# The role of competency-based certification in ensuring sustainable project delivery

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# The role of competency-based certification in ensuring sustainable project delivery

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**Abstract:** An increasing number of organisations are basing their operations on temporary forms of work such as projects to cope with the needs of the modern business environment, which consequently leads to a significant growth in the demand for competent individuals who can not only adequately manage projects, but also seize the opportunities that this new way of doing business brings in the creation of strategic value for organisations. To be considered competent in the field, individuals should therefore demonstrate a certain level of knowledge, skills and abilities that are assessed, developed or improved through certification systems. Although professional certification was previously driven exclusively by the aspirations of individuals for improvement in a business context, to ensure a more professional project practice, the conditions for performing this type of work are starting to be more formalised at the level of employers (requirements in job advertisements) or the state (regulation of certification bodies or legally prescribed requirements for project positions). With the aim of examining the attitude of project professionals towards the competency-based certification in the field of project management and its legal regulations, as well as its role in ensuring the sustainable project delivery, quantitative empirical research was conducted among 246 certified project, programme and portfolio managers in Croatia. The obtained results not only indicate the importance of certification in project delivery and continuous professional development of individuals, but also emphasise insufficient recognition of certification within organisations, its connection with career progress and compliance of practices at the state level.

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## 1 Introduction

For some time now, project-oriented business has been gaining importance in the private and public sectors alike, given that an increased number of organisations started to base their operations on projects as drivers of short-term performance and long-term value creation through construction of dynamic work environments that involve faster adoption of new technologies, more frequent organisational transformations, better use of limited resources, faster product/service development and reactions to impulses coming from the market (Bakker et al. 2016; Sydow 2017; Sołtysik et al. 2020; Nieto-Rodriguez 2021; Wagner and Radujković 2022). Research shows that this trend will continue and estimates the growth of project-oriented economic activity worldwide from US$12 trillion in 2017 to US$20 trillion in 2027, with more than 88 million people working in project-oriented roles (Nieto-Rodriguez 2021). While the project and organisational variables have a significant weight in the sustainable project delivery and consequently the realisation of the desired competitive position of project-based organisations, the main emphasis is on project leaders who can manage high levels of complexity and support delivery teams in a resource-constrained environment (Wong 2007; Pagell 2010; Bakker et al. 2016; Nieto-Rodriguez 2021; Wagner et al. 2021; Longhurst and Choi 2023). The role of project manager is thus evolving from the administration of the project towards strategic activities such as establishing clear and achievable objectives, balancing the competing demands and adjusting plans and approaches to the different concerns and expectations of the various stakeholders, managing complex adaptive systems, as well as facilitating high performance and training, coaching, motivating and developing teams to create value for their organisations (Ahsan et al. 2013; Nimmo and Usher 2020; Cabeças and

Silva 2021). Consequently, the growing dynamics of the business environment requires an increasing level of competency of project managers, including formal education, qualifications, practical experience and multidisciplinary orientation (Bredin and Söderlund 2013; Alvarenga et al. 2019; Edum-Fotwe and McCaffer 2000) to understand diverse aspects of the project environment and ensure project delivery through coordination of work of a large set of people, while coping with challenges this way of work brings (Wong 2007; Ulrich et al. 2008; Anantatmula and Rad 2018; Verenych and Bushuyev 2018; Bukvić et al. 2020; Akhwaba 2021). Although approaches to defining the concept of competency significantly vary, it can be more narrowly understood as a combination of knowledge (information and experience), skills (technical capabilities to perform a task) and abilities (effective delivery of knowledge and skills within a certain context) – called the KSA model – used to improve performance (Rodriguez et al. 2002; Crawford 2005; Hayton and Kelley 2006; Ulrich et al. 2008; IPMA 2015; Lizunkov et al. 2015; Struková and Bašková 2017; Sołtysik et al. 2020). As assurance of the project manager's competency becomes an important concern for business practice and taking into account their complexity and necessity for acquiring a variety of elements, in order to develop, improve or assess them, professional certification comes to the fore. The certification process should therefore be conducted in accordance with the framework of professional competence of the industry and include an evaluation of whether the project manager has the appropriate combination of knowledge, skills and abilities set out in the industry that can be adequately applied to the project for its sustainable delivery. The certificate should then provide legitimacy, which will generate a certain level of trust in potential employers, contractors and partners (Drechsler and Sati 2015; Loufrani-Fedida and Saglietto 2016; Kavosa et al. 2017; Blomquist et al. 2018). Once obtained, the certificate is valid for a limited time period, and certificate holders are obligated to keep up with trends and professionally develop, as well as periodically undergo the recertification process (Capuz-Rizo 2023). This way, the certification in the field can have a positive impact on the micro-level that includes the improvement of the individual performance and results of both the certificate holder and organisation and the macro-level that includes the improvement of reliability and quality of organisations in the industry, while mitigating various safety-related risks (Cohen 2012; Kavosa et al. 2017). Also, as opposed to licensing, which does not imply levels of quality but is required by law to perform activities or practice the profession, certification in many cases is voluntary and is focussed on using a particular professional title defined by standards for education, experience and examination performance to ensure project practices that are more competitive and have a chance to provide better quality (Farinha et al. 2013). Still, in some countries, the requirements for performing project management tasks in specific industries are further formalised – certificates are becoming a necessity required by the employers for project manager positions, especially in technical projects such as construction and IT (e.g. Canada, Germany), professional bodies receive chartered status that gives them authority to award chartered status to individuals who satisfy the right competencies (e.g. the UK), or the certification for carrying out work in the area is regulated by national bodies, chambers and laws (e.g. Italy, Poland). In the Republic of Croatia, in 2015, the law 'Zakon o poslovima i djelatnostima prostornog uređenja i gradnje' (Zakon-NN-78/15 2015) (together with its supplement) 'Zakon o izmjenama i dopunama Zakona o poslovima i djelatnostima prostornog uređenja i gradnje' (Zakon-118/18; 110/19) was passed and since then prescribes cases when investors (who are considered public contracting authorities in the sense of regulating governing public procurement) must appoint project managers. In accordance with this law, the project manager will perform construction project management activities, and to be elected to the position, he/she must have (1) at least 8 years of work experience in the relevant jobs, (2) education in the field of construction, architecture or mechanical or electrical engineering and (3) additional education in the field of construction, architecture or mechanical or electrical engineering with an educational programme that includes at least 30 ECTS credits in areas relevant to construction project management or an internationally recognised certificate in the field of project management (Pravilnik-NN-85/15 2015). Although a range of project management certificates offered by international (e.g. AXELOS, International Project Management Association [IPMA], Project Management Institute (PMI) and national certification and qualification bodies (e.g. Australian Institute of Project Management, Association for Project Management, Project Management Association of Japan) are available on the market, the certificates are mostly limited to an exam with inclusion of certain situational questions to assess the knowledge and professional experience of the person, but without proving their actual ability to apply the acquired knowledge and skills in real project situations (Powell 2014; Kavosa et al. 2022; Capuz-Rizo 2023). The organisation that has come the farthest on a global level in its efforts to assess competencies of individuals in project management is the IPMA, with a certification process that includes the assessment

of practical experience and competence demonstrated in the project environment. It includes a written project report, which is verified during an oral interview to prove not only the candidates' knowledge and skills, but also the ability to apply them to achieve observable results for a task within a project context (Müller and Turner 2010), while levels are defined to describe the degree to which the candidate demonstrates competence: Certified Project/Programme/Portfolio Director – Level A, Certified Senior Project/Programme/Portfolio Manager – Level B, Certified Project Manager – Level C and Certified Project Management Associate – Level D. The IPMA certification is based on a global competency standard Individual Competence Baseline (ICB), complementary to the world's renewed process-based project management standards, that defines the individual competencies presented in three areas – perspective, people and practice – required of people working in the field of projects, programmes and portfolio management regardless of the industry, while avoiding role-specific terminology due to the universality of the standard application (Vukomanović et al. 2016). Each competency within the standard is presented by definition, purpose and description and lists the general knowledge and skills that need to be demonstrated, as well as key competency indicators (KCIs) presented by description and measures that are used to assess the output performance (IPMA 2015).

However, despite the global acceptance of certification among project management professionals and the significant increase in the number of certified individuals, previous research still insufficiently examines the actual importance of different types of certifications in the context of project performance (Pinto and Winch 2016; Joseph and Marnewick 2018; Aslam and Bilal 2021). The focus of the studies was on the links between project management certification and specific areas such as: (a) selection and recruiting (de los Ríos-Carmenado et al. 2011; Farashah et al. 2019), (b) motivation for obtaining certification (Blomquist et al. 2018), (c) salary (Carden and Callahan 2006), (d) importance of legal regulations (Szewc 2022) and (e) project success and quality (Catanio et al. 2013; Abu-Rumman 2014; Drechsler and Sati 2015; Robertson and Stock 2023), but the results are usually either relevant to a specific community or inconclusive. With the aim of building on the perceived research gap and to make contributions in the field, the authors conducted empirical research among certified project professionals and examined their attitude towards the competency-based certification and its legal regulations, as well as its role in ensuring the sustainable project delivery. The rest of the paper has the following structure – detailed explanation of the research methodology, sampling procedure and sample characteristics, followed by the summary of the findings and discussion, and conclusion with limitations and suggestions for future research endeavours.

## 2 Research methodology and sample

The quantitative research was carried out using a specifically designed questionnaire consisting of both close- and open-ended questions related to the research problem and demographic and professional background of the respondents. The respondents were firstly asked to provide the details about themselves such as their age, gender, education level, certification level, experience in project management and domain within which they work on projects, as well as to rate (on a Likert scale from 1 to 5) the reasons behind their decision to obtain professional certification in the field (1 having the least and 5 having the most importance). In addition, the respondents were asked to express their opinion in open-ended questions about the importance of the project management certificate for sustainable project delivery, the legal regulation prescribing the certification of construction project managers for construction projects and the introduction of the obligation for projects to be managed exclusively by certified project managers. The estimated time for completing the questionnaire was 10 min.

The questionnaire was sent to the population of certified project, programme and portfolio managers in Croatia in October 2023 (all levels according to the IPMA 4-L-C certification system) with the help of the IPMA Hrvatska – Croatian Member Association of IPMA. During the research, all ethical principles related to implementation were respected in terms of anonymity and voluntariness, as well as the right to express one's own opinions and the right to withdraw. A total of 246 correctly completed questionnaires were collected, which constitutes 27.03% of the total number of active IPMA-certified professionals in Croatia. Excel and SPSS 27 (IBM Corp. Released 2020. IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp) were used for quantitative statistical processing of primary data, which included descriptive statistics, the Relative Importance Index (RII) and the Mann–Whitney *U* test. Qualitative primary data were analysed by using the grounded theory approach.

The sample characteristics are presented in Table 1.

**Tab. 1:** Sample characteristics.

| Level | Variable | Data distribution |
|---|---|---|
| Individual | Age (years) | <25 years, 0.41%; 25–34 years, 13.01%; 35–44 years, 34.14%; 45–54 years, 35.77%; ≥55 years, 16.67% |
| | Gender | Men: 73.2%; Women: 26.8% |
| | Education level | Bachelor: 0.81%; Graduate: 82.52%; Postgraduate: 16.67% |
| Professional | Work experience | <3 years, 8.54%; 3–5 years, 7.72%; 5–10 years, 25.20%; 10–15 years: 24.39%; >15 years, 34.15% |
| | Certification level | A: 1.63%; B: 9.35%; C: 49.59%; D: 39.43% |
| | Project domain | Civil engineering/architecture: 56.5%; other: 42.5% |

As shown in Table 1, men constituted 73.2%, while women constituted 26.8% of the sample. Only 0.41% respondents were under the age of 25 years, 13.01% had ages between 25 years and 34 years, 34.14% between 35 years and 44 years, 35.77% between 45 years and 54 years and 16.67% above 55 years. Most of the respondents obtained a graduate education level (82.52%), followed by respondents who held a postgraduate degree (16.67%), while only a minor part of the respondents obtained the bachelor education level (0.81%). As for the work experience, around a third of the respondents have more than 15 years of experience in project management (34.15%), followed by respondents with 5–10 years (25.20%), 10–15 years (24.39%), <3 years (8.54%) and 3–5 years of experience (7.72%). The majority holds the IPMA level C project management certificate (49.59%). Level D is represented in 39.43% cases and level B in 9.35%, while level A is under-represented with 1.63%. However, this is not unusual as the total number of A-certified project professionals in Croatia is 14, while other categories have significantly more certificate holders (level B – 94, level C – 277 and level D – 525). The respondents were mainly from the field of civil engineering/architecture (56.5%), while the remaining 42.5% came from different industries, such as IT and electrical engineering (16.26%), education (4.47%), mechanical engineering (3.66%), telecommunications (3.25%), state administration (3.25%), banking (1.21%) and other fields (8.94%).

# 3 Results and Discussion

To obtain a deeper insight into the reasons for certification and the respondents' opinion on the importance of certification and legal regulations in project delivery, the authors divided the respondents into two categories – those from construction/architecture, considering the existence of legal regulations that attribute the necessary criteria for managing projects in the domain, and other non-construction/architectural categories. The results were divided as follows.

## 3.1 Reasons behind certification

Given that the questions in this section used a Likert scale, which is ordinal, a non-parametric RII technique was used to determine the relative importance and ranking of the reasons as to why the respondents decided to obtain certification in the field of project management (Kometa et al. 1994; Holt 2014). RII was calculated according to the formula:

$$\mathrm{RII} = \frac{\sum w}{A * N} = \frac{5\mathrm{n}_5 + 4\mathrm{n}_4 + 3\mathrm{n}_3 + 2\mathrm{n}_2 + 1\mathrm{n}_1}{5*246} \quad (1)$$

where W indicates the weighting given to each indicator within the range from 1 to 5 by the respondents, multiplied by the number of respondents for each indicator; A the highest weight (5); and N the total number of respondents (246).

The RII value ranges from 0 to 1, and as the value increases, so does the importance of the particular reason for certification. The results are presented in Table 2.

In the first category, the most important reason for obtaining the certificate with the relative importance of 0.869 is continuous professional development within the chosen profession, closely followed by the acquisition of competency for managing projects of greater complexity (0.768), as well as proof of having project management competencies and applying for tenders for new workplaces or jobs (0.753). The reasons with the least importance were having the possibility of advancement within the organisation to a higher management position (0.591) and insistence by the employer (0.407). This group was also asked whether they considered the obligation to satisfy the legal regulations for the management of construction projects that have come into force in Croatia to be important as a reason for certification. The value of

**Tab. 2:** RII.

| Statement | C/A PM | | Non-C/A PM | |
|---|---|---|---|---|
| | RII | Rank | RII | Rank |
| I decided to get certified in order to continuously professionally develop within my profession. | 0.869 | 1 | 0.824 | 1 |
| I decided to get certified in order to have the possibility of advancement within the organisation to a higher management position. | 0.591 | 4 | 0.639 | 4 |
| I decided to get certified because of my employer's insistence. | 0.407 | 5 | 0.460 | 5 |
| I decided to get certified to prove that I have project management competencies and apply for tenders for new workplaces/jobs. | 0.753 | 3 | 0.796 | 2 |
| I decided to get certified in order to acquire the competence for managing projects of greater complexity. | 0.768 | 2 | 0.770 | 3 |

RII, Relative Importance Index.

the RII was 0.708 and it indicates that they consider this reason as important.

In the second category, the reason for obtaining the certificate that had the highest importance is again to continuously professionally develop within the chosen profession, with the relative importance of 0.824. This was closely followed by proof of having project management competencies and applying for tenders for new workplaces or jobs (0.796) and acquisition of competency for managing projects of greater complexity (0.770). The reasons with the least importance were having the possibility of advancement within the organisation to a higher management position (0.639) and insistence by the employer (0.460). The obtained results indicate the still-prevailing insufficiency in the recognition of certification within organisations and its connection with career progress in the chosen profession.

In addition, the Mann–Whitney *U* test (Mann and Whitney 1947) was performed to check whether there are differences in the terms of the central tendency between two independent groups of respondents (construction/architecture and non-construction/architecture). To obtain the *p*-value, a *z*-value was calculated that shows the signed, fractional number of standard deviations by which an event is above the mean value being measured and is according to the formula:

$$z = \frac{U - \mu_u}{\sigma_u} = \frac{\mathrm{U} - \frac{\mathrm{n_x n_y}}{2}}{\sqrt{\frac{\mathrm{n_x n_y}}{12}}} \quad (2)$$

where $U$ denotes the number of occurrences $\mu_\mu$, the expected value of $U$ (with $n_x n_y$ being the number of cases) and $\sigma_\mu$ the standard error of $U$.

The results of the analysis are shown in Table 3 and indicate that there are no statistically significant differences between the examined groups as *p*-values for all the answers were above 0.05.

## 3.2 The importance of certification in sustainable project delivery

Certified professionals from both categories were asked whether they think competency-based certification is important for successful project management. By using the grounded theory approach, the results were organised around constructed codes with the quotes that adequately depicted them (Corbin and Strauss 2008). The vast majority of respondents in the field of construction/architecture, more precisely 88% of them, believe that certification plays a significant role and the following appear as the most important reasons:

- confirmation of knowledge, skills and abilities in the field of project management:

  'Qualifications are derived primarily from work on projects (which is anticipated by certification as the first condition for C-A), while the requirements for education and thinking about management through the prism of certification can direct the manager towards expanding knowledge, the circle of managers, exchange of experiences, reflection, which certainly increases competencies and possibly ultimately makes project management more successful'.
  'Yes, because the systematisation and standardisation of competencies improves project management procedures'.
  'Knowledge and experience are important, and the certificate confirms one's competence at a higher level than the national level'.
  'The certificate is important because it proves that a person has acquired competencies and knowledge that helps in managing projects'.

**Tab. 3:** Mann–Whitney *U* Test.

| Statement | Group | *N* | Mean rank | Sum of ranks | Mann–Whitney *U* test | *Z* | Asymp. Sig. (two-tailed) |
|---|---|---|---|---|---|---|---|
| I decided to get certified in order to continuously professionally develop within my profession. | Non C/A PM | 107 | 114.40 | 12,241.00 | 6,463.000 | −1.920 | 0.055 |
| | C/A PM | 139 | 130.50 | 18,140.00 | | | |
| | Total | 246 | | | | | |
| I decided to get certified in order to have the possibility of advancement within the organisation to a higher management position. | Non C/A PM | 107 | 129.79 | 13,887,50 | 6,763.500 | −1.249 | 0.212 |
| | C/A PM | 139 | 118.66 | 16,493.50 | | | |
| | Total | 246 | | | | | |
| I decided to get certified because of my employer's insistence. | Non C/A PM | 107 | 130.93 | 14,009.00 | 6,642.000 | −1.527 | 0.127 |
| | C/A PM | 139 | 117.78 | 16,372.00 | | | |
| | Total | 246 | | | | | |
| I decided to get certified to prove that I have project management competencies and apply for tenders for new workplaces/jobs. | Non C/A PM | 107 | 128.10 | 13,706.50 | 6,944.500 | −0.943 | 0.346 |
| | C/A PM | 139 | 119.96 | 16,674.50 | | | |
| | Total | 246 | | | | | |
| I decided to get certified in order to acquire the competence for managing projects of greater complexity. | Non C/A PM | 107 | 119.81 | 12,820.00 | 7,042.000 | −0.751 | 0.453 |
| | C/A PM | 139 | 126.34 | 17,561.00 | | | |
| | Total | 246 | | | | | |

- help better recognise situations and act during the implementation of projects:

  'Yes, it gives clear guidelines for a complete and unique action based on one's own personality'.
  'I believe that it is important because it helps to direct the management of the project and to choose an adequate approach during the project implementation'.
  'It is important, it gives you basic knowledge and indicates the necessary competencies for certain situations on the project'.
  'Yes, especially in the case of managing complex infrastructure projects, where the knowledge of project management in terms of managing human resources, finances, risks, etc. is of crucial importance'.

- facilitate the recognition of experts in the field and increase their value on the market:

  'It certainly helps that this segment is regulated in a certain way and that the value of education in the field increases'.
  'It is important to have a certificate, because it confirms authorisation and qualification. On the market, I meet too many "experts" who do their work superficially, go below the price in tenders and disrupt market conditions, thereby also jeopardising the survival of companies and other colleagues who do their work conscientiously, in accordance with the regulations and conditions of the tender'.

Respondents harbouring the opinion of certification being unimportant emphasise that knowledge, experience and the ability to work with people are more important than a physical certificate, that too much bureaucracy should not be introduced into project management and that they were not asked to present the certificate or that it was insufficiently recognised in the company where they work or in Croatia, in general.

As in the previous category, the results indicate that the vast majority of respondents outside the field of construction/architecture, i.e. 86% of them, believe that certification in the field is important for successful project management. The reasons they give are also very similar to those previously obtained:

- encourages individuals to improve, think in new ways, look at the bigger picture and better understand the elements and relationships between them that are crucial in the implementation of projects:

  'I believe that the PM certificate and the knowledge that needs to be acquired is essential for successful project management, especially for large projects. It is necessary to deal not only with the competencies of time and money, but also with others such as managing resources, knowledge of legislation, safety at work, managing risks (positive and negative), organising the mindset of leading people, and as such encouraging them and leading them to better performance of assigned tasks'.
  'I think it is, because it gives insight into the psychological aspect of project management and people management. It develops the ability to see the "bigger picture"'.
  'The project management certificate is a key part of improving and developing personal competencies for more successful project management'.

- ensures standardised evaluation and confirmation of the competencies of individuals and the selection of the right collaborators on the project:

  'The certificate is important because it evaluates the competencies of future managers in a standard way. PMs thereby receive confirmation that they are capable of carrying out project activities in accordance with the standard and monitoring risks. This directly helps the goal: that the project is completed at all, and that the project is within the budget, time and scope'.
  'Yes, of course, it confirms the knowledge and abilities of the project manager through a certified document accepted not only in Croatia, but also in the world'.
  'Each certificate is a professional association's confirmation of the worker's qualifications for a certain job, thus facilitating the selection of a competent person'.
  'I think it's because it increases the credibility of the person who owns it'.
  'The PM certificate provides credibility because it is proof that a person has the required competencies and experience'.
  'The PM certificate is important because it makes us stand out among the competition'.
  'Yes, I believe that without control of professional skills, there is no successful and recognised professional association as a point of reference, a beacon that will facilitate cooperation between PM certified managers and investors/stakeholders'.
  'I believe that the certificate is necessary in order to standardise and formally recognise the knowledge needed for project management'.
  'The certification process frames and systematises the acquired skills in practice and ultimately proves the ability of PM. There should be a project management chamber in the country to conduct the certification process'.
- helps manage projects in a structured way:

  'Yes, it validates the methods I use and shows me personally the correctness of my actions'.
  'The certificate contributes to the success of project management because it provides basic guidelines on how the project manager can resolve certain doubtful situations that often arise during project implementation in an acceptable manner'.
  'Yes, because it points to the competencies that a project manager should have and reveals how much more you can and should learn, thus encouraging the continuous improvement of project managers, which certainly leads to more successful project management'.

Respondents who consider that the certificate is not important state that practice is much more important than the certification as such, and that although it is proof of the will for professional education and progress, it does not help in concrete situations and it is not sufficiently recognised by employers and in Croatia, in general.

Finally, respondents from both categories believe that in addition to obtaining a certificate, continuous professional development is also necessary:

'A certificate is important, but without continuous direct work on management, self-education and professional education, it remains just another certificate'.
'I think the certificate certainly helps in terms of reminders and grouping of necessary competencies in one place and the need for continuous education'.
'The certification process offers a systematisation of knowledge and indicates the candidate's shortcomings – areas in which he/she must improve'.
'It is very important to be educated in the field of project management and to constantly gain new knowledge to be recognised as a professional in the PM community'.
'Through continuous learning, we encounter new ways of managing projects and the experiences of other colleagues, which can be of great help'.

## 3.3 Legal regulation in project management and implementation of projects

Respondents from the field of construction/architecture were initially asked to review the current legislation in Croatia prescribing the certification of construction for project managers, and how it affects the more sustainable project delivery. Among the respondents, 15.82% do not consider such a law necessary, primarily because they see that the prescribed criterion is still not always present in tender conditions, the law is insufficiently harmonised with other laws, project managers are introduced too late in the project and neither the required knowledge nor the necessary certificate is prescribed clearly enough. The vast majority, however, see the advantages of such a law – as many as 82.74%, in the form of significant guidelines for regulating the profession and the recognition of qualified experts for the implementation of projects, especially with the increase in their complexity. The remaining 1.44% of respondents think that they still do not have complete information and concrete evidence to assess the usefulness of the law or consider that it is only partially important, bearing in mind other parameters that are not covered by it and are important for the final outcome of the project.

When asked whether they think other types of projects (i.e. those apart from construction) should be managed by certified project managers, 5.75% of the respondents from construction/architecture are not sure because they have no insight into what kind of projects are managed in other industries, and 12.9% believe that it is not necessary, but desirable, while 81.29% of them consider that projects in each domain should be managed exclusively by certified competent experts.

Respondents from other industries have a similar opinion. Only 8.5% of them consider the competency-based

project management certificate unnecessary, and 14.9% do not consider the certificate necessary, but believe that the project must be conducted in accordance with defined processes and practices in the specific organisation/industry, while 76.7% consider it necessary as a proof that a project manager is competent enough and to ensure project management in accordance with the rules of the profession.

## 4 Conclusion

The rapid development of the project management profession and the organisation of work within temporary project organisations, as well as predictions of future trends in the field, emphasise the importance of developing and continuously improving the knowledge, skills and abilities of individuals in project roles through the professional certification process. The results of the conducted research among certified project professionals further strengthen the opinion that the formal recognition of project management competencies can contribute to the increase in individuals' professionalism, which will ultimately result in improved performance and sustainable project delivery, ensuring the organisation's operations in accordance to market conditions and achieving a competitive advantage. The evolution of certification systems is expected to be determined by complex technological developments, changing demands, recognition and inclusion in the value systems of the organisations, regulating the profession status at the state level and forming project management chambers to socialise new recruits and control entrance to the occupation, as well as social and cultural trends from the market. In addition, with the aim of not merely creating a more comprehensive view of the topic and ensuring a potential way for professional associations to introduce continuous professional development that starts with certification and directs individuals through different paths of training and improvement, but also overcoming the limitations of the present research, the authors suggest including non-certified project experts in the sample, gathering longitudinal data in the countries that conduct certification based on globally recognised project management standards and examining the gap in research between different types of professional certification in the field and objective measures of project performance.

## References


Abu-Rumman, A. (2014). Prince or pauper? Does project management certification really matter. *PM World Journal*, *3*(6), pp. 1-7.

Ahsan, K., Ho, M., & Khan, S. (2013). Recruiting project managers: A comparative analysis of competencies and recruitment signals from job advertisements. *Project Management Journal*, *44*(5), pp. 36-54

Akhwaba, J. (2021). Leadership skills, stakeholder management and execution of fibre-optic infrastructure: intervening influence of government policy. *Organization, technology & management in construction: an international journal*, *13*(1), pp. 2426-2437.

Alvarenga, J. C., Branco, R. R., Guedes, A. L. A., Soares, C. A. P., & da Silveira, W. (2019). The project manager core competencies to project success. *International Journal of Managing Projects in Business*, *13*(2), pp. 277-292.

Anantatmula, V. S., & Rad, P. F. (2018). Role of organizational project management maturity factors on project success. *Engineering Management Journal*, *30*(3), pp. 165-178.

Aslam, A., & Bilal, A. (2021). Impact of project management certification on project performance. *Journal of Project Management, 6*(3), pp. 133-142.

Bakker, R. M., DeFillippi, R. J., Schwab, A., & Sydow, J. (2016). Temporary organizing: Promises, processes, problems. *Organization Studies*, *37*(12), pp. 1703-1719.

Blomquist, T., Farashah, A. D., & Thomas, J. (2018). Feeling good, being good and looking good: Motivations for, and benefits from, project management certification. *International Journal of Project Management*, *36*(3), pp. 498-511.

Bredin, K., & Söderlund, J. (2013). Project managers and career models: An exploratory comparative study. *International Journal of Project Management, 31*(6), pp. 889-902.

Bukvić, I. B., Buljubašić, I., & Ivić, M. (2020). Project management education in Croatia: A focus on the IT sector needs. *Management: Journal of Contemporary Management Issues, 25*(1), pp. 255-278.

Cabeças, A., & Silva, M. M. D. (2021). Project management in the fourth industrial revolution. *International Technology, Science and Society Review, 2*(9), pp. 79-96.

Capuz-Rizo, S. F. (2023). Projectification and professional certification. In: Martínez Montes, F., & Moreno Escobar, B. (eds.), *The Projectification of Society. A necessary debate*. Editorial Universidad de Granada, Granada, pp. 221-247.

Carden, L. L., & Callahan, J. (2006). Project management salary predictors: Career development activities and extrinsic reward. In: *Proceedings of the Seventh International Conference on HRD Research and Practice across Europe (22-24 May 2006),* Tilburg, The Netherlands

Catanio, J. T., Armstrong, G., & Tucker, J. (2013). The effects of project management certification on the triple constraint. *International Journal of Information Technology Project Management (IJITPM), 4*(4), pp. 93-111.

Cohen, D. J. (2012). Identifying the value of HR certification: Clarification and more complex models required. *Human Resource Management Review, 22*, pp. 258-265.

Corbin, J., & Strauss, A. (2008). Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. Sage Publications, Thousand Oaks.

Crawford, L. (2005). Senior management perceptions of project management competence. *International Journal of Project Management, 23*(1), pp. 7-16.

de los Ríos-Carmenado, I., Díaz-Puente, J. M., & Martínez-Almela, J. (2011). The effect that project management certification has on employability: Agents' perceptions from Spain. In: *Applied Economics, Business and Development: International Symposium, ISAEBD 2011 (August 6-7, 2011)*, Dalian, China, pp. 35-47.

Drechsler, A., & Sati, T. (2015). A competence-focused assessment framework for project management certifications. In: *Proceedings of the Twenty-first Americas Conference on Information Systems (13-15 August 2015)*, Fajardo, Puerto Rico, pp. 1-15.

Edum-Fotwe, F. T., & McCaffer, R. (2000). Developing project management competency: Perspectives from the construction industry. *International Journal of Project Management, 18*(2), pp. 111-124.

Farashah, A. D., Thomas, J., & Blomquist, T. (2019). Exploring the value of project management certification in selection and recruiting. *International Journal of Project Management, 37*(1), pp. 14-26.

Farinha, J. M. T., Galar, D., Adelino Fonseca, I. A., & Kumar, U. (2013). Certification of maintenance providers: A competitive advantage. *Journal of Quality in Maintenance Engineering, 19*, pp. 144-156.

Hayton, J. C., & Kelley, D. J. (2006). A competency-based framework for promoting corporate entrepreneurship. *Human resource management: Published in cooperation with the School of Business Administration, The University of Michigan and in Alliance with the Society of Human Resources Management, 45*(3), pp. 407-427.

Holt, G. D. (2014). Asking questions, analysing answers: Relative importance revisited. *Construction Innovation, 14*(1), pp. 2-16.

International Project Management Association (2015). *Individual Competence Baseline*, Vol. 4.0. International Project Management Association, Zurich.

Joseph, N., & Marnewick, C. (2018). Investing in project management certification: Do organisations get their money's worth? *Information Technology and Management, 19*, pp. 51-74.

Kavosa, M., Lapiņa, I., & Briņķis, K. (2017). Certification of persons: Empirical study in the field of energy construction in Latvia. *Cogent Business & Management, 4*(1), pp. 1334407.

Kavosa, M., Lapina, I., & Kozlovskis, K. (2022). Sustainable approach to certification of persons: Ensuring reliability and quality. *Sustainability, 14*(3), pp. 1137.

Kometa, S. T., Olomolaiye, P. O., & Harris, F. C. (1994). Attributes of UK construction clients influencing project consultants' performance. *Construction Management and Economics, 12*(5), pp. 433-443.

Lizunkov, V., Marchuk, V., & Podzorova, E. (2015). Identification of criteria, features and levels of economic and managerial competencies development for bachelors in mechanical engineering. *Procedia-Social and Behavioral Sciences, 206*, pp. 388-393.

Longhurst, R., & Choi, W. (2023). What the next generation of project management will look like. Available at: https://hbr.org/2023/11/what-the-next-generation-of-project-management-will-look-like [accessed 10 November, 2023].

Loufrani-Fedida, S., & Saglietto, L. (2016). Mechanisms for managing competencies in project-based organizations: An integrative multilevel analysis. *Long Range Planning, 49*(1), pp. 72-89.

Mann, H. B., & Whitney, D. R. (1947). On a test of whether one of two random variables is stochastically larger than the other. *The annals of mathematical statistics, 18*(1), pp. 50-60.

Müller, R., & Turner, R. (2010). Leadership competency profiles of successful project managers. *International Journal of Project Management, 28*(5), pp. 437-448.

Nieto-Rodriguez, A. (2021). The project economy has arrived. Available at: https://hbr.org/2021/11/the-project-economy-has-arrived [accessed 10 November, 2023].

Nimmo, L., & Usher, G. (2020). 'Job-ready' project managers: Are Australian Universities preparing managers for the impact of AI, ML and Bots? *Project Management Research & Practice, 6*. pp. 1-23.

Pagell, M. (2010). An examination of strategies employed for the integration of management systems. *The TQM Journal, 22*, pp. 648-669.

Pinto, J. K., & Winch, G. (2016). The unsettling of "settled science": The past and future of the management of projects. *International Journal of Project Management, 34*(2), pp. 237-245.

Powell, M. (2014). Energy workforce: Certification – Do you get what you pay for? *PennEnergy, 14*, pp. 25-27.

Pravilnik-NN-85/15 (2015). Pravilnik o potrebnim znanjima iz područja upravljanja projektima. Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/2015_08_85_1662.html [accessed 10 November, 2023].

Rodriguez, D., Patel, R., Bright, A., Gregory, D., & Gowing, M. K. (2002). Developing competency models to promote integrated human resource practices. *Human Resource Management: Published in Cooperation with the School of Business Administration, The University of Michigan and in alliance with the Society of Human Resources Management, 41(*3), pp. 309-324.

Robertson, J. W., & Stock, G. N. (2023). The effects of project management certification and project complexity on project quality in information technology projects: An organisational information processing perspective. *International Journal of Project Organisation and Management, 15*(3), pp. 375-394.

Sołtysik, M., Zakrzewska, M., Sagan, A., & Jarosz, S. (2020). Assessment of project manager's competence in the context of individual competence baseline. *Education Sciences, 10*(5), pp. 146.

Struková, Z., & Bašková, R. (2017). Innovation of education for the development of key competencies of university graduates. *Organization, Technology & Management in Construction: An International Journal, 9*(1), pp. 1565-1573.

Sydow, J. (2017). Temporary organizing – The end of organizations as we know them? *Rutgers Business Review, 2*(2), pp.199-205.

Szewc, T. (2022). The impact of legal regulations on investment project management in construction. *Organizacja i Zarządzanie: kwartalnik naukowy, 1*(57), pp. 145-159.

Ulrich, D., Brockbank, W., Johnson, D., Sandholtz, K., & Younger, J. (2008). *HR Competencies: Mastery at the Intersection of People and Business,* Society of Human Resource Management, Alexandria.

Verenych, O., & Bushuyev, S. (2018). Interaction researching mental spaces of movable context, stakeholders, and project manager. *Organization, Technology & Management in Construction: An International Journal, 10*(1), pp. 1684-1695.

Vukomanović, M., Young, M., & Huynink, S. (2016). IPMA ICB 4.0 – A global standard for project, programme and portfolio management competences. *International Journal of Project Management, 34*(8), pp. 1703-1705.

Wagner, R., & Radujković, M. (2022). Effects of lagging projectification in the public sector on realizing infrastructure projects. *Organization, Technology and Management in Construction: An International Journal, 14*(1), pp. 2559-2570.

Wagner, R., Huemann, M., & Radujkovic, M. (2021). The influence of project management associations on projectification of society – An institutional perspective. *Project Leadership and Society, 2*, pp. 100021.

Wong, Z. (2007). Human Factors in Project Management: Concepts, Tools, and Techniques for Inspiring Teamwork and Motivation. Jossey-Bass, San Francisco.

Zakon-118/18; 110/19 (2019). Zakon o izmjenama i dopunama Zakona o poslovima i djelatnostima prostornog uređenja i gradnje. Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/ 2019_11_110 _2215.html [accessed 10 November, 2023].

Zakon-NN-78/15 (2015). Zakon o poslovima i djelatnostima prostornog uređenja i gradnje. Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/2019_11_110_2215.html [accessed 10 November, 2023].