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CHALLENGES FOR PROJECT MANAGEMENT IN THE 21ST CENTURY

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Abstract

Challenges could be observed as opportunities for success. The growth of project management body of knowledge and the advancement of project managers' capabilities in dealing with resources are crucial to the successful delivery of projects. As the main objective of this paper is to overview the key challenges for project managers in the current century to help the Future Built Environment, a systematic literature review analysis on PM features was conducted by evaluating over 256 published research papers under the Project Management topic during the past 15 years (2003–2018). As result of this exploration, the research highlighted 18 main challenges and over 125 parameters related to challenges in projects from the extant literature. The management of uncertainty and dealing with different challenges are necessary conditions for effective project management. Sources of challenges are wide ranging and have fundamental effects on projects and the project management body of knowledge. These challenges are not limited to specific industries, and include scope management, information technology, team dynamics, customers' satisfaction, lean management, communication, innovation and quality. Common project management body of knowledge does not address many of the listed sources of challenges, particularly in 'soft' project management skills where flexibility and tolerance of PMs are necessary. The findings of this review paper help scholars to put their attempts on key challenges in managing projects effectively. Such attempts need to entail project managers' capabilities as well as the organization maturities including some aspects of organisation culture and learning.

Keywords: Project management; challenges; the 21st century.

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1. Introduction

Challenges could be observed as opportunities for success. Prevalent unpredictability in different markets in recent years, in conjunction with swift changes in technology, talent shortages, communication issues and even more, bring in challenges for project managers. Although employing the knowledge of project management competently has been a vital topic of discussion for the past decades, organizations still battle with how to come up with this strategic shift in their projects (Atkinson, Crawford, & Ward, 2006; Khan, Peters, Sahinel, Pozo-Pardo, & Dang, 2018), specifically when dealing with the future built environment to evaluate the capacity of urban project development.

The growth of the project management body of knowledge and the advancement of project managers' capabilities in dealing with resources are crucial to the successful delivery of projects. Understanding the substantial influence of projects, and subsequently the impact of project management knowledge, to society and the economy has been rising and grew to become urgent for EU countries in 2007 with the global recession. In line with this, the value of the global projects market is massive and interest in project management and operations as a necessary body of knowledge has been enhanced.

The "Being Lean and Seen" programme is an EU-H2020 RISE funded collaborative, multidisciplinary programme of research exchanges between 10 international partners over four years (2017-2020). From a wider perspective of advancing knowledge in project management through research exploration, the programme enriches and extends the field beyond its current intellectual foundations and connects it more closely to the challenges of contemporary practices. The multidisciplinary perspective of the work goes beyond the traditional boundaries of the PM body of knowledge to develop a holistic framework which will enable the successful delivery of projects both now and in the future. It is based on three major pillars:

• "Being Lean" – adapt, enhance and advance management practices from other industries in response to the need for efficiency and effectiveness of projects

• "Being Seen" – incorporate the perspective of the people responsible for delivering projects by accentuating the psycho-social aspects

• "Being Lean and Seen" – adapt projects to dynamic environments in order to sustain competitive advantage in the long run with Dynamic Capabilities and adapt PM methods to developing countries.

As a starting point, this paper aims to highlight some on the wide range of issues that the PM professionals have faced within past decades, which could be consolidated into a list of major hurdles. Common project management body of knowledge does not address many of possible sources of challenges in one place, particularly in 'soft' project management skills where flexibility and tolerance of PMs are necessary. The findings of this review paper help scholars to put their attempts on key challenges in managing projects effectively. Such attempts need to entail project managers' capabilities as well as the organization maturities including some aspects of organisation culture and learning. While the hurdles discussed here might not be all-encompassing, addressing these predominant issues provides impetus for turning challenges into opportunities.

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2. Problem Statement

In the last few decades, project managers have witnessed how the profession has evolved and grown to become increasingly accepted (PMI, 2017). Project management frameworks and techniques have been formulated, from "traditional" perspectives to innovative solutions. Projects are now larger in size, with shorter duration bound timelines along with even more stakeholders. Technological advancement has experienced an intense impact on new project management tools and techniques. There is now a great deal more data, not to mention much less paper. The project manager's profile has also changed, with fewer and fewer experts from industries in that role, which is a shift from specific to a general project management concept.

Since organisations seek competitive advantages in today's dynamic business environments, project management is often more likely to be the method intended for quality improvements towards improving the organisation's overall performance. In this regard, the management of an organization's projects is also intentioned for change and growth. By utilising advantages from project management tools and techniques, organisations strategize and put into action innovative business approaches in order to gain or perhaps sustain competitive strengths. Since the life of many organisations is bound hand in hand with their projects their particular revolutionary organisational strategies has led to Project Management being viewed as a vital business practice. Project Management has been also deemed a practical approach for the reason that it is a foundation of organisational strategy much like functional tactics and as such is likely to be allied closely the organisation's overall strategy.

The current market in different businesses demands that companies become more multinational and more global (Aarseth, Rolestadas, & Anderson, 2014). The modern world is getting smaller as the technological and financial systems try to make global business groups scaled-down. In this business environment, a modern project manager is often asked to lead virtual world-wide projects. This trend is most likely going to continue apace. To be involved in such competitive virtual environments project managers need to create, lead and deal with virtual teams and cope with all the related challenges. A virtual group is a decentralized team working for a core objective.

In developing project management and making mangers prepared for future we need to determine the current challenges and consequently the solutions for such challenges in order to be able to illuminate the future of project management as a profession in different industries. As result, some of the major challenges that PMs have been faced with them in the past years summarised in this study.

3. Research Questions

This review paper aims to find answer to the following questions:

- What are the main challenges for project management in this century that influence the overall performance and efficiency of project management?
- What are the key parameters under each project management challenges that need to be addressed?

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4. Purpose of the Study

This paper aims to highlight some on the wide range of issues that the PM professionals have faced within past decades, which could be consolidated into a list of major hurdles.

5. Research Methods

There has been a growing need for aligning project management with the organisation's strategy and performance improvement. In doing so, identifying the common challenges faced by organisation in managing projects may assist us to make a better future for this necessary body of knowledge. As the main approach of this paper is overview the key challenges for project managers in the current century to help the future built environment, a systematic literature review analysis on PM features was conducted by evaluating over two hundred and fifty-six published research papers during the past 15 years and the period of (2003–2018). As result of this exploration, the research highlighted 18 main challenges and over 125 parameters related to challenges in projects from the extant literature. The main sources of papers were those that published by ScienceDirect, Emerald, and John Wiley & Sons, Inc. Based on a vast literature review some of the major challenges for PMs derived from the number of occurrence in the reviewed papers which are related to areas, included, but not limited to, scope management, information technology, team dynamics, customers satisfaction, lean management, communication and quality, to identify a few.. Table 1 listed top 15 challenges that were addressed in the extant literature. The parameters of the challenges are also identified and summarised in this table. According to our findings and based on the number of repetitions of challenges in the literature and different point of views by researchers, Risk Management, Human Resource Management and Project Definition and Planning are ranked as number one in the list. We have not been able to make a clear differentiation in ordering these three challenges in our ranking system. Accordingly, we decided to consider Risk Management, HRM and Scope Management as the number one challenges for PMs in managing different projects. Based on the analysis of current literature, Stakeholder Management, and Value Management and Sustainability are also ranked as number 4 in identified challenges for project managers. However, these concepts may be more prevalent in some industries such as the construction industry that is the main focus for sustainable development by different nations. Therefore, managing the stakeholder and addressing their requirements in line with value to the project and sustainability issues are among the key challenges for PMs.

The list of challenges continues until Innovation and Creativity as the final ranked challenge. Project managers working in imaginative or creative projects such as software development are challenged by loosely defined innovative processes. Innovation, therefore, is counted as one of the necessary areas for improvement as the innovation that will result from advancement is unknown until the project commences. Therefore, innovation in agile projects are usually associated with high tech industries such as those in information technology projects.

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Table 01. Top 15 Challenges for Project Management in this century

Rank	Challenges	Parameters	References
1	Risk Management	• Financial Risk • Legal & Contractual Risk • Political Risk • Operational Risk • Force Majeure • Technological Risk • Construction Risk • Maintenance Risk • Environmental Risk • Organizational Risk • Schedule Risk • Design Risk • Project Sponsor Risk	Hwang & Ng (2013); Sawhney & Paul (2014); Padalkar & Gopinath, (2016); Irimia-Diéguez, Sanchez-Cazorla, & Alfalla-Luque, (2014); Kululanga & Kuotcha (2010); Dziadosz, Tomczyk, & Kapliński, (2015)
	Human Resource Management	• Staff Recruitment Issues • Teamwork • Virtual teams • Cultural challenges • Labor related challenges • Cross-cultural leadership skills • Transformational leadership	Hwang & Ng (2013); Sawhney & Paul (2014); Padalkar & Gopinath (2016); Marrewijk (2010); Aarseth et al. (2014); Ainamo et al. (2010); Tabassi & Bakar (2009); Tabassi, Ramli, & Bakar, (2012)
	Project Definition and Planning	• Project Scope Management • Project Location	Hwang & Ng (2013); Khan et al. (2018)
2	Performance Management	• Relationship between standards and performance • Method to align intangible outcomes • Systematic biases and influence of culture in project outcomes • Project management maturity • Key performance indicators	Sawhney & Paul (2014); Padalkar & Gopinath (2016); Elonen & Artto (2003); Crawford (2005); Nogeste & Walker (2008); Shore (2008); Yazici (2009); Ogunlana (2010); Doloi, Sawhney, Iyer, & Rentala (2012); Meng (2012)
3	Knowledge Management	• Knowledge competencies in project organizations • Knowledge sharing contexts • Tacit knowledge acquisition and sharing • Integration processes in cross-functional projects • Knowledge creation in interdisciplinary project teams	Padalkar & Gopinath (2016); Dogbegah, Owusu-Manu, & Omoteso (2011)
4	StakeholderManagement	• Internal stakeholders • External Stakeholders • Stakeholder Relationship • Trust Building • Knowledge Sharing	Aarseth et al. (2014); Hwang & Ng (2013); Padalkar & Gopinath (2016)
	Value Management and Sustainability	**Environmental sustainability** • Energy Efficiency • Water Efficiency • Ecology • Conservation • Material Efficiency • Pollution Control • Land Utilization • Indoor Environmental quality **Social sustainability** • Quality of Life • Health • Transportable • Accessibility • Aesthetics • Safety	Sawhney & Paul (2014); Zhang, Shen & Wu (2011); Tagaza & Wilson (2004); Williams & Dair (2007)

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		• Nuisance to Neighbours **Economic sustainability** • Building Affordability • Expenditure in Renovating and developing • Business enhancement • Legislation Compliance • Profitability • Waste management	
5	Cost Management	• Cost Estimation • Cost Monitoring and Controlling • Value analysis • Life Cycle Cost of Building	Hwang & Ng (2013); Niazi et al. (2016); Padalkar & Gopinath (2016)
6	Agile Project Management	• Fluctuation of prices of materials • Shortages of materials • Changes in material • specification and type • Communicating • changing culture and mind-set • Day-to-day operational problems • Delay in delivery of materials • Equipment availability and failure • Late delivery of equipment • Insufficient number of equipment • High cost of machinery • Process not understood • Just-in-time Inventory Associated Risks • Single Source Alliance Associated Risks • Just-in-Time Management General Risks	Hwang & Ng (2013); Sawhney & Paul (2014); Golini & Kalchschmidt's (2015)
7	Conflict and Dispute Management	• Conflict management strategies • Identifying source of conflict • Conflict and Innovation	Hwang & Ng (2013); Niazi et al. (2016); Sawhney & Paul (2014); Tabassi, Roufechaei, Bakar, & NorAini (2017)
8	Health and safety management	• Leadership mindset and corporate commitment • Life cycle approach to OH, investment in infrastructure and management systems • Awareness, Education and Training • Regulatory framework and compliance • Use of Technology as a strategic enabler	Hwang & Ng (2013); Sawhney & Paul (2014)
9	Communication Management	• Rapid advancement of information and communication technologies • Virtual communications • Maintaining the authenticity and trustworthiness of electronic records • Violating Confidentiality	Hwang & Ng (2013); Padalkar & Gopinath (2016)
10	Claim Management	• Inconsistent Service Delivery • Increasing Customer Demand • Supplier Performance	Dogbegah et al. (2011)
11	Information Technology Management	• BIM Adaptation (construction industry) ▪ Client demand ▪ Lack of BIM skills and expertise in technical and system requirements ▪ Significant adoption cost to implementing BIM ▪ Lack of knowledge about BIM ▪ Lack of BIM guidelines and standards • Primavera as a tools for managing projects not used widely by PMs • Cloud Computing and security issues	Aarseth et al. (2014); Sawhney & Paul (2014);
12	Procurement Management	• Contract Documents • Sub-contract management • Supplier Preselection System	Padalkar and Gopinath (2016); Johnson & Flynn (2015); Sollish & Semanik (2012)

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		• Supplier Performance Measurement • Negotiation • Contract Dispute and Resolutions	
13	Quality Management	• Plan Quality Management • Perform Quality Assurance • Measurement of Metrics • Regulation and traceability	Sawhney & Paul (2014); Padalkar & Gopinath (2016); Suwandej (2016)
14	Ethical Management	• Personal Level • Organizational Level • Trade/Professional Level • Societal Level • Global Level	Dogbegah et al. (2011)
15	Innovation and creativity	• Culture of innovation in project • Develop consensus on a set of objectives in a steering group with divergent interests • Hiring and Managing Remote Workers • Industry Changes • Demographic changes • New Knowledge	Maghsoudi, Duffield & Wilson (2015); Muller and Jugdev (2012)

In addition to the above, an emerging tendency in the growth of high performing virtual teams in different industries is a corporately organised team building function. The main object in almost all team-based activities is clearly set for the team to perform in a stress-free atmosphere. Thus, the project manager is acting as a facilitator and needs to understand the cultural variations and possible sensitivities of different individuals to be able to attempt to gain alignment and coordination of the team to perform cohesively on current and forthcoming projects. Team members' perception of the way in which their desired goals may be affected by actions of others or the project managers significantly influences both the nature of interactions and the final results of conflict management (Tabassi et al., 2017). Preceding studies also outlined that conflict is more likely to arise and escalate when cultural differences are present among the parties (Fisher, Ury, & Patton, 2011). Consequently, one of the main challenges of project managers in international projects is dealing with different cultures that may possibly use different methods in dealing with conflict in the course of managing multi-cultural teams (Tabassi et al., 2017).

6. Findings

Findings of this review paper suggest that project managers are dealing with a number of challenges in daily activities, which have required them to employ effective supervision criteria to reduce flawed results, rejection, and rework activities. PMs should implement, at the early stage of the management plan, an effective scope management, which can mitigate the risks of work interruptions due to unexpected scope creep (Hwang & Ng, 2013; Khan et al., 2018). Furthermore, findings show that Human Resource Management is among the key challenges of project managers in the current century. Under this part PMs are mostly faced with the issues associated with staff recruitment, teamwork management, specifically those under virtual teams, cultural challenges and issues, labour related challenges, and cross-cultural leadership skills (Padalkar & Gopinath, 2016; Tabassi et al., 2012).

The findings also recognize the following as the prominent demotivation components affecting the overall performance and efficiency of project managers in many projects: unclear relationship between standards and performance, lack of financial incentive strategies; method to align intangible outcomes, time-consuming decision-making process by clients; remuneration scale; systematic biases and influence

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of culture in project outcomes, delay in responding to request for information; project management maturity at project and organization level, shortage of skilled labour force; shortage of materials; setting up the key performance indicators for supplier evaluation, clarity and completeness of technical specifications; frequent changing orders during execution; and rework activities (Hwang & Ng, 2013; Sawhney & Paul, 2014; Aarseth et al., 2014; Tabassi et al., 2012).

It is clear that the cultural background of team members, and the environment in which the project teams operate, are two significant aspects in figuring out inspiration drivers for team performance. As a result, further exploration of the prominent culture and values of individuals, is recommended, along with the features of working conditions, prior to application of appropriate motivational theories, or activation of action specific management tactics. It could be suggested that the outcomes received by preceding studies are limited, or in other words they could be relevant only to that particular cultural feature, thereby there is a lack to declare majority of lessons learned from the literature to generality in the international outline.

The other important challenge for organizations is becoming an employer of preference. To reach at this point the project managers need to help the organization in creating an environment that employees desire to become a member of the crew and work for the best of the team while they are there and stay long enough to make a difference. Human resource management in dealing with human capital is therefore a challenge, which is verified by ROI not merely with regards to money, but also in performance, efficiencies and organizational best practices. Without any doubt, technological innovation represents a critical factor in handling HR challenges by facilitating alternatives which will optimize overall project success (Tabassi et al., 2012). This is evidenced by almost every exceptional organizations that try to find the best approaches to carry out HR-related tasks.

According to the findings of this review, future trends of project management are not very different from the ones that have been witnessed in recent years. Complexity is expected to increase, on a global basis. Project teams will be more diverse and virtually-based, so the focus of the project manager will remain communication (Hartono, 2018). Clients' participation will rise and collaboration between stakeholders will start earlier. New tools, technological models and risks will emerge, and new methods, specifically lean and agile, will become implemented more fully.

Project managers in the future are expected to have many different skills. Of prime importance are soft skills, social, communication and leadership skills, broad knowledge about economy, law, industry, tools and methods. Finally, technological skills will be more and more important in the successful delivery of projects.

7. Conclusion

To sum up, the initial literature review across a broad range of journals has been conducted but few articles revealed anything specifically about trends and challenges within projects. A further, more focused literature review was undertaken across the specialist Project Management journals; including but not limited to International Journal of Project Management, Project Management Journal, Journal of Management in Engineering, Construction and Architectural Management, International Journal of Managing Projects in Business. This returned 265 articles specifically featuring trends and challenges

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within projects, however, limited exploration of the experience or perceptions of practitioners within project management could be found, hence, these were of limited use when designing pre-coding structures for analysis. Our review of literature on project management as a discipline comprising a rich body of literature is characterized by early determinism and later expansion to broader contexts aided by paradigmatic, thematic, and methodological diversity. It is noted that several topical themes such as performance, risk, governance & control, project complexity or uncertainty, and organizational factors involve a high degree of interdependence, intractable or unknown variables, and human cognitive factors.

Our findings recognize the key prominent components affecting the overall performance and efficiency of project management in many projects and showed 18 areas related to major challenges for PMs in the 21st century. Therefore, the findings of this review paper show contribution to the future body of knowledge for sustainable development in different industries, particularly those in the construction sector. Those findings under environmental, economic and social challenges for PMs are also addressed the main conference theme.

Since the results of this study are based on systematic literature review, therefore, future study could determine the percentage of the impact of each of the identified challenges on overall project performance.

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