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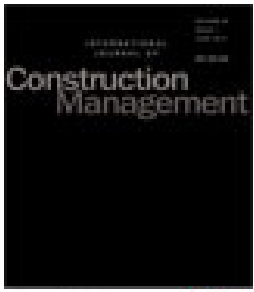
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A lean talent management framework for maximizing creativity in architectural design firms

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ABSTRACT

Being one of the creative industries worldwide, Architecture plays a significant role towards developing communities, fulfilling their needs and meeting their expectations. The divergence of societal problems and the complexity nature of projects called for creative and non-traditional solutions to address these problems and overcome complexities. Architectural Design Firms (ADFs) are responsible for achieving this mission, yet lack of motivation and demotivation acted as barriers for creativity. Recently, Talent Management (TM) was presented as an innovative approach for fostering creativity, balancing work-life commitments, enhancing motivation and reducing demotivation. However, lack of utilizing talented human capitals, which was counted as waste of resources, necessitated the integration of lean thinking principles with TM. This research aims to develop a Lean Talent Management Framework to maximize creativity in ADFs. To achieve this aim, a research strategy consisted of literature review and survey questionnaire is designed to gather data sufficiently rich to cover the research topics and investigate the perception and application of ADFs towards integrating TM in ADFs as an approach for enhancing creativity. Although only Egyptian ADFs were surveyed, other countries that share similar characteristics will benefit from the application of the framework towards maximizing creativity in ADFs.

KEYWORDS

Architectural design firms; creativity; motivation; demotivation; talent management; lean thinking; lean talent management

Introduction and research methodology

Architecture is a novel and complex business. It is classified as one of the creative industries that are talent-based and depend heavily on the creativity of individuals (Cunningham 2003; Jones et al. 2004). In addition, it is an integral part of the Architecture, Engineering and Construction (AEC) industry (Kamara et al. 2002). Architecture plays a vital role in developing creative solutions that address community needs and solve emerging problems innovatively. However, ADFs are characterized with inefficient utilization of their talented personnel, which is considered a waste of resources. Lack of talents utilization leads to lack of creativity, reduce market share and competitive advantage as well as decrease customer satisfaction (Khalil et al. 2017). ADFs that wish to remain in market and compete for the future are required to adopt Talent Management which is presented recently as an innovative approach for fostering creativity through proposing different perspectives for managing talented human resources; enhancing motivational factors and reducing de-motivational

barriers as such considerations affect creative development in ADFs. Moreover, Talent Management is essential for balancing work-life commitments and achieving mutual benefits (Amabile 1993; Deery 2008; Oyedele 2013; Thunnissen et al. 2013). Despite the role of Talent Management in enhancing creativity, several factors were identified in previous research as barriers for its integration in creative industries. These barriers need to be overcome for successful achievement of Talent Management benefits. (Tafti et al. 2017). In line with efficient utilization of human resources, Lean Management has proven to be successful in eliminating human waste and respecting people (Koskela 2004). As lean thinking has a common perception of eliminating waste and maximizing value, it was highlighted that it is privileged in maximizing utilization of talented personnel and enhancing the talent management strategy through its different principles, tools and considerations (Womack et al. 1990; Agan 2014). Accordingly, this article aims to propose a framework based on Lean Management as an approach for maximizing creativity in ADFs. To achieve the abovementioned aim, a

mixed qualitative and quantitative methodology based on a literature review and a survey questionnaire is conducted to achieve three objectives.

- (1) Building a comprehensive background on the research topic through investigating the concepts of innovation, creative industries, Talent Management, Lean Thinking and Lean Talent Management. Literature review was based on academic journals, textbooks, conference proceedings, theses and related websites.
- (2) Investigating the perception and application of ADFs towards the integration of Talent Management in Egyptian ADFs as an approach of enhancing creativity.
- (3) Developing a Lean Talent Management Framework (LTMF) to increase creativity of ADFs through efficient utilization of talented architects.

Literature review

Architecture is classified as one of the creative industries that depend on individual creativity, skills and talent with a potential for job creation (Cunningham 2003; Jones et al. 2004). Creative industries are responsible for producing novel products and projects that have tangible and intangible values (UNESCO, 2006). The complexity and novelty of the architectural design process stems from the role of talented architects towards developing creative solutions that address certain social circumstances. Motivation, which is a set of processes that direct and sustain the human capital behaviour to attain certain goals (Greenberg 2003), is the knowledge base for architects in which conceptual solutions are developed creatively (Oyedele 2010). Lacking motivation drives talented personnel to avoid the workplace and expend little effort in which the produced work become of low quality (Amabile 1993). As intrinsic motivation is an essence for creativity, extrinsic motivation fosters creativity if it is part of the reward criteria (Amabile 1988; Choi 2004; Prabhu et al. 2008). Although motivation should be considered a critical success factor, demotivation should be differentiated from lack of motivation, as the first is a reduction of spirit or morale in carrying out certain tasks, but not a loss of motivation (Ng et al. 2004). Oyedele (2013) identified seven demotivating factors namely, organizational injustice, project induced stress, poor-coordination of design team, poor interpersonal skills, career decline, negative behaviour of leadership and poor organizational culture. Moreover, the Architecture, Engineering

and Construction (AEC) industry is fragmented by its nature (Hobday 2000) that leads to conflict between objectives and loss of creativity (Baiden et al. 2006).

Talent Management (TM) was investigated by Khalil et al. (2017) as an approach to manage the creativity of talented architects in ADFs. The term 'talent' is defined by Dries (2013) as the human capitals not as an inborn gift. This is known as a subject approach while the abilities themselves are considered an object approach (Gallardo-Gallardo et al. 2013). As initial research of TM was criticized for following procedures of its predecessors (i.e. Human Resource Management (HRM) and succession planning) (Lewis and Heckman 2006). Consequently, the Strategic Talent Management (STM) distinguished TM from its predecessors by solving the issue of categorizing employees in the organization through putting emphasis on certain key positions in the organization. Therefore, a talent pool of high potential talented personnel is developed (Collings and Mellahi 2009). TM perceives talents as objects or subjects in which the first refers to skills and attributes while the second refers to inborn talents. Either philosophy can be for a specific group of people or every one. Moreover, many arguments highlighted that talents could have a potential of development in which four talents categories were developed as inclusive/stable, inclusive/developable, exclusive/stable and exclusive/developable (Thunnissen et al. 2013; Meyers and van Woerkom 2014). In any of those four cases, TM is the management of the talent lifecycle that is a representation of the relationship between talents and their organization (Schiemann 2014), but each of the four approaches would have different phases in that cycle. TM was highlighted as an essence for achieving mutual benefits between the organization, individual and society (Thunnissen et al. 2013). In addition, TM balances the work-life commitments of individual workers to enhance their retention, achieve competitiveness of the organization and enhance creative development (George 2007; Deery 2008). Barriers and challenges of adopting TM have four categories. First, structural barriers as lack of alignment between business strategies and HR strategies, lack or competency model, lack of integrated HR system, lack of specialized managers and motivational approaches. Second, environmental barriers as lack of management stability, economic situation, external pressure, gap in supply and demand of talents and lack of management stability. Third, behavioural barriers and challenges as expectations of elected people, resistance to change and cultural barriers. Lastly, managerial barriers as

lack of strategic perspective to HR, lack of cooperation between managers and lack of commitment and support on their behalf. The success factors of integrating TM have structural, environmental and managerial factors (Tafti et al. 2017).

Although TM has a great potential on enhancing motivation, reducing demotivation, achieving and balancing work-life commitments. From a Lean perspective, nonutilization of talented personnel was recently recognized as an eighth waste that needed to be eliminated. It means a lack of fitting for talented individuals' skills and capabilities or lacking appropriate development (Koskela 2004; Ramesh et al. 2008). As it affects the knowledge transfer in the design process (Kamara et al. 2002), there is a critical need to consider utilizing talented individuals even when integrating a TM strategy. As lean production was first introduced within the Toyota's Production System in an attempt to eliminate wastes, lean thinking became a subject for describing application of the lean production concepts in other industries (Womack and Jones 1996). Recent findings indicated that lean recruitment, lean performance management and lean learning environment have great potential for enhancing TM (Editorial Staff of Healthcare Source 2015). Consequently, there is a critical need to integrate lean thinking with talent management. To assert on this need, lean thinking is based on eliminating non-value adding activities in any process to add more of the value-adding activities. Therefore, the role of talent management will be enhanced even better with lean thinking. However, the nature of each industry puts could define the value in the different way. For example, the nature of ADFs requires adding more activities to add value because of the knowledge-based process (Hines and Rich 1997; Browning and Sanders 2012). Hence, specific lean concepts as lean innovation is concerned with provision of certain tools and techniques that fit the complex and novel nature of ADFs. Lean innovation is based on team effort and collaboration (Agan 2014), which highlights the importance of its integration with TM. Its principles focused on experiencing issues in real life, increasing knowledge early through front-loading, facilitating knowledge transfer through visual management, setting deadlines in knowledge-intense environment using time boxing, working with one task at a time through one-piece flow, giving a rhythm of delivery and lastly prototyping through using Takt time (Claus and Henrik 2011). However, unintentional adoption of any lean principles in knowledge-based environment has counter results. Therefore, the principles

should be integrated at least disruption times, system's complexity should be well-understood, improvement should not be in isolation, waste and value should be perceived as a whole and lastly avoiding extensive application of lean concepts (Browning and Sanders 2012).

Data analysis

Sampling

The random probability sampling method was applied to a total number of 44 ADFs that represent the population of ADFs registered in the Egyptian Engineers Syndicate (EES). This sampling plan ensures that each unit had an equal opportunity of being encompassed in the sample (Hannagan 1997). Consequently, the sample would be representative and not biased to investigate the role of TM towards creative development in ADFs. To develop a representative sample size that can support the research findings, two equations were used. Equation (1) calculated the Sample Size (SS) with a distribution of 50% that indicates no bias for measuring the extent to which information is misrepresented, confidence level score that is dependent on a confidence level of 95% that refers to the required accuracy and lastly a 5% margin of error of 5%. Equation (2) computed the True Sample Size (TSS) (Freedman et al. 2007).

$$SS = (p*(1 - p))/\left(\frac{p}{C}\right)^2 \quad (1)$$

$$TSS = (SS * Pop)/(SS + Pop - 1) \quad (2)$$

where:

SS = sample size

P = percentage picking a choice (0.5 is used for the required sample size)

C = confidence level score (1.96 for 95% confidence level)

TSS = true sample size

Pop = population

In this case:

$$SS = (0.5*(1 - 0.5))/\left(\frac{0.05}{1.96}\right)^2 = 384.16$$

$$TSS = (384.16*44)/(384.16 + 44 - 1) = 39.57 \sim 40$$

Consequently, the true sample size is 40 ADFs in which the results would be representative for the total number of population. A sample calculator was used (Creative Research System 2017) to confirm the

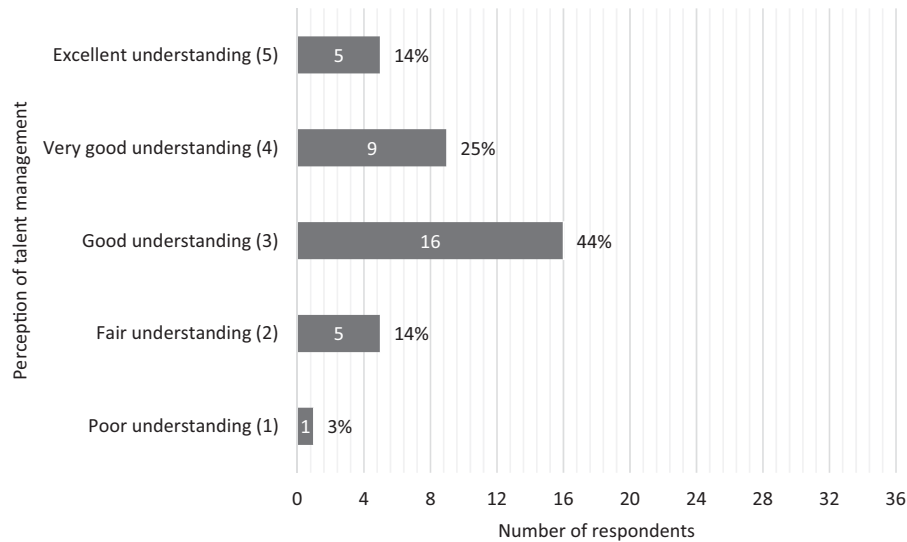


Figure 1. Respondents scoring for perception of talent management.

previous results with a confidence level of 95%, a confidence interval of 4.73 and a population of 44 ADFs which resulted in a sample size of 40 ADFs. To increase the level of validity of the findings gained from the survey responses and because of the small difference between the population and sample size, the survey questionnaire was sent to all 44 ADFs.

Response rate

Out of 44 survey questionnaires sent to all ADFs registered in the EES, 36 responses were completed and received, representing a response rate of 81.82% which is considered sufficient to rely on and publicize the findings of data analysis (Babbie 1992; Fellows and Liu 1997; Gillham 2000; McNeil and Chapman 2005).

Out of the 36 respondents, 21 were junior and senior architects, 4 were project managers, 3 were chairmen and owners, 2 were general managers, 2 were team leaders, 1 was a CEO, 1 was a general director, 1 was an HR manager and 1 was a construction engineer. Consequently, all respondents held positions that made their responses reliable and of essence.

Quantitative analysis

Two approaches were adopted for analysing the collected data. First, the measure of central tendency was used to develop an overview of the typical values for every variable through calculating the Mean, Median and Mode. The measure of dispersion was used to investigate the heterogeneous or homogenous nature of the collected data through calculating the Variance (V) and Standard Deviation (SD) (Bernard 2000).

Analysis of the collected data revealed close values of these measures which confirmed its quality and homogeneity. Second, the Relative Importance Index (RII), using Equation (3), was used to differentiate between the success factors and barriers since each success factor and barrier does not have the same importance for the success or failure of TM strategy implementation in ADFs (Kometa 1997). Data was analysed using Microsoft Excel spreadsheets.

$$RII = \sum W/AN \quad (3)$$

where:

W = weighting given for each factor by respondents (ranging from 1 to 5).

A = highest weight (5 in this case).

N = total number in the sample.

Perception of talent management, adopted philosophies, success factors and barriers of implementation

Out of 36 respondents, 14%, 25% and 44% ranked their perception of TM strategy on a scale of 1-5 as Excellent (5/5), Very Good (4/5) and Good (3/5), respectively, see Figure 1. These results showed the maturity of ADFs responded to the survey questionnaire and supported by the measure of central tendency (Mean 3/5), (Median 3.33/5) and Mode (3/5) and the measure of dispersion (V 0.29 and SD 0.54) which confirmed the quality and homogeneity of the collected data.

However, only 44% of the respondents stated that their firms adopt TM strategy. That raised a need to investigate the reasons behind lack of implementing

Table 1. Success factors of talent management.

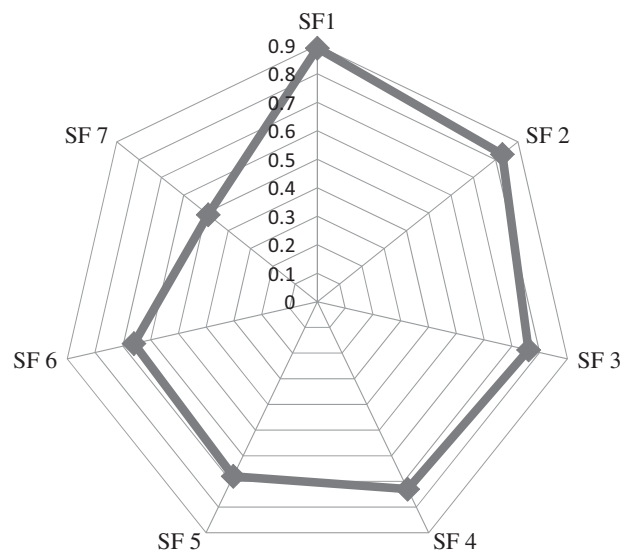
No (1)	Success Factors (SF) (2)	Measure of central tendency			Measure of dispersion		Percentage of respondents scoring			RII (11)	Rank (12)	Final rank (13)
		Mean (3)	Median (4)	Mode (5)	V (6)	SD (7)	<3 (8)	3–4 (9)	>4(10)			
SF 1	Top managers commitment, belief and support	4.44	5	5	1.27	1.13	1	5	10	0.89	(1)	1
SF 2	Motivation system	4.13	4	5	1.02	1.01	2	7	7	0.83	(2)	2
SF 3	Aligning talent management strategy with organizational strategic objectives	3.81	4	4	0.83	0.91	1	12	3	0.76	(3)	3
SF 4	Talent management is a priority in the organizational strategy	3.63	4	5	0.75	0.86	3	8	5	0.73	(4)	4
SF 5	Financial analysis for development and performance	3.38	4	4	0.67	0.82	4	9	3	0.68	(5)	5
SF 6	HR department implementations for human capital programmes	3.31	3	3	0.66	0.81	4	9	3	0.66	(6)	6
SF 7	Preventing external pressures that obstruct hiring talents	2.44	2	2	0.72	0.85	10	6	0	0.49	(7)	7

TM in ADFs. 81% of respondents who stated that their ADFs adopt a TM strategy mentioned that 50% and 31% of them adopted inclusive and exclusive development strategies for architects, respectively. On another note, 13% and 6% of respondents used inclusive/stable and exclusive strategies for groups other than architects.

Respondents were asked to investigate the most emphasis of the TM strategy adopted in ADFs, where 69% respondents stated that their ADFs adopt a non-economic perspective focusing on challenging work and fair treatment, meeting social needs of employees, legitimacy for the organization, and development of society's norms. Conversely, 31% respondents mentioned that their ADFs adopted the economic perspective focusing on job security, financial rewards for employees, profitability to the organization and the competitive position of the firm to the economic condition.

Respondents were asked to indicate the balance of work-life commitments when TM strategy was adopted in which 81.3% indicated that both commitments are balanced, but 12.5% indicated that work commitments prevent adhering to personal commitments and 6.3% indicated that life commitments prevent adhering to work commitments. Respondents were asked to score the seven success factors on Likert scale of 1 to 5. Their scoring was used in computation of measure of central tendency and dispersion and RII as shown in Table 1 and Figure 2.

Respondents who mentioned that their ADFs do not integrate TM strategy were asked to score the barriers on a Likert scale from 1 to 5. Their scoring was used in computation of measure of central tendency and dispersion and RII as shown in Table 2 and Figure 3.

**Figure 2.** Ranking of RII of success factors for talent management integration.

Perception of creative industries, motivation and demotivation, success factors and barriers of implementation

Out of 36 respondents, 22.2%, 44.4% and 19.4% ranked their perception of TM strategy on a scale of 1-5 as Excellent (5/5), Very Good (4/5) and Good (3/5), respectively, see Figure 4. These results showed the maturity of ADFs responded to the survey questionnaire and supported by the measure of central tendency (Mean 3.69/5), (Median 4/5) and Mode (4/5) and the measure of dispersion (V 0.34 and SD 0.59) which confirmed the quality and homogeneity of the collected data as well as the higher level of understanding of their role towards developing creative solutions.

Data analysis, showed that 64% of respondents asserted that architects are motivated with high levels

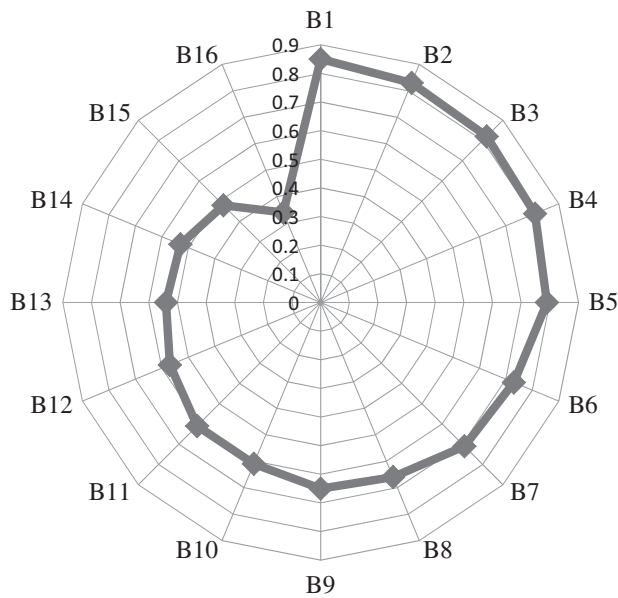


Figure 3. Ranking of RII of barriers of talent management integration.

of energy and commitment, but 19% stated that architects lack inner or social incentive or energy in performance (i.e. lack of motivation) while 17% stated that architects have decreased spirit, enthusiasm or morale in performance (i.e. demotivation). A high percentage of 72%, out of the 36 respondents, stated that their ADFs seek developing creative solutions.

Out of 26 respondents whose firms seek creative development, 42.5% stated that personal traits of employees is a key for creativity while extrinsic motivation and intrinsic motivation received approximate responses of 30% and 27.5%, respectively. From the 26 respondents, 41% relied on financial rewards to foster creativity while balance of work-life commitments, certificates of appreciation and flexibility of working from home as well as further ephemeral strategies had 21%, 18%, 15% and 2%, respectively. Hence, there is an approximate balance between financial and non-financial strategies. 12 respondents provided examples of creative projects they developed in which only one of them was successful to be considered as a creative solution.

Respondents who stated that their firms do not seek creative development were asked to choose the prevention factors in which 37% chosen the stressful nature of the projects, 32% chosen the lack of freedom in day-to-day work, 21% chosen miscommunication in teamwork and 11% mentioned other prevention factors. Those factors were resistance to change and the freedom of design without constraints. Therefore, it was of essence to investigate the

relation between adopting TM and seeking creative development in ADFs.

The lean talent management framework

Definition and rationale

A framework is defined as a structure for describing a set of concepts, methods and technologies required to complete a product process and design (Joseph and Mohapatra 2009). The LTMF (hereinafter referred to as 'LTMF' or as The Framework) is a framework proposed to integrate people-centred lean principles with TM as an approach for maximizing creative developments in ADFs. The rationale of this framework stems from the findings of data analysis of the survey questionnaire responses, which highlighted the successful role of TM in motivating talented Architects, achieving work-life commitments balance and reducing demotivation. In addition, respondents mentioned the high need for a well-organized procedure to be followed for maximum benefit from the LTM strategy. Moreover, the essence of the framework emerges from findings of literature review which presented the new paradigm shift of people-centred lean innovation that emphasizes utilization of people more than projects, methods or budgets because they are capable of innovative development in a knowledge-based environment (Paolillo et al. 2016).

Aim of the framework

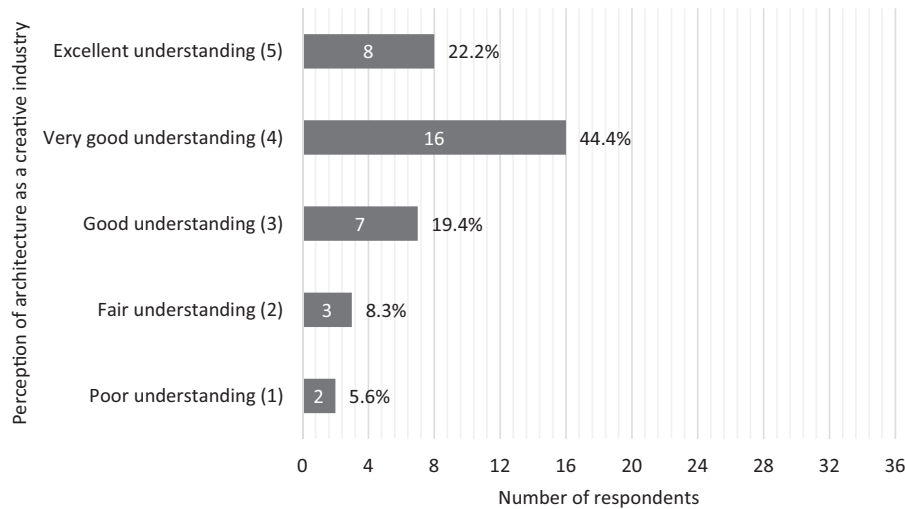
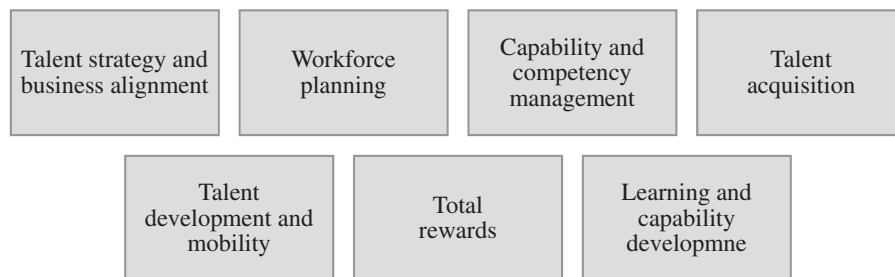
The LTMF is an innovative tool for eliminating waste of talented Architects through maximizing architects ability for creative development in ADFs. The framework aims to incorporate the concept of LTM in ADFs as a novel approach to maximize the role of architects towards developing creative solutions that fulfil community needs.

Description of the framework

The ideology of the LTMF is based on an existing baseline of TM in which TM integration has seven main pillars, namely talent strategy and business alignment; workforce planning; capability and competency management; talent acquisition; talent development and mobility; total rewards and learning and capability management as shown in Figure 5. Those pillars are cycle based on an infrastructure and monitored through business metrics and governance (Bersin 2010). Lean six sigma is a methodology applied to each pillar in which it aims to enhance the

Table 2. Barriers of talent management.

No. (1)	Barriers (B) (2)	Measure of central tendency			Measure of dispersion		Percentage of respondents scoring			RII (11)	Rank (12)	Final rank (13)
		Mean (3)	Median (4)	Mode (5)	V (6)	SD (7)	<3 (8)	3–4 (9)	>4 (10)			
B1	Lack of understanding role of talent management towards shaping employees' careers and capabilities	4.25	5	5	0.89	0.94	1	8	11	0.85	(1)	1
B2	Economic condition	4.15	4	5	0.83	0.91	2	8	10	0.83	(2)	2
B3	Lack of organizational competency model that identifies skills	4.10	4	5	0.80	0.90	1	10	9	0.82	(3)	3
B4	Bias to certain employees for recruitment	4.05	4	5	0.78	0.88	2	10	8	0.81	(4)	4
B5	Cultural barriers	3.95	4	5	0.73	0.85	3	8	9	0.79	(5)	5
B6	Lack of specialized managers	3.65	4	5	0.61	0.78	4	9	7	0.73	(6)	6
B7	Lack of alignment between HR strategies and business objectives	3.55	4	4	0.58	0.76	4	11	5	0.71	(7)	7
B8	External pressure	3.30	3	4	0.52	0.72	5	11	4	0.66	(8)	8
B9	Resistance to change	3.25	3	3	0.51	0.72	5	10	5	0.65	(9)	9
B10	Lack of external motivational incentives	3.05	2	3	0.50	0.71	8	9	3	0.61	(10)	10
B11	Lack of identifying talent management challenges	3.05	3	3	0.50	0.71	7	9	4	0.61	(10)	11
B12	HR department focuses on development of talents rather than administration	2.85	3	3	0.51	0.71	6	13	1	0.57	(11)	12
B13	Absence of competition	2.70	2	2	0.52	0.72	11	7	2	0.54	(12)	13
B14	Lack of cooperation between managers in talent management implementation	2.65	3	2	0.53	0.73	10	9	1	0.53	(13)	14
B15	Gap between supply and demand of talents	2.40	2	2	0.59	0.77	12	8	0	0.48	(14)	15
B16	Expectations of elected talents	1.70	2	1	0.92	0.96	17	3	0	0.34	(15)	16

**Figure 4.** Respondents scoring for perception of architecture as a creative industry.**Figure 5.** Pillars of talent management (Bersin 2010).

performance through a systematic removal of waste, as the removal of nonutilization of talents waste in this case. One of the lean six sigma methodologies is

DMAIC that stands for Define, Measure, Analyse, Improve and Control (Daneman 2014). Defining the problem is concerned with identifying the problem



Figure 6. LTMF. Developed by: Authors.

that lead to the lack of creativity. Measuring the problem is in terms of the current symptoms from the data analysis that asserts on the defined problem. Analysing the possible root causes identifies the exact problem to be solved. Improving the process through proposing solutions that eliminates the root causes is the initial key step for advancement while controlling is the second key step for maintaining the advancement of the process. The application of DMAIC on the pillars TM is illustrated in Figure 6.

Functional description of the framework

The DMAIC methodology aims to enhance the value of each pillar's objective to maximize utilization of talented architects, which ultimately reflects positively on maximizing creativity in ADFs. The data analysis highlighted the potential root causes that prevent creative development in ADFs. Therefore, each pillar is presented in a table format in which the pillar is subject to application of DMAIC phases to present the main problem, investigation of its root causes, proposed solutions based on every identified root cause and finally yet importantly controlling the improvement.

Business alignment of creative development and talent strategy

The 'business alignment of creative development and talent strategy' pillar enhances ADF's ability to achieve its business goal in which this step is considered a baseline for the success of integrating LTM. Eight categories of goals were identified including productivity; innovation; market share; profitability; management performance and development; financial and physical resources; employees performance and attitude goals and social responsibility (Drucker 2008). The objective of the first pillar is to align the

business goals with the TM strategy as an initial step before integrating lean concepts with TM. The first pillar of the LTMF is represented in Table 3.

Workforce planning

The 'workforce planning' pillar aims to help the firm defines its talent segments, critical roles and identify skills gaps. It is considered the process of aligning needs and priorities of the firm with the workforce to meet its legislative, regulatory, production and service requirements and the previously set objectives (Sloan 2010). The objective of the second pillar is to ensure having no waste in investment of talented personnel neither in the required number of talented architects for the required roles. The second pillar of the LTMF is represented in Table 4.

Capability and competency management

The 'capability and competency management' pillar aims to allow the organization to understand the purpose of hiring and assessment criteria. In other words, it is concerned with experiences, skills and competencies. Capability management is defined as the process of leading and monitoring the firm as a set of capabilities in which it can be identified, measured, integrated and improved (Spacey 2017). In addition, competencies are considered observable abilities, skills, knowledge, motivations or traits required for the success of the performance (Dubois and Rothwell 2004). The objective of this third pillar is to set competencies, experiences and skills of the previously identified critical roles. Thereafter, ADFs should be able to understand the aim of hiring, expect outcomes and understand the developments.

The third pillar of the LTMF is represented in Table 5.

Talent acquisition

The 'talent acquisition' pillar aims to fulfil the workforce plan through external or internal resourcing. It focuses on ensuring that hiring skilled talented architects is nonbiased to specific candidates. The hiring process should depend on the development of a talent pool in a lean approach where the waste of talented personnel is eliminated through addition, subtraction or poor decisions of hiring to save budget. Successful application of this pillar as shown in Table 6 will improve the firm's ability of selecting talented employees who adequately fill the vacancies of critical roles.

Table 3. LTMF (Pillar 1).

DMAIC	Pillar 1: Talent strategy and business alignment
Define	(1) Lack of alignment between business goals and creative development. (2) Lack of integration for talent management.
Measure	For (1) The highest priority is given to profit-oriented business goals. For (2) Relying solely on HRM.
Analyse	For (1), the potential external causes are (a) given higher priority for client's profitability (b) high fund is needed for creative projects and/or (c) lacking governmental initiations for such projects. For (2), potential ADFs related-problems are (d) rejecting to integrate TM and/or lacking interest for creative development.
Improve	Each architectural firm should solve the problem/s it is facing at first before solving applying the common solution. For (a), client awareness should be enhanced through provision of benefits over the long run as the organizational employer branding that gives promotions and long-term profit. Firms could use tools as Organizational Development (OD) to investigate client's nonverbal needs, Charettes with the client and client value creation. For (b), creativity does not require technology, complex structures or luxury, but understanding the true characteristics of the different cultures and integrating them in a basic manner. brainstorming and mind mapping are recommended tools For (c), the Egyptian government considers creative development in the Egyptian vision 2030 SDS. Awareness should be raised about the low-needed budget for creative-effective solutions. For (d), managers should build knowledge about the mutual benefits of TM for organizational competitiveness, talents' careers and capabilities development and society enhancement with its noneconomic benefits. For (e), majority of architects have average motivation to think creatively. Therefore, top management commitment is of essence as it was identified as a critical factor for success and for failure. Application of TM will lead to organizational branding and enhanced competitiveness in market. Afterwards, all firms should set their goals in the eight key areas in a balanced manner to avoid any waste of investment at any of the areas including productivity, innovation, market share, profitability, financial and physical resources, social responsibility, management development and employees' performance management.
Control	Firms should monitor the business goals regularly every 2 years maximum and update the goals accordingly based on changes in the market without compromising the needs of any area.

Table 4. LTMF (Pillar 2).

DMAIC	Pillar 2: Workforce planning
Define	(1) Adopting an inclusive TM strategy. (2) Adopting an exclusive TM strategy.
Measure	For (1), architectural firms invest in developing all employees who have the same importance for every role in the firm. For (2), architectural firms invest in developing certain group of employees due to believing in their contribution to the success of business goals.
Analyse	For (1), intention of managing all talents inclusively to ensure maintaining motivation among all talents. For (2), identification of a key position that directs the investment, but reduces motivation for other groups.
Improve	Optimum improvement needs investment to be allocated without any waste. Considering that architectural-roles are critical for the development of creative solutions, other roles in the firms are critical for the success of the architectural development process as well. As inclusive TM enhances motivation for all talents, but results in waste in investment Exclusive TM results in optimum investment in architectural critical-roles, but causes demotivation to other roles, which objects the perfection of delivery. Therefore, the 'Included-Exclusive' approach is proposed as a solution for improvement in this framework. First, identification of talent segments based on performed tasks not the generated value. Second, architectural roles should be an A-level roles for developing creative solutions while other roles should be considered A-level roles for the success of the creativity process. Hence, the level of investment would differ without affecting fair treatment. Third, identifying skill gaps for all roles. The scenario matrix tool, current and future workforce profile, risk assessment and environment scan are recommended tools, but the workforce segmentation tool could only help in the initial phase to build the included-exclusive approach.
Control	Skill gaps and critical roles deviations should be monitored on yearly basis and the maximum span of monitoring should not exceed three years.

Table 5. LTMF (Pillar 3).

DMAIC	Pillar 3: Capability and competency management
Define	(1) The concept of creative development is misunderstood. (2) Lacking competency model to identify skills.
Measure	For (1), developed projects are thought to be creatively delivered, but failed to be so. For (2), architectural firms depend on existing workforce yet ignoring development of a competency model to identify needed skills.
Analyse	For (1), the lack of freedom in day-to-day work and the stressful nature in the firms led to unbalanced work-life commitments for talents in which the level of performance was reduced as a result. For (2), lack of interest in hiring new talents, but assigning existing workforce to multitask.
Improve	For (1), architectural firms should build several capabilities to provide appropriate working environment for talents to reduce stress. Such capabilities are day-to-day work freedom, multifunctional spaces to enhance sense of belonging, healthy workplace, ease of communication between management levels and provision of recreational facilities. For (2), architectural firms should understand the benefit from hiring new talents, which will enhance the competitiveness of their firm. Architectural firms should build fresh talents for mutual benefit. Architectural firms should look for certain skills for architectural roles including the ability to work smart, ability to experience new things and courage to risk failure, discover hidden meanings in problems, express and share thoughts, find order in confusion, have internal need to solve problems, be motivated by task and expand experience boundaries. Architectural firms should not duplicate competencies to avoid competition rather than focusing on the target of development on behalf of the talents and to avoid waste of duplicated investment in one competency.
Control	Monitoring should focus on adoption of competencies, skills, experiences and capabilities. Turnover, lack of creativity and/or negative behaviours are signs of improper identification of competencies and skills.

Table 6. LTMF (Pillar 4).

DMAIC	Pillar 4: Talent acquisition
Define	(1) Bias to candidates. (2) Hiring poorly skilled talents with low salaries.
Measure	For (1), existing talents will feel demotivated. For (2), talents will lack motivation.
Analyse	For (1), the unfair treatment causes demotivation that prevents enthusiasm in developing creative solutions. For (2), inappropriate fulfilment of the talent pool results with poor performance and low creativity.
Improve	For (1), talents acquisition should depend on the previously set competencies, experience and skills because bias in hiring creates a gap that prevents adhering to business goals that will be profit oriented. For (2), managers should consider the value over the long term as salaries of highly skilled talents ensure creative development and enhanced competitiveness as a result. Return of investment should be adopted rather than the full time equivalent of talents retention. Four lean acquisition activities enhance the process of acquisition including understanding how optimal is the candidate pool, elimination of manual administrative tasks, management of the candidate pool and finally using e-recruitment to reduce time needed for hiring.
Control	The motivational status are indication for the fairness of talents acquisition and value existence. The talent pool should be controlled accordingly through seeking acquisition of undergraduate talents.

Talent development and mobility

The aim of ‘talent development and mobility’ pillar is to allocate talents where they are required as this phase encompasses four areas. The first is leadership development to ensure allocating high-performing leaders to be responsible for managing the firm. Such leadership roles execute strategies through alignment, growing capabilities of team members and wining mindshare (Adl 2013). Second, the positive driven

succession management defines bench strength required for top-down succession. Third, career management is a bottom-up approach concerned with building awareness about employee’s career goals. Lastly, performance management ensures aligning overall contribution to the firm success (HR Council 2008). The objective of this pillar is developing and mobilizing talents to the most suitable roles to maximize productivity and eliminate wastes of carrying out

Table 7. LTMF (Pillar 5).

DMAIC	Pillar 5: Talent development and mobility
Define	(1) Miscommunication between team leaders and talents. (2) Person-driven succession planning. (3) Conflict between job characteristics and lateral career development.
Measure	For (1), architects lack freedom of expressing creative ideas. For (2), less creative and low in quality work is produced. For (3), talents turnover.
Analyse	For (1), the ego of a senior consultant acts as a barrier for accepting new ideas. For (2), conflict between required skills and talents skills for such key positions lead to less creative work. For (3), talents take the opportunity of working in the firm as a step for building experience without mutual benefit being added.
Improve	For (1), a set of recommendations is presented for optimum leadership development. Leadership continuity is needed for continuous improvement, the last should be improved, but not necessarily problem solving, self-awareness should be built, diverse abilities should be acquired, talents problem-solving abilities should be developed, training programs should be provided and leadership hierarchy should be reduces. For (2), a set of recommendations is presented for optimum succession planning. Being in position for maintaining values, ensuring continuity of the learning curve as successors should go 'Gemba' with predecessors. In other words, mentoring and coaching them to be prepared with required skills. For (3), a set of recommendations is presented for optimum career management. Consideration of talents lateral career development, provision of opportunities that enhance career progress and talents retention and internal mobility to develop a talent within the firm. Architectural firms should build an assessment criteria to measure performance, creativity, quality, cooperation, training, ethics and development.
Control	Negative changes in leadership behaviour of lost sense of belonging on behalf of the talents should be monitored on regular short-term basis.

Table 8. LTMF (Pillar 6).

DMAIC	Pillar 6: Total rewards
Define	Architects are not proactive for creative development.
Measure	Depending on financial rewards solely.
Analyse	(a) External factors as the economic condition affects talents engagement. (b) Believing in the positive influence of monetary rewarding to help in lateral career development.
Improve	For both (a) and (b), the following rewarding recommendations should be considered to increase motivation and retention of talents. <ul style="list-style-type: none"> • Compensation of talents for provided services based on the performance level. • Benefits should be provided including health insurance, promotions, savings and retirement programs. • Work-life balance activities should be provided as the ability to work from home and recreational facilities that enhances building co-workers relationships. • Non-financial rewards as certificates of appreciation for all hardworking talents, dinner with top management and upgrading working place. Rewarding should not engage competition, but enhanced individual performance over time.
Control	Architectural firms should control a balanced rewarding system to ensure motivation, engagement and retention. If any of the previous three factors is missing, then it is an indication of a poor rewarding system.

activities. Successful application of this pillar as shown in Table 7 should enhance competitiveness of ADFs, career progression and creative development.

Total rewards

The approach of 'total rewards' aims to reward talented architects in a fair manner through the employment lifecycle based on the talent's performance. The objective of this pillar is to propose an inclusive

rewarding system that eliminates wastes of investment and payment for work through creating a balance between monetary and nonmonetary as well. Table 8 presents the application of DMAIC for the approach of total rewards.

Learning and capability development

This is a vital step across the whole employment lifecycle. Talents should continuously build skills and

Table 9. LTMF (Pillar 7).

DMAIC	Pillar 7: Learning and capability development
Define	Limited deadlines and stressful nature of architectural projects prevents creative development.
Measure	The stressful nature affects the knowledge-based learning process negatively.
Analyse	Architectural projects are based on a network of activities not a network of commitments as such fragmentation leads to strict deadlines.
Improve	<p>Integration of lean innovation with talent management would maximize utilization of talents to develop creative solutions. This approach can be achieved through:</p> <ul style="list-style-type: none"> • Integrating lean concepts and principles at least disruption times and at early project stages. • Understanding the project complexity. • Improving activities together instead of in isolation. • Understanding values and wastes as a whole. • Avoiding excessive application of lean concepts to avoid harming the knowledge-based process. <p>Architectural firms should adopt the five lean principles of identifying value, mapping the value stream, ensuring a flow of the process, delivering what is needed only and delivering it on time in a cost efficient manner. To achieve this, the following lean innovation principles should be used:</p> <ul style="list-style-type: none"> • Going Gemba: understanding real life issues in early project stage. • Front loading: maximizing inputs of knowledge at the beginning of the project using additional resources. • Visual management: increasing flexibility of knowledge transfer. • Time boxing: setting a deadline because the knowledge-based process is endless and continuous. • One-piece flow: talents should work on each activity as a whole. • Takt: developing a rhythm of delivery between departments. • Prototyping: examining solutions on a small scale to receive better feedback and adjust the solutions without wastes.
Control	Application of lean principles must not obstruct the knowledge-creation process that is an essence in such complex and novel environment.

improve capabilities as the business grow and architectural problems become complex and require complicated creative solutions. The objective of this pillar is to help adopting the principles of lean innovation in the knowledge-based learning process of ADFs. It offers tools and techniques to maximize the utilization of talented architects and eliminate potential wastes of time, over processing, overproduction, waiting or rework. Table 9 presents the application of DMAIC for enhancing learning and capability development.

Benefits of the framework

The benefits of the framework lie in its ability to enhance the competitiveness of ADFs, maximize the utilization of talented architects' ability to develop innovative solutions and creative development. In addition, the alignment of TM strategy with business objectives and the integration of lean principles play a significant role towards eliminating the waste of nonutilizing talented architects, balancing work-life commitments, enhancing motivation and reducing demotivation.

Limitations of framework

Adaptability of the framework will vary depending on the perception of ADFs to the role of TM towards developing creative solutions and the willingness of ADFs to change. In addition, the 7 pillars of the framework are not applicable to all ADFs, which raise the issue of adapting the framework to meet the business strategy of each firm. The application of the framework is time consuming and if the senior management of ADFs are not persuaded with its benefits, then its adoption and provision of required resources will be difficult to materialize.

Conclusion and recommendations

Architecture is classified as one of the creative industries worldwide. It is responsible for community development through providing creative solutions that fulfil community needs and overcome emerging problems. Creative industries are talent-based and depend heavily on the creativity of individuals. This highlighted the importance of managing such resources in a talented manner. However, ADFs are characterized with incompetent utilization of their talented

resources, which leads to lack of creativity, reduce market share and competitive advantage as well as decrease customer satisfaction. Adopting TM will foster creativity in ADFs through adopting different approaches for managing talented human resources; enhancing motivational factors and reducing demotivational barriers. Consequently, this article aimed to propose a framework based on Lean Management as an approach for maximizing creativity in ADFs. The strength of the framework is based on the benefits of integrating TM and Lean Principles. It consists of 7 pillars of 'talent strategy and business alignment'; 'workforce planning'; 'capability and competency management'; 'talent acquisition'; 'talent development and mobility'; 'total rewards and learning' and 'capability management'. Lean six sigma is applied to each pillar to enhance the performance through a systematic removal of nonutilization of talents waste. At this point, the research comes with the following recommendations:

Recommendations to ADFs

- Developing an awareness programme to enhance ADFs' perception and willingness to change their culture towards adopting TM as an innovative approach for enhancing creativity of architects. .
- ADFs should align their business goals with TM values for optimum enhancement for the community and achieving competitiveness for ADFs.
- Adopting the developed framework developed by this research will help maximizing the architect's role to develop creative solutions that fulfil community needs.

Recommendations to Government Authorities

The integration of lean thinking with TM in ADFs will need time in order for its results to raise to the surface. It is recommended that the government authorities consider some issues to reduce the external barriers for the ADFs:


- Enhance educational paths to prepare talents to the best-fit jobs after graduation so that the architectural vacancies can acquire those with the required skills regardless they were inborn or developed skills.
- Facilitate platforms for allocating talents into adequate vacancies to reduce the gap between supply and demand, which is variant among the countries.
- Investigate potential external barriers that could prevent the integration of lean thinking with TM in ADFs such as encouraging high return on


investments over the long run, so that there will be enough time to implement the LTM strategy.

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