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How to Build Quality Management in a Small to Medium Enterprise?

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Quality management (QM) in one of its many forms has become an integral part of contemporary business. Since its mainstream introduction to the United States in the early 1980's it has become more than a strategy or a competitive differentiator. QM is now a customer expectation. Most of the voluminous research done in this field was conducted by large businesses for large businesses. However, the vast majority of businesses in the United States and the world at large are small to medium enterprises (SMEs). These organizations have largely been ignored by the quality movement. This study attempts to narrow that gap by investigating what is currently known in the field by the academic and practitioner communities in the hope that future researchers will use this data to further investigate this phenomenon. The findings from this research study indicate that QM is appropriate to the SME environment. There are specific critical to success factors and barriers to implementation that are unique to SME's that should be considered prior to implementation. Additionally, there is evidence to suggest that QM is not universal in nature as previously thought, but tends to be context dependent. Most of the studies that were conducted were survey based. There was comparatively little qualitative research done in this field and no action research projects that this author could find which creates opportunities for future research.

What is currently known to the academic and practitioner communities about how society may better utilize the practices of quality management to increase performance in smaller organizations?

Keywords: Quality, Quality Management, TQM, Small Business, SME, Small Enterprise

Introduction

The definition of quality is nebulous at best and can be quite confusing to understand. Traditionally, there have been many competing definitions offered by experts, novices, academics and practitioners (Crosby, 1979; Deming 1986; Juran, 1999; Westcott, 2006). It is beyond the scope of this article to join the debate, so for the purposes of this study quality will be defined as: fitness of purpose to include both products and services. No matter how it is defined, quality management (QM) in one if its various forms (Total Quality Management (TQM), Six Sigma, Lean, ISO 9000, etc.) has received intense academic and practitioner focus for nearly 40 years. The research was often initiated by and targeted for large organizations. In stark comparison, there has been comparatively little research related to the application or implementation of QM in small to medium sized enterprises (SME's). This lack of focus is quite surprising when one considers that the clear majority of workers in the United States and the world work for SME's. In fact, according to the United States Small Business Administration, 99.7% of the American workforce consisted of SMEs with fewer than 500 employees ("United States Small Business Profile," 2016). With SMEs representing such a large proportion of the American economy, a specific focus on how to make these organizations more competitive, resilient and successful could potentially be of great value to both the practitioner and academic communities. Recognizing the opportunity, researchers from across the globe have begun to take a concentrated look into this very problem. Murphy (2016a) published a concise review of the extant literature in this space from the years 1990-2014. Most of the studies he reviewed centered on whether SME's were embracing QM; the critical success factors (CSF) that were thought to be associated with that effort; and gaps or barriers remaining to those SME's that chose the QM route. This study builds on Murphy (2016a) by reviewing the pertinent literature from 2014 to 2017 and integrating it with Murphy's findings. The intent for this literature review is to examine the following:

1. Explore QM's applicability for SME's
2. Discuss possible critical success factors for QM implementation
3. Explore possible barriers to implementation
4. Deliberate on the universal nature of QM
5. Expose a gap in the present literature and propose a method to close that gap

There has been comparatively little research related to the application or implementation of QM in small to medium sized enterprises (SME's).

Methodology

The literature review includes articles published in the last 28 years. It builds on the 55 articles reviewed by Murphy (2016a) and adds 18 articles that were published from 2014 to 2017 for a total of 73 articles. The author used the same search terms and database employed by Murphy. Specifically, Google Scholar was searched with the following terms: TQM, QM or ISO 9000 accompanied with SME, Small Business or Medium Business.

Literature Summary

Quality Management's Applicability for SMEs

One of the most pressing questions for the past few decades has been whether QM is applicable to SMEs based on their unique set of circumstances. As Welsh and White (1981, p.18) point out, "A small business is not a little big business." SME's have their own set of unique strengths and weaknesses. Ghobadian and Gallear (1996) clearly articulate these differences in Table 1 which is the culmination of in depth case studies conducted in the UK. The goal for SME's is to minimize the effects of the disadvantages such as inferior resources, know-how and training budgets while fulling optimizing the advantages such as the flat management structure, short decision-making chain and low resistance to change.

Based on the literature from 1990-2014, Murphy (2016a) unequivocally stated that: "There is near consensus among QM researchers that QM is both possible and right for SME's." However, Murphy did not explicitly state which articles were for or against QM implementation. As a result, the author gathered the data to show what a near consensus looks like visually (see Table 2).

Appiah Fening, Pesakovic, and Amaria (2008) conducted a study of 200 businesses in Ghana and found that QM had a significant positive impact on firm performance. Further, his findings suggest that QM improves organizational performance in both large and small organizations. A similar study was conducted with 141 SME's in the Turkish textile industry that showed a strong positive relationship between the level of TQM implementation and organizational performance (Demirbag et al., 2006a).

Table 1: A comparison of the characteristics of large organizations vs. SME's. Source adapted from Ghobadian & Gallear (1996).

Large Organizations	SME's
Hierarchical with several layers of management	Flat with very few layers of management
Clear and extensive functional division of activities, high degree of specialization	Division of activities limited and unclear, low degree of specialization
Strong department/functional mindset	Absence of departments/functional mindset. Corporate mindset
Activities and operations governed by formal rules and procedures	Activities and operations not governed by formal rules and procedures
High degree of standardization and formalization	Low degree of standardization and formalization
Mostly bureaucratic with extended decision-making chain	Mostly organic with short decision-making chain
Top management a long distance away from the point of delivery, visibility limited	Top management close to the point of delivery, highly visible
Wide span of activities	Span of activities narrow
Multi-sited and possibly multinational	Single-sited
Cultural diversity and inertia	Unified and fluid culture
System dominated	People dominated
Rigid organizations and flows with many interest groups	Flexible organization and flows with very few interest groups
Incidence of fact-based decision making more prevalent	Incidence of "gut feeling" decisions more prevalent
Dominated by professionals and technocrats	Dominated by pioneers and entrepreneurs
Range of management styles: directive, participative, paternal, etc.	Range of management styles: directive, paternal
Meritocratic	Patronage
Individuals normally cannot see the results of their endeavors	Individuals normally can see the results of their endeavors
Ample human capital, financial resources and know how	Modest human capital, financial resources and know how
Training and staff development is more likely to be planned and large scale with specified training budget.	Training and staff development is more likely to be ad hoc and small scale with no specified training budget.
Extensive external contacts	Limited external contacts
High incidence of unionization	Low incidence of unionization
Normally slow to respond to environmental changes	Normally rapid response to environmental change
High degree of resistance to change	Negligible resistance to change
Potentially many internal change catalysts	Very few internal change catalysts
Low incidence of innovativeness	High incidence of innovativeness
Formal evaluation, control and reporting procedures	Informal evaluation, control, and reporting procedures
Control oriented	Result oriented
Rigid corporate culture dominating operations and behaviors	Operation and behavior of employees influenced by owner's/manager's ethos and outlook

Table 2: A comparison of the usefulness of quality management in SME's (Created by Author).

Finding	Source
Quality Management in one of its various forms is beneficial to small business performance.	**Ahire (1996); Anderson (1999); Beheshti (2003); Demirbag (2006a); Demirbag (2006b); Eisen (1992); Fening (2008); Gadenne (2009); Harris (2013); Hendricks (1999); Ismail (2009); Krueger (2013); Kumar (2007); Kumar (2008); Lee (1995); Lee (2004a); Lee (2004b); Leonard (2003); Mo (1997); Parkin (1996); Pinho (2008); Price (1993); Quazi (1998); Rahman (2001b); Shea (1995); Valmohammadi (2011)**
Quality Management in one of its various forms has no effect on small business performance.	**Chittenden (1998); Goh (1994); Ilkay (2012); Rahman (2001a); Sun (2002)**

Later that same year, another study of 500 SME's in the Turkish textile industry found that there was a strong positive relationship between TQM practices and nonfinancial performance with only a weak relationship between TQM and financial performance (Demirbag et al., 2006b). Eisen (1992) refuted those findings when he conducted a study of 338 SME's in Australia that found that SME's who implemented QM practices achieved higher financial performance. Nearly a decade later, a study was conducted with 500 SME's in the United States that suggested those companies that invested in quality initiatives receive significant returns across a variety of measures both operational and financial (Beheshti, 2003). Although there is overwhelming evidence that QM does impact performance (see Table 1) not all studies agree that the result is optimistic. Ilkay (2011) surveyed 255 SME's in Turkey to investigate whether ISO certification affected performance. His study concluded that certification showed no statistical difference in terms of performance for the SME's who responded. In the UK, Chittenden (1998) found that this may be due to the complexity of ISO 9000 and that many SME's considered it inappropriate to the SME environment. More recent studies in Ghana (Kwamega, 2015), Australia (O'Neil, 2016) and Spain (del Alonso-Almeida, 2015) reassert that QM practices do increase performance and result in positive outcomes.

Murphy found that there were at least 55 studies conducted from 16 countries around the world which implies that the application of QM to SME's is of global interest. As stated earlier, that study was conducted from literature published from 1990 to 2014. Since that time, the findings suggest that interest in QM practices for SME's is growing, narrowing on consensus and becoming more global. Table 3 shows a selection of at least 73 studies from 26 countries around the world in the past 28 years (see Table 3). Again, the clear majority of these findings suggest that QM is applicable to the SME environment and that performance improvement, both operational and financial, is likely to follow.

Following a process for SME QM engagement makes improvement more likely, with preparation pivotal to success.

Critical Success Factors for SME's

As can be seen in Table 1 there is overwhelming support for the idea of QM implementation into SME's. However, that doesn't mean the process will be quick, easy or necessarily guarantee positive results. Murphy (2016a) does state that SME's should commit to QM and that business improvement seems certain to follow. Kumar (2011) states that following a process for SME QM engagement makes improvement more likely, with preparation pivotal to success. If one were to follow a process, logic would dictate that there would need to be a set of common critical success factors (CSF's) that could be measured to allow the organization to assess performance. There is debate as to what the critical to success factors should be in a SME and if those factors should be hard (tools and systems) or soft (people) focused. Lewis (2006) synthesized literature from developing economies that indicated soft factors such as customer focus and customer satisfaction were frequently studied QM criteria. Quazi (1998) conducted a study of 41 SMEs in Singapore and found a set of seven CSF's that proved to be beneficial in a SME environment. They include leadership, information and analysis, strategic planning, human resource utilization, management of process quality, quality results and customer satisfaction. Two years later Yusof (1999) compared and contrasted five prominent studies of CSF's in 1999. Strikingly, there was a large degree of commonality among the models, specifically top leadership com-

Table 3: The growth of QM SME research since 2014. Adapted from Murphy (2016).

Country	Source	Country	Source
USA	Shea & Gobeli (1995); Ahire et al. (1996); Hendricks & Singhal (1999); Kuratko, Goodale & Hornby (2001); Beheshti & Lollar (2003); Zhou (2016)	United Kingdom	Goh & Ridgway (1994); Parking & Parkin (1996); Ghobadian & Gallear (1996); Ghobadian & Gallear (1997); Chittenden et al. (1998); Yusof & Aspinwall (2000); Sousa (2001); Antony et al. (2005); Kumar (2007); Kumar & Antony (2008); Antony et al. (2008); Kumar et al. (2009); Kumar et al. (2011); Kumar et al. (2014); McAdam et al. (2014)
Canada	Ahire et al. (1996)	Vietnam	Nguyen (2015)
USA & Canada	Briscoe et al. (2005); Murphy (2016a); Murphy (2016b)	Australia	Eisen et al. (1992); Wiele & Brown (1998); Anderson & Sohal (1999); Husband (1999); Rahman (2001a, 2001b); Gadenne and Sharma (2009); Kumat et al. (2014); O'Neil (2016)
India	Alamelu & Balasubramanian (2011) Majumdar 2016; Sinha 2016)	Turkey	Demirbag et al. (2006a); Demirbag et al. (2006b); Ilkay (2012)
Brazil	Sousa-Mendes et al. (2016)	Finland	Gunasekaran et al. (1996)
Ethiopia	Temtime & Solomon (2002)	Italy	Azzone & Cainarca (1993)
Ghana	Appiah Fening et al. (2008); Kwamega (2015)	Norway	Sun & Cheng (2002)
Iran	Valmohammadi (2011)	Portugal	Pinho (2008); Mendes & Lourenco (2014) Teixeira 2015)
Qatar	Salaeldin (2009)	Sweden	Hansson & Klefsjo (2003)
Kenya	Wanjau et al. (2013)	Spain	Claver & Tari (2008); Del Alonoso-Almeida (2015); Heras-Saizarbitoria (2015)
China	Lee (2004a, 2004b)	Greece	Sainis et al. (2016)
Korea	Lee (1998)	Slovakia	Satanova et al. (2015)
Malaysia	Abdullah (2010); Talib et al. (2013); Isa (2016)	Pakistan	Malik et al. (2011); Hussain (2015)
Singapore	Quazi & Padibio (1998)	NA	NA

mitment, supplier quality management, human resources management, and training and education. Yusof (1999), who proposed his own unique model (Table 4), added continuous improvement systems, systems and processes, measurement and feedback, improvement tools and techniques, resources and work environment, and culture to the common elements to produce a list of ten factors.

To further bolster his credibility, Yusof (2000) conducted a study of his proposed CSF's with UK automotive parts SME's. He validated that the CSF's enhanced QM in a SME and that the CSF's for a SME were different from those of a large organization. This finding contrasts with Ahire et al. (1996) who conducted a similar study in the US and Canada in 1996. They found that QM did lead to better product quality, there were no operational differences attributable to firm size for TQM implementation, and that both types of firms implement the elements of TQM equally effectively. Sila (2002) conducted a literature review of all the TQM literature from 1989 to 2000 and found 25 TQM factors (CSF's) that were

Table 4: A comparison of CSF's from prominent studies (Created by Author).

Generic Critical Factor Saraph (1989); Ahire (1996); Black & Porter (1999)	Yusof's (1999) Model	Quazi's (1998) Model
Management leadership	**Management leadership**	**Leadership**
Organization	**Continuous improvement system**	**Strategic planning**
Education and training	**Education and training**	**NA**
Quality in design	**NA**	**NA**
Quality in suppliers	**Supplier quality management**	**NA**
Quality in process	**Systems and processes**	**Management of process quality**
Fact based management	**Measurement and feedback**	**Quality results**
Human resource management	**Human resource management**	**Human resource utilization**
Customer focus	**NA**	**Customer satisfaction**
Tools and techniques	**Improvement tools and techniques**	**Information and analysis**
NA	**Resources**	**NA**
NA	**Work environment and culture**	**NA**

most common across 76 studies. Once again leadership, customer satisfaction and employee involvement featured prominently. He suggested that other lesser known factors such as strategic quality planning, product and service design, communication, social responsibility and employee appraisal, and rewards and recognition be considered for future research.

Barriers to Implementation

If we are to accept that CSF's are important to SME QM performance, then we must be aware of what the common barriers to implementation may be. As Murphy (2016a) stated, there has been research attention in this specific area. A study conducted in the US and Canada found that ISO implementation was more successful when management internalized ISO practices, reduced the behaviors that inhibit adoption and performed a readiness analysis (Briscoe et al., 1995). A major part of that analysis is to determine what the likely QM barriers could be. There seems to be widespread agreement that a lack of resources (human and financial), employee training and top management commitment are the most common barriers to implementation (Alamelu, 2011; Anderson, 1999; Antony, 2005; Antony, 2008; ; Gadenne, 2009; Hasson, 2003; Kumar, 2007; Kumar, 2008; Mendes, 2014; Valmohammadi, 2011). Representative of this type of work, Mendes & Lourenco (2014) conducted a study in Portugal that asked 95 manufacturing SMEs this very question. Their study highlighted 7 different but common factors affecting quality programs. They were:

1. Top management education/training priorities
2. Costs and actual performance
3. Lack of support from external agents
4. Human resources overload
5. Aversion to change
6. Lack of resources
7. Culture and training

In other cases, some SME's can be compromised by the mechanistic and formalized nature of some of the improvement models that they see as adding bureaucracy (McAdam, 2000). For example, in the UK SME's struggled with accurately measuring and recording the quality costs which led the management team of these organizations to believe that TQM was not appropriate to the needs of small business (Goh, 1994).

An article published in 2015 examined the problem of barriers to QM by identifying both inhibitors and enablers to QM implementation (Hu et al., 2015). Hu and his team were particularly focused on Lean implementation in SME's. The list of inhibitors included the previously mentioned lack of top management commitment, lack of resources and a lack of training. He also added to that list supplier and customer market forces such as SME's lacking the market power to influence their network of suppliers to adopt Lean. Perhaps more beneficial to SME's, Hu identified enablers that could make SME's more competitive versus large organizations in the adoption of QM. They include: an owner's long-term commitment, a cross functional workforce, high levels of teamwork and ease of communication.

Are QM Practices Universal?

From nearly the beginning of the quality revolution there has been the belief that the principles and practices of QM are universal in nature. This view has been propagated by the gurus of quality management which include Walter Deming (1986), Joseph Juran (1989) and Philip Crosby (1979) to name a few. For example, Juran (1989, p.3) stated that:

> *All organizations can achieve superior results through the application of the universal methods to manage quality, which design, maintain, and continually improve the quality of goods and services.*

In Murphy's (2016a) review, he discovered evidence that QM could be more context related. Those contextual factors could include country factors ranging from leadership skills to national culture to government and could potentially affect QM implementation and outcomes. An article that was not included in Murphy's review was a study conducted by Sousa and Voss (2001) in the UK that questioned the universality of QM and had evidence that there were certain contextual factors (manufacturing strategy in this case) that affected the implementation of QM in SME's. Aldowaisan and Youssef (2004) suggested the idea of a tailored framework that utilized an incremental approach to implementing QM (the ISO framework in this case) in small organizations. Assarlind and Gremyr (2016) seem to agree with that suggestion and conducted an interesting study in Sweden from 2009-2012 that found firm size among other factors was critical to QM adoption. The study found that SME's often contend with scarce resources and as a result it could be beneficial to implement QM in a gradual manner rather than attempting to implement everything at once. These recent insights make a powerful argument that contextual factors should at least be considered when SME's approach the implementation of QM.

Discussion

The goals of this literature review were the following:

1. Explore QM's applicability for SME's
2. Discuss possible critical success factors for QM implementation
3. Explore possible barriers to implementation
4. Deliberate on the universal nature of QM
5. Expose a gap in the present literature and propose a method to close that gap

In response to these questions, the existing literature shows that there is now near universal agreement that QM is appropriate to the SME environment. This agreement is global and not constrained to any geographic area. There are a number of critical success factors and barriers to QM implementation that should be considered by SME's. It has also been determined that QM is not universal as previously thought but context dependent. One of these contextual factors is firm size. The challenge going forward for SME's is how to best utilize what is known about the CSF's and the associated barriers to maximize business performance. One possible answer to this question is to create a menu of all of the factors (CSF's, barriers, enablers and inhibitors) and allow the specific SME to choose among the factors that are most closely aligned with their goals and unique situation. From the existing research, a logical path forward could be to combine the work of Ghobadian and Gallear (1996) with the work of Yusof (1999), Hu (2015), Mendes and Lourenco (2014), and Assarlind and Gremyr (2016). In other words, to do the following:

1. Determine the strengths and weaknesses of SME's in general
2. Determine the critical success factors of SME's in general
3. Consider the typical barriers to implementation commonly found in SME's
4. Consider the enablers and inhibitors of SME's
5. Determine the specific contextual factors likely to most affect the SME under study
6. Gradually implement QM based on the factors identified in steps 1-5

> There is now near universal agreement that QM is appropriate to the SME environment.

A reasonable quantity of the factors (3-5 for example) could be chosen for the team to focus their energies on with a specific goal of not overloading the team since a resource constraint is likely to take place. Reducing the number of factors that will be considered will save time and money (a key barrier for SME's) and increase the probability for success since only a few and not all factors will be included in the model.

Although there was a significant amount of agreement concerning the use of QM in the SME environment, there were areas in the literature that offer opportunities for future research. The vast majority of the work that Murphy (2016a) and the author reviewed was survey based. There were very few studies that were qualitative in nature although there were some case studies. As a result, there is a gap in the literature concerning how to implement QM in a SME through lived experience. The author could find no articles or examples that embedded the re-

Figure 1: A comparison of research methods for QM SME research (Created by Author).

searcher into an SME to effect change on the system with the goal of implementing a quality management system (QMS) (See Figure 1).

An additional area that offered opportunities for future research was geography. In Table 3 one can clearly see that QM SME research is becoming more widespread and more global. The 18 studies that were added since Murphy's (2016a) publication attest to this growing interest. Strikingly, there seems to be relatively little research that is being conducted in the world's largest economy. Figure 2 illustrates this discrepancy and shows that of the QM SME research that was considered in the article only 13 percent originated in the United States. That means 87 percent of the existing research has been conducted elsewhere. An opportunity would be to conduct QM SME research in the United States.

A future study will close these gaps by conducting a qualitative action research project in the United States of a SME that has the goal of building a QMS. The proposed research question would be the following: How did one SME build a quality management system?

The value of this research is significant for both the academic and practitioner communities. For the academic community, there is the opportunity to add to the growing segment of SME QM research, to focus in a particular geographic area (the USA) and to use a research methodology (qualitative research) that is underrepresented in the existing literature. For the practitioner, the benefits are perhaps greater. There is the opportunity to conduct research that could potentially result in a guide detailing how to implement QM in a SME. The guide could be especially useful when considering that SME's make up 99.7% of the work force of the United States, and that QM is known to increase business performance. There are limitations to this proposed research. First and foremost there will only be a sample size of one. Only one company will be a part of this project, but the author believes that this limitation will be outweighed by the potential benefit, as there are currently no existing action research studies in this particular arena. A guide or a collection of best practices from one SME implementing QM could serve as a catalyst for other similar SME's to join the quality movement and propel their organizations forward.

Conclusions

This literature review has described that QM research in the SME environment has significantly increased after years of neglect. The existing research is near unanimous in declaring that QM is appropriate for SME's although critical success factors such as top leadership commitment, supplier quality management, resource management (both human and financial) as well as training and education should be considered. There is also wide spread agreement that the lack of these resources are common barriers to implementation. Additionally, there are key dimensions that have the ability to enable or inhibit the adoption of QM in SME's and these factors must be deliberated upon. The research also shows that the adoption of QM is much more context dependent than traditionally thought and may hinge on factors such as firm size, strategy or country factors among others. A possible next step is for an ambitious SME to implement the 6-step model outlined in the discussion section and begin the QM journey sure to lead to increased business performance.

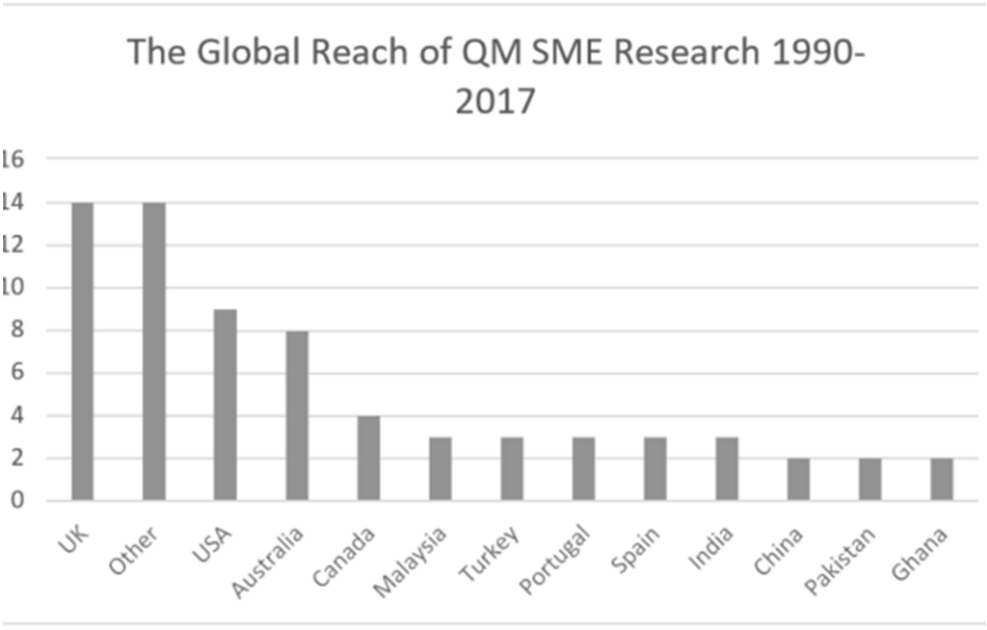

Figure 2: The global reach of QM SME research from 1990-2017 (Created by Author).

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Review

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