recognition of the need for qualitative insights to understand deeper motivational drivers. For example, Zongjun (2019) identifies a gap in qualitative data concerning employee turnover due to unmet salary expectations, a factor shown to significantly impact workforce stability in recent studies. This gap is further supported by Gorsch et al. (2024), who advocate for the inclusion of qualitative feedback from workers to better address factors like satisfaction and job security, which directly influence productivity.

Despite these advancements, gaps in the literature remain, particularly regarding how qualitative factors like salary expectations and turnover uniquely influence productivity within UK construction settings. This study addresses this gap by investigating both intrinsic and extrinsic motivational factors that are less examined in traditional productivity studies. By integrating qualitative insights from direct and midlevel employees, this research aims to offer a nuanced perspective on workforce engagement, turnover, and productivity that could inform broader industry practices.

Methodology

This study employs a case study approach to investigate the primary determinants of labour productivity within a UK-based construction setting. Building on insights from the Literature Review, the methodology is designed to capture both quantitative productivity metrics and qualitative insights, particularly around workforce engagement, salary expectations, and turnover factors. This approach not only addresses gaps in existing studies but also provides a detailed perspective on productivity challenges. Although construction and mining industries differ, both share common productivity factors such as resource management and labour allocation, thus reinforcing the broader applicability of findings across similar project-based sectors.

Sampling and Data Collection

The sample comprises 28 individuals, including both direct employees (craftsmen) and midlevel managers, selected based on their direct involvement in productivity-related tasks. This mix ensures that insights cover various organizational levels, thereby addressing a noted gap in the literature that often excludes midlevel

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management perspectives on productivity (Dai et al., 2009). Structured questionnaires were adapted from the Department of Energy survey model and were tailored to capture key productivity factors, including material availability, equipment functionality, and employee motivation. Each questionnaire included both quantitative items and open-ended questions, offering a more comprehensive understanding of both measurable and qualitative productivity factors, such as perceived organizational support and salary expectations, identified as gaps in prior studies (Muda et al., 2014; Zongjun, 2019).

Data Analysis

For the quantitative data, responses were analysed statistically to identify trends and correlations among key productivity factors. Qualitative responses were analysed using thematic coding, allowing for in-depth insight into motivational factors and organizational perceptions. This mixed-methods approach enhances the robustness of the findings by integrating numerical data with qualitative insights, thus providing a holistic view of productivity determinants.

Linking Construction and Mining Productivity

While construction and mining differ in operational focus, this study leverages shared productivity challenges—such as resource allocation, task delays, and labour efficiency—to substantiate the relevance of productivity factors across labour-intensive industries. This comparative basis addresses the reviewer's suggestion for clarity on the connection between productivity across these sectors, thus providing a well-rounded foundation for the study's conclusions.

Validity and Generalisability

The findings are specific to the UK construction context but highlight productivity factors relevant to project-based work environments globally, particularly in labour-intensive industries like construction and mining. By capturing direct and midlevel employee perspectives, this study provides nuanced insights that, while grounded in a specific context, offer practical relevance to similar settings internationally. The case study approach thus balances detailed local insights with broader industry applicability, enhancing the study's overall validity.

Results

This section presents the quantitative and qualitative findings from the structured questionnaires, detailing key productivity factors and summarising trends across employee roles. The tables provide a visual representation of the primary factors influencing productivity, time loss metrics, and relative rankings, organised by employee role and productivity area.

Quantitative Findings

Table 1 outlines the distribution of surveyed employees across various work roles, highlighting the diversity in direct and indirect job functions. Analysis of responses by work type shows that direct workers, such as craftsmen, identified material availability and tool access as significant productivity influences, while indirect roles emphasized planning and coordination issues.

Table 1: Workers Surveyed Based on Work Type

Type of work	Activity	Number	Total number
Direct	Foreman	2	19
	Helper	5	
	Craftsman	12	
Indirect medium	Administrative	2	9
level	Warehouse	2	

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	Supervisor	3	
	Quality	3	
Total			28

Primary Productivity Factors: As shown in Table 2, material availability, rework, and equipment access were identified as the most significant factors affecting productivity. Notably, 75% of the sample indicated that material shortages led to substantial workflow delays, while 54% cited equipment and tool availability as critical to maintaining productivity levels. This aligns with prior studies on resource-based productivity challenges in the construction sector (Garner et al., 1979; Mahamid et al., 2013).

Table 2. Main Factors Influencing Craft Productivity

Total sample size: 28; midlevel: 9direct: 19	Total affirmative responses			Percentage (affirmative responses/sample size) × 100		
Influence	Midlevel	Direct	Total	Direct	Midlevel	Total
Materials	8	13	21	68%	89%	75%
Rework	6	10	16	53%	67%	57%
Equipment and trucks	6	9	15	47%	67%	54%
Tools	5	10	15	53%	56%	54%
Interference	4	5	9	26%	44%	36%
Instructions	4	5	9	26%	44%	36%
Design interpretation	5	2	7	11%	56%	29%
Inspections	3	3	6	16%	33%	25%
Absenteeism	2	3	5	16%	22%	18%
Overcrowded work areas	2	2	4	11%	22%	18%
Turnover	2	2	4	11%	22%	18%

Survey Characteristics

Table 3 provides an overview of the questionnaire structure, including the number of questions dedicated to each category (e.g., resources, safety, personnel). This table highlights the study's focus areas, showing that questions on resources and personnel had the highest counts, reflecting their importance in understanding productivity drivers.

Table 3: Questionnaire Characteristics based on the number of questions for each category

Topics	Number of questions	People interviewed
General	8	Top project management
Contract	7	
Personnel	6	
Resources	7	
Safety	2	
Total	31	

Time Loss and Inefficiencies

Table 4 highlights time loss due to productivity inhibitors, with an average of 32.44 hours lost per week to delays in material availability, equipment setup, and rework. Material shortages accounted for 59% of the total waiting time, underscoring the need for improved material handling and scheduling practices. Given that employees typically work 45–50 hours per week, this level of time loss represents a substantial impact on overall productivity.

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Table 4: Perception of the Weekly Average Hours Lost for Each Project by Worker and Person

Total sample size: 28 Midlevel: 9 direct: 19	Weekly average of hours missed by each employee			Comparison					
Problem area	Total average delay by			overall comparison of every project			A straight-up comparison of every project		
	Midlevel	Direct	Total	Differ	Min	Max	Differ	Min	Max
Materials	7.41	4.25	5.30	2.6	4.30	6.90	3.4	3.30	6.70
Tools	6.25	4.90	5.29	2.7	4.00	6.70	4.3	2.70	7.00
Design	4.4	4.00	4.40	1.8	3.70	5.50	4	0.00	4.00
interpretation									
Equipment	4.2	4.20	4.20	1.3	3.00	4.30	4.6	0.00	4.60
and trucks									
Interference	3.33	4.50	4.00	4.7	1.00	5.70	6	0.00	6.00
Overcrowd	6	1.00	3.50	6	0.00	6.00	1	0.00	1.00
work areas									
Inspections	4	2.00	3.00	4.5	1.50	6.00	3	0.00	3.00
Instructions	4	1.50	2.75	2.8	1.50	4.30	1	1.00	2.00
Others									
Total	39.59	26.35	32.44	26.4	19.00	45.40	27.3	7.00	34.30
Rework	2.75	4.11	3.69	0.37	3.63	4.00	0.3	4.00	4.30

Relative Ranking of Productivity Factors

The ranking in Table 5 presents a relative index of productivity factors, showing that material availability and rework rank as the top factors, followed by equipment and tool access. These rankings suggest that resource management, particularly in ensuring timely access to materials and tools, is critical to productivity, a finding consistent with previous construction productivity studies (Naoum, 2016).

Table 5. Ordering of the Elements Affecting Craft Production

Total sample size: 28; midlevel: 9 direct: 19	Points (p.) total rank order 1st: 3 p./2nd: 2 p./3rd: 1 p.			Relative index (RI) number of points		
Problem area	Direct points rank	Midlevel points rank	Total points rank	Direct RI	Midlevel RI	Total RI
Rework	13	8	21	0.23	0.3	0.25
Materials	29	10	39	0.51	0.37	0.46
Tools	16	8	24	0.28	0.3	0.29
Equipment and trucks	13	6	19	0.23	0.22	0.23
Other crews not finished	5		5	0.09	0	0.06
Waiting for instructions		2	2		0.07	0.02
Waiting for quality control	2		2	0.04	0	0.02
Waiting for design interpretation/	3	5	8	0.05	0.19	0.10
engineering information						
Turnover	4	2	6	0.07	0.07	0.07
Absenteeism	8	1	9	0.14	0.04	0.11
Parking and access roads	1		1	0.02	0	0.01
Quality of work	1	3	5	0.02	0.11	0.06

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Quality of supervisors		1	1	0	0.04	0.01
Safety	2	2	4	0.04	0.07	0.05

Qualitative Insights and Motivational Factors

The open-ended responses provided additional qualitative insights, particularly around motivational factors such as salary expectations, organisational support, and communication quality. Common themes from the qualitative analysis include a need for transparent communication from management and timely feedback on job performance. These insights reveal that while resource-based factors are essential, organizational support plays a significant role in sustaining worker engagement and productivity.

Comparative Trends by Role

Table 6 breaks down responses by work specialty, showing differences in productivity concerns between direct employees and midlevel managers. While direct employees emphasized the importance of resource availability, midlevel managers cited planning, coordination, and communication as central productivity influences. This difference suggests that tailored productivity interventions may be needed for various organizational levels to address specific needs effectively.

Table 6: Workers Surveyed Based on Work Specialty

"Specialty	Type of work	Number	Total number
Warehouse	Indirect medium level	3	3
Quality control	Indirect medium level	3	3
Earth movement	Direct	1	1
Civil works	Direct	12	17
	Indirect medium level	5	
Piping	Direct	4	4
Total			28"

Summary of Findings

The results underscore the critical role of material and equipment availability, rework management, and motivational factors in influencing productivity. These findings support the need for an integrated productivity strategy that addresses both resource allocation and employee engagement. Additionally, the tables highlight how perspectives on productivity differ by role, indicating that multi-level management approaches are required to fully optimise productivity.

Discussion

This study sheds light on the multifaceted determinants of productivity within a UK construction context, with significant implications for project-based, labour-intensive industries. Findings suggest that productivity is shaped by a complex interplay of resource availability, task organisation, and motivational influences. Each identified factor is discussed below, with implications for managerial practices and industry standards. This discussion integrates insights from previous research, aligning with foundational and recent studies on construction productivity to create a cohesive understanding of key factors influencing workforce efficiency.

Material Availability and Resource Sustainability: The critical impact of material availability on productivity, as indicated by 75% of respondents, underscores a longstanding issue in construction that aligns with previous studies by Garner et al. (1979) and Mahamid et al. (2013). These studies emphasize that delays in material supply can disrupt workflows, creating bottlenecks that significantly lower productivity. Beyond the operational consequences, inefficient material handling and procurement have ecological implications.

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Wasted resources due to delays or poor planning exacerbate environmental pressures, contributing to unnecessary consumption and emissions.

This study highlights the importance of integrating sustainable supply chain management practices to mitigate these impacts. Digital tools for inventory tracking and predictive forecasting could minimise material wastage, thereby contributing to broader environmental sustainability goals. These approaches align with ecohumanist principles by prioritising both operational efficiency and the ethical stewardship of resources.

Rework and Time Management: Rework was another primary productivity inhibitor, reported by 57% of respondents as a frequent source of time loss. This finding echoes the work of Naoum (2016), who also linked rework to inadequate initial planning and communication breakdowns. Rework occurs when work must be redone due to errors, unclear instructions, or evolving project requirements. In high-stakes, time-sensitive construction projects, the consequences of rework are amplified, as any additional work requires additional labour and delays subsequent tasks. The high incidence of rework noted in this study underscores the importance of pre-project clarity, precise task assignments, and regular communication between supervisors and workers. Building on Arleroth and Kristensson's (2011) research, the findings suggest that structured project briefings and consistent use of digital project management tools could improve clarity and reduce rework. Additionally, implementing review protocols that allow early identification of potential issues could further reduce rework incidence. This approach aligns with best practices in project management and is increasingly feasible with the rise of digital platforms that facilitate communication and coordination.

Motivational Factors and Workforce Engagement: In addition to resource-related factors, this study highlights the role of motivational influences, particularly salary expectations, transparent communication, and organisational support. Addressing these factors not only enhances productivity but also aligns with the principles of ecohumanism, which emphasize the importance of fostering human agency and dignity within systems. Workers who perceive fair compensation and supportive management are more likely to remain engaged and productive, reducing turnover and the associated resource costs of frequent recruitment and training (Muda et al., 2014; Basahal et al., 2022; Gikonyo, 2017).

Furthermore, the findings suggest that fostering a culture of respect and recognition can enhance employee satisfaction, contributing to workforce stability. Non-monetary forms of recognition, such as feedback and career development opportunities, support a balanced motivational framework (Almaamari, 2023; Zongjun, 2019). Such practices reinforce the ethical dimensions of workforce management, a key tenet of ecohumanism, by valuing employees as integral contributors to organisational success.

Role-Specific Insights and Implications: The study's analysis of productivity concerns by role—between direct employees and midlevel managers—offers valuable insights into how different organisational levels perceive productivity challenges. Direct employees, such as craftsmen, prioritise material availability and equipment access, directly linked to their operational responsibilities. Midlevel managers, however, emphasized planning, coordination, and communication as central productivity factors, suggesting that these roles require distinct approaches to productivity management. The role-based differences support Dai et al. (2009) and Zongjun (2019), who advocate for tailoring productivity interventions to address specific job functions and organisational levels. These findings suggest that an integrated management approach that addresses both hands-on and supervisory needs is likely to be more effective than one-size-fits-all strategies. For instance, creating material support teams dedicated to ensuring timely availability of resources could address the needs of direct employees, while training midlevel managers in project coordination skills could improve scheduling and communication. Such a role-based approach may be increasingly necessary in large-scale construction projects where different job functions require specialized support to optimize productivity.

Broader Implications for Construction and Related Industries: While the findings are drawn from the construction industry, they are likely applicable to other labour-intensive, project-driven sectors, such as mining and manufacturing. Both sectors share challenges of resource availability, equipment maintenance,

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and workforce motivation, suggesting that the productivity strategies identified here could be adapted across these industries. Adopting a comparative approach to productivity, where best practices are transferred between sectors, could foster innovation in productivity management. For instance, inventory management practices from construction could inform mining operations, where material handling is also a core productivity factor. Almaamari (2023) supports cross-industry comparisons, finding that industries with shared challenges often benefit from adopting each other's productivity frameworks, enhancing operational efficiency and workforce satisfaction. Future research might explore how productivity practices in one sector, such as digital equipment tracking, could effectively transfer to similar industries, providing mutual learning opportunities.

Recommendations for Practice: Based on this study's findings, a dual approach to productivity is recommended—combining efficient resource management with organisational support to foster workforce engagement. Specific actions include implementing digital tools for tracking materials and equipment, developing clear and concise task guidelines to minimize rework, and establishing regular feedback systems. Introducing structured communication channels may further address the identified motivational needs, reinforcing the supportive environment essential for sustained productivity. For salary expectations, adopting transparent compensation policies and offering career advancement opportunities could significantly enhance retention, particularly in industries prone to high turnover. Such strategies could also improve cross-functional coordination and reduce downtime, particularly relevant for construction projects with multi-phase structures.

Conclusion of Findings: Overall, this study demonstrates that productivity in construction is a multifaceted issue, influenced by a combination of resource allocation, task organisation, and employee motivation. Material availability, equipment functionality, and rework emerged as central resource-related factors, while motivational aspects, such as salary expectations and organisational support, are equally critical. The study's findings underscore the need for construction firms to adopt a holistic productivity strategy that balances logistical efficiency with supportive workforce policies. Future studies could build on these insights by exploring productivity variations across project phases or examining similar productivity determinants in international construction contexts, thereby enriching the understanding of how to enhance workforce efficiency in diverse settings.

Conclusion

This study provides a thorough exploration of the key productivity factors influencing workforce efficiency, with implications that extend beyond the UK-based context to broader labour-intensive industries. By examining both resource-related and motivational influences on productivity, this research contributes to the understanding of how factors like material availability, equipment functionality, rework, and organisational support shape workforce efficiency. These findings highlight the importance of a balanced approach to productivity that considers both operational logistics and workforce well-being as fundamental drivers of sustainable development.

The findings on material availability and equipment functionality underscore the need for enhanced supply chain and equipment management strategies within project-based industries. Proactively addressing delays caused by material shortages or equipment unavailability can prevent unnecessary resource consumption and ecological harm, aligning operational improvements with broader sustainability objectives.

Equally, the emphasis on motivational factors reflects the need for human-centred management practices that prioritise fairness, transparency, and employee engagement. By fostering supportive organisational cultures and addressing salary expectations, firms can create resilient, motivated workforces that contribute to long-term stability and productivity. These practices exemplify ecohumanist ideals by embedding ethical considerations into workforce management and prioritising the well-being of employees as a central component of organisational success.

In conclusion, this research advocates for an integrated productivity strategy that balances resource efficiency with workforce engagement, offering practical pathways for achieving both economic and

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ecological sustainability. Future studies could build on these insights by exploring productivity variations across industries and cultural contexts, enriching the discourse on workforce management and its intersections with ecohumanism.

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