

VALIDATING THE DIMENSIONS OF THE LEARNING ORGANIZATION QUESTIONNAIRE (DLOQ) IN THE RWANDAN CONTEXT

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ABSTRACT

The purpose of this study was to validate the Dimensions of the Learning Organization Questionnaire (DLOQ) in the Rwandan context. The educational sector was chosen, from which five universities were selected. A total of 430 questionnaires were retrieved and analyzed for this purpose. Following the results of the confirmatory factor analysis, the DLOQ is applicable in the Rwandan context.

Keywords: Learning organization, dimensions of the learning organization questionnaire.

INTRODUCTION

Since the 1990s, organizational learning and learning organizations have become indispensable concepts for managers, researchers and practitioners in the business field (Sugarman, 2001a). Both concepts are widely accepted and well established in management and organizational research (Argyris & Schon, 1996). However Bui and Baruch (2012) observe that there is an on-going debate concerning the level or unit of analysis of a learning organization. Some argue that organizational learning is the sum of what people learn in organizations while others consider that organizational learning is more than the learning of individuals within an organization (Easterby-Smith, Crossan, & Nicolini, 2000). This study considers that organizational learning is the sum of learning of individuals in an organization while learning organization is an ongoing support towards learning.

Liao, Chang, and Wu (2010) contend that in the knowledge-based economy, the only constant is change, and therefore the power of knowledge becomes a very important resource for preserving a valuable heritage and creating core competences both in the individual and the organization. Knowledge has become an important element of competitiveness for an organization as well as for a nation (Pinelli, Barclay, Kennedy, & Bishop, 1997). Garvin (1993) argued that most organizations have failed because they did not recognize that continuous improvement depended on continuous learning. A rapidly changing environment demands that organizations generate equally fast responses and constantly adapt in order to survive and prosper (Axson, 2010; Porras & Silvers, 1991).

According to Marquardt (2002), only learning organizations will have a chance of surviving in a volatile environment. Yang, Watkins, and Marsick (2004) argue that many organizational researchers have come to the conclusion that an organization's learning capability will be the only sustainable competitive advantage in the future. Starkey, Tempest, and McKinlay (2004) observe that even Michael Porter, an authoritative author on strategies, sees learning as playing an important role in the success of companies in the future. It is through learning that knowledge becomes a crucial competitive resource for an organization, because mass production is being replaced by information and knowledge (Rastogi, 2000).

Sugarman (2001b) suggests that the ability to learn better and faster than its competitors is essential for the survival of any business or organization. In today's economy, it is important

to develop the capacity to learn, adapt and change. Just as an individual who ceases to learn becomes out of date, an organization that does not cope with a changing environment also becomes “dysfunctional”. A learning organization is one that supports and encourages the learning of individuals and groups in the organization and continuously transforms itself. It can therefore be recognized by its ability to adapt to its external environment, while internally it is recognized by a culture in which learning from challenges and mistakes is central Sugarman (2001b). Many organizations have identified their primary purpose as becoming learning organizations (Atak & Erturgut, 2010).

Watkins and Marsick (1993) define a learning organization as one that learns continuously and proactively uses learning in a way that is integrated with its work. In their view, seven interdependent action imperatives characterize organizations that are aiming to become learning organizations: the organization should (1) create an environment that continuously supports learning, (2) promote inquiry and dialogue, (3) encourage collaboration and team learning, (4) establish systems to capture and share learning, (5) empower people to have a collective vision, (6) connect the organization to its environment, and finally (7) leaders should provide strategic support for learning.

Despite the wide acceptance of the benefits of becoming a learning organization, there are still clear gaps that call for further investigation. First, it is surprising that the concept has not been popularized in Africa. Little is known about African organizations vis-à-vis learning organizations (Nakpodia, 2009; Ngesu, Wambua, Ndiku, & Mwaka, 2008; Obasi & Motshegwa, 2005). Second, a critical review of literature shows that most of the studies on the concept of learning organizations have concentrated on other parts of the world except Africa (Al-Jawazneh & Al-Awawdeh, 2011; Filstad & Gottschalk, 2011; Jamali, Sidani, & Zouein, 2009; Kumar & Idris, 2006; Lien, Yang, & Li, 2002; McHague, 2003; Power & Waddell, 2004; Selden, 1998; Zhang, Zhang, & Yang, 2003). Third, the education sector, which is supposed to play a key role in preparing future leaders in general, and particularly in Rwanda, where the government has purposed to drive the country towards becoming a knowledge-based economy, is not well represented in studies relating to learning organizations (Bui & Baruch, 2012). Fourth, while Watkins’ and Marsick’s (1993) contribution has attracted the attention of other researchers and practitioners, there is still a need to either test the model or validate the instrument developed for assessing the learning organization’s practice. A recent study established that the instrument has not been validated in the African context (Song, Chermack, & Kim, 2013).

Most studies on learning organizations have focused on financial performance and/or knowledge performance (Al-Jawazneh & Al-Awawdeh, 2011; Filstad & Gottschalk, 2011; Jamali et al., 2009; Kumar & Idris, 2006; Lien et al., 2002; McHague, 2003; Power & Waddell, 2004; Selden, 1998; Zhang et al., 2003). Research on the impact or the benefit of becoming a learning organization has been increasing since the 1990s with the publication of Senge’s book, *The Fifth Discipline*. However, such research efforts are directed primarily at assessing businesses and industrial organizations (Patnaik, Beriha, Mahapatra, & Singh, 2012).

Very few studies have focused on educational institutions, specifically higher learning institutions. From the review of the literature, it seems that no research has been conducted until now to validate the dimension of the learning organization questionnaire (DLOQ) in the African context (Song et al., 2013). The problem that serves as the foundation for this study is that empirical evidence is needed to validate the DLOQ in Africa in general and in Rwanda

particularly. Additionally there have been no empirical studies in Africa that support the learning organization concept or that validate the construct. Therefore, this study should provide answers to the following question: “Is the DLOQ a valid construct in the Rwandan context”? Considering the benefits associated with becoming a learning organization, it is therefore important to explore the applicability of the learning organization concept in Rwanda.

LITERATURE REVIEW

Most scholars agree that learning is a process that incorporates knowledge acquisition, deeper understanding and improved performance, but, concerning other matters relating to learning, they differ (Garvin, 2000a). According to Phillips (2003), numerous attempts to achieve an ideal learning organization have produced a corresponding variety of interpretations, showing the difficulty of producing a common definition of a learning organization. Senge (1990) argues that “learning organizations are those where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspirations are set free, and where people are continually learning how to learn together” (p. 3). Bennett and O’Brien (1994) note that “a learning organization is one that has woven continuous and enhanced capacity to learn, adapt and change into its culture” (p. 42).

Although several definitions of a learning organization compete, a number of points seem to recur: there is a continuous learning of an individual, team or group and organizational levels (Bennett & O’Brien, 1994b; Braham, 1995; Gephart, Marsick, VanBuren, & Spiro, 1996; Marquardt, 2002; Pedler, Burgoyne, & Boydell, 1991; Redding & Catalanello, 1994a; Senge, 1990; E K Watkins & Marsick, 1993); the creation and distribution of knowledge and information (Garvin, 2000; Marquardt, 2002); the capacity to adapt to change (Bennett & O’Brien, 1994b; DiBella & Nevis, 1998; Gephart et al., 1996; Redding & Catalanello, 1994; Watkins & Marsick, 1993); the ability to alter organizational behavior (DiBella & Nevis, 1998; Garvin, 2000b); and the ability to continuously transform itself (Marquardt, 2002; Pedler et al., 1991; Redding & Catalanello, 1994b; Watkins & Marsick, 1998).

Before the 1980s, the terms learning organization and organizational learning were used interchangeably or synonymously (Mulili & Wong, 2011). Organizational learning and learning organization have two things in common, they are both concerned with the process for acquiring information, interpreting data, developing knowledge and sustaining learning (Kezar, 2005). However, a number of differences between the two concepts exist (Mulili & Wong, 2011). The primary difference relates to the degree to which learning is seen as possible, effective and desirable (Kezar, 2005). According to Kezar (2005), organizational learning is firstly concerned with the threats to and limitations of organizational learning, while the learning organization focuses on the process for overcoming threats to learning. Secondly, the learning organization tends to focus more on external threats as the reason for fostering learning and looks to external forces and logic to prompt learning, whereas organizational learning researchers discuss internal concerns about performance and learning as part of the condition of human beings within settings (Kezar, 2005). According to Yeo (2005), organizational learning is a process of learning while a learning organization is a type of organization. Ortenblad (2001) observes that three distinctions have been suggested in the literature to differentiate organizational learning from a learning organization. The first distinction is that a learning organization is a form of organization while organizational learning is about activities or processes (of learning) in organizations. The second distinction

is that a learning organization needs to exert efforts while organizational learning exists without making any effort.

Watkins and Marsick (1993) observed that several authors have written about the learning organization. The literature on learning organizations shows that there are different ways of conceptualizing the construct that has generated different models and various characteristics of learning organizations (Ali, 2012). Senge's seminal work has the merit of being an eye-opener to the theory that describes the learning organization. He laid the foundation for research interest that followed his publication and continues to grow in the business environment. However, Senge (1990) has been criticized (Garvin, 1993) for leaving too many questions unanswered. He has also been criticized for making recommendations that are too abstract since he does not provide guidance or a framework for action. What is more, his book is not supported by formal research on the learning organization. (Pedler et al., 1991) conceptualization's is comprised of 11 elements. This model has several strengths for such a pioneering effort. First, the idea of the boundary worker attaches the importance of learning within organizations to front-line workers (Watkins & Marsick, 1993). Furthermore, the book can be both a theoretical journey for the learning company concept as well as a manual for managers who would wish to venture into the learning company field. Walton (1999) states that one criticism of this model is that it is more structural and "recipe driven" than Senge's (1990) learning organization model. Its focus on processes and practices is illustrated in the visual image of the model as an "11-piece jigsaw puzzle". They naively lead the reader to believe that if all the pieces are in place, the puzzle is solved and thus the learning organization can be successfully implemented.

Garvin's (2000b) model consists of 5 components. The model provides a comprehensive explanation of three types of organizational learning using the cognitive perspective: gathering intelligence, learning from past experience and providing opportunities for experimentation. However, other authors have insisted on including multiple perspectives when trying to explain the objectives and impact of a learning organization (Watkins & Marsick, 1993; Matthews, 1999). For instance, a behavioral perspective of learning focuses on individual learning that results from adapting to changing conditions and meeting performance objectives (Chalofsky, 1996; Redding & Catalanello, 1993). In addition, the humanistic perspective of learning focuses on the transformative power of personal relationships and individual emotions within the overall realm of individual and team learning (Dixon, 1997; Kofman & Senge, 1995; Vince, 2002). None of these models had an instrument designed to help practitioner measure them. The traditions for measuring learning organizations have not been well-established or validated, and there are few measurement tools available regardless of their background or purpose (Moilanen, 2001). From eight instruments reviewed, the Dimension of the Learning Organization Questionnaire (DLOQ) is the most comprehensive questionnaire (Moilanen, 2001). This tool has been scientifically and empirically tested, which is not the case with the other instruments presented by Moilanen (2001).

Watkins and Marsick (1993) conceptualize a model with seven components. The specificity of their approach lies in their expertise as adult educators who are interested in learning and organizational change. They note that learning occurs at four interdependent levels - individual, team, organization and society - and that learning transforms the organization. The authors further lay out six action imperatives for the creation of a learning organization, each complementing the others. A seventh action imperative (providing strategic leadership

for learning) was added in a later work (Watkins & Marsick, 1996). The model proposed by Watkins and Marsick (1993), which depicts the action strategies, is presented below:

Create Continuous Learning Opportunities

The authors note that “yesterday’s organizations can be described as machine-like, today’s as systems-like, and the future’s as brain-like” (pp. 23-24). In today’s workplace, a continuous learning opportunity means that: learning becomes an everyday part of the job and is built into routine tasks; employees are expected to learn not only skills relating to their own jobs but also the skills of others in their work unit and how their work unit relates to the operation and goals of the business; employees are expected to teach, as well as learn from, their co-workers. In short, the entire work environment is geared toward and supports the learning of new skills. The authors developed a model of continuous learning based on the problem-solving cycle. The model features alternating cycles of judgment or reflection with taking action, which results in the deepening of learning from work experience (Watkins & Marsick, 1993). Based on the model, they argue that there is no specific time for learning since every challenge can be converted into a learning possibility.

Promote Inquiry and Dialogue

In a learning organization, people gain productive reasoning skills to express their views, and the capacity to listen and inquire into the views of others; the culture of the organization supports questioning, feedback and experimentation (Watkins & Marsick, 1993). Through inquiry, people explore ideas, questions and potential actions; inquiry is based on open-minded curiosity that suspends presuppositions and judgments in the interests of truth for a better solution (Watkins & Marsick, 1993).

Encourage Collaboration and Team Learning

Work is designed to use groups to access different modes of thinking and these groups are expected to learn and work together. Therefore collaboration is valued by the organizational culture and rewarded (Watkins & Marsick, 1993). However, they also note that it may also happen that when individuals learn, they fail to share the results. Despite this, Watkins and Marsick (1993) argue that teams are “crucibles” in which ideas can be challenged.

Establish Systems to Capture and Share Learning

Watkins and Marsick (1993) note that both high and low technology systems for sharing learning are created and integrated in the work; access is provided and systems are maintained. The authors also observe that even if organizational learning is supported by individual learning, it is the way the organization does business, the systems put in place that favor learning.

Empower People Toward a Collective Vision

Watkins and Marsick (1993) argue that in a learning organization people are involved in setting, owning and implementing a joint vision. Responsibility is distributed close to decision making to motivate people to learn what they are accountable for. This is what they call “empowerment”. Learning organizations depend on the participation of many individuals in a collective vision and on the release of the potential locked within them. The learning

organization begins with a shared vision and learning is directed toward that vision.

Connect the Organization to its Community and Environment

According to Watkins and Marsick (1993), learning organizations have a healthy relationship with their physical, social and cultural environments. The learning organization acknowledges its dependence on its environment. People are helped to see the impact of their work on the entire enterprise. They scan the environment and use the information obtained to adjust work practices. The organization is linked to the community through continuous interaction.

Providing Strategic Leadership for Learning

Leaders model, champion and support learning, which is why leadership uses learning strategically for business results.

METHODOLOGY

This research used a survey. Surveys are popular as they allow the collection of a large amount of data from a sizeable population in a highly economical way (Saunders, Lewis, & Thornhill, 2009). Surveys may be used for descriptive, explanatory and exploratory purposes. They are chiefly used in studies that have individual people as the units of analysis (Babbie, 2011). With the development and perceived legitimacy of both quantitative and qualitative research, mixed methods research, employing a combination of the qualitative and quantitative, has gained popularity (Creswell, 2009). A quantitative survey method was therefore used for this study, supplemented by a qualitative study. The research design consisted of a self-report questionnaire to evaluate respondents' perceptions on the dimensions of the learning organization questionnaire (DLOQ).

The population of this study was chosen among administrators, teaching staff and non-teaching staff from five universities in Rwanda. As a guide, sample sizes of 50 are considered to be very poor, 100 poor, 200 fair, 300 good, 500 very good and 1,000 excellent (Comrey & Lee, 1992). As a rule of thumb, it is comforting to have at least 300 cases for factor analysis (Tabachnick & Fidell, 2012). A total of 545 questionnaires were distributed from which 430 usable were retrieved, establishing a retrieval rate of 80 percent.

Data Analysis Technique

The primary concern of this research was assessing the applicability of the DLOQ to the Rwandan cultural context. According to Yang (2005) when there is little previous theoretical guidance explorative factor analysis (EFA) is used to explore underlying factors, whereas confirmatory factor analysis (CFA) is used to confirm or disconfirm a hypothesized factor structure of interest. Because a number of studies have already used the DLOQ, this validation study is based on CFA and reliability tests as for the analysis techniques. Data analyses were performed with SPSS 20.0 and Amos 20.

First, a CFA was employed to examine validity and applicability of the hypothesized constructs of measurement in the Rwandan culture. According to Kline (2005), "the technique of CFA analyzes a priori measurement models in which both the number of factors and their correspondence to the indicators are explicitly specified" (p. 71). Analysis of CFA

is the appropriate method to validate the hypothesized measurement for three reasons: (1) measurement of the DLOQ has been developed on a theoretical basis; (2) it verifies the adequacy of the item-to-factor associations; and (3) it examines the construct validity of theoretically proposed measurement (Hair, Black, Anderson, & Babin, 2010; Yang et al., 2004). Second, to assess item internal consistency, zero-order correlation analysis and scale reliability tests were used. Item inter-correlation and Cronbach's coefficient alpha estimations are the initial steps to examine the proposed items' reliability in terms of internal consistency of the measures (Yang et al., 2004).

RESULTS

To confirm the construct validity of the DLOQ in Rwanda, CFA was used. This study statistically selected and juxtaposed several measurement indices to examine the level of the goodness-of-fit of the particular measurement model. The absolute fit measurements consist of chi-square (χ^2), which is the most fundamental one, sensitive to sample size, GFI devised by Joreskog and Sorbom (1984), which is less dependent on sample size and adjusted goodness-of-fit (AGFI), which takes heed of the degree of complexity of models (Hair et al., 2010). Furthermore, the applied index is the root mean square residual (RMR), observed and estimated covariance and variance terms (Joreskog and Sorbom, 2001) and Steiger's (1990) root mean square error of approximation (RMSEA). The incremental fit indices were comparative fit index or CFI, which indicates the degree of fit between the hypothesized and null measurement models. Finally, Bentler and Bonnet (1980) proposed the relative fit index (NNFI), which compares the model being tested to a baseline model (null model).

The DLOQ as the hypothesized measurement model consists of seven dimensions, with a total of 21 questions. Collectively, they all represent the single circumstance of the learning culture. But, statistically, the implication is that the DLOQ is a second-order factor structure that contains two layers of latent construct (Hair et al., 2010). Therefore, two separate simple CFAs and a higher-order CFA were carried out. Table 1 summarizes the measurement model from both CFAs, one with 21 items and seven factors and the other with seven factors and one construct.

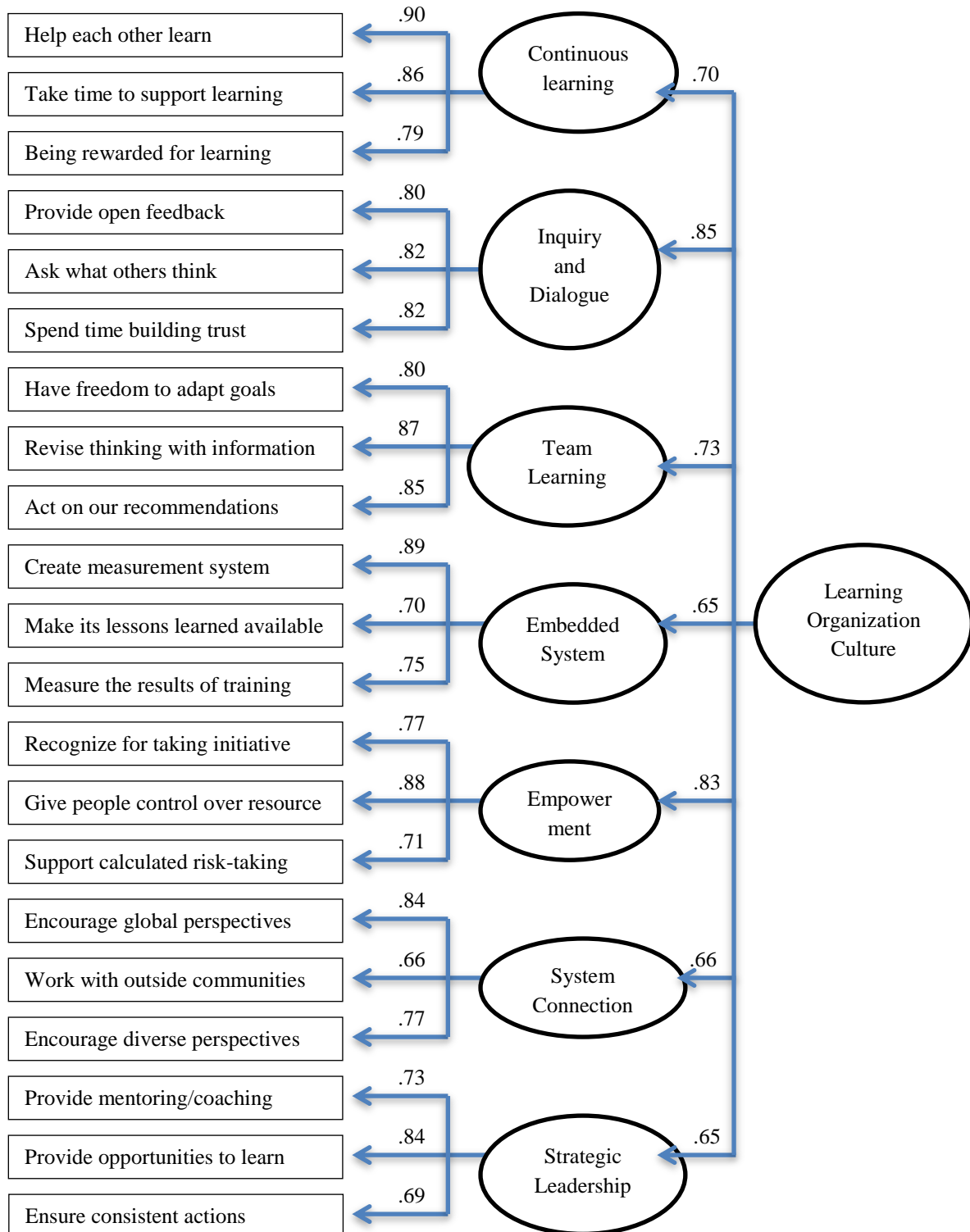
Table 1 Summary of Measurement Model

Models	χ^2	DF	χ^2/DF	RMR	GFI	AGFI	TLI	CFI	RMSEA
21 items 7 factors	369.817	168	2.201	.046	.929	.902	.981	.984	.053
7 factors 1 construct	438.795	182	2.411	.097	.918	.896	.977	.980	.057

Table 1 shows that, according to goodness-of-fit indices, the measurement model in the Rwandan context has a good level of conformity. In terms of the first-order CFA, all indices of comparative fit (GFI, AGFI, TLI, and CFI) have acceptable and in-range figures (all are well above 0.90), indicating a statistically significant data-model fit. In addition, as regards general model fit, a great proportion of the variance and covariance of the learning organization could be justified by the suggested model with seven dimensions or factors of the DLOQ (GFI = 0.93). This means that 93% and even more of item variance and covariance were explained by the seven-dimension factor structure. Considering residuals, the small number of RMSEA with 0.053 and RMR with 0.046 could be an indicator of a suitable model-data fit. It means that all these figures verify construct validity in the Rwandan context. As a result, we can affirm that although the DLOQ, as an organizational learning measurement tool, was developed in western countries, its construct validity in the Rwandan context is confirmed. On the other hand, the results of the higher-order CFA from the same table also produced statistically significant model fit (RMSEA = 0.57, GFI = 0.91

and CFI = 0.98). Consequently, it shows that the seven dimensions of the DLOQ can also be considered a one-factor structure to measure the learning organization culture in the Rwandan context. The factor loadings of each item on the seven dimensions provide additional evidence of the measurement model fit of the DLOQ in the Rwandan context. All factor loadings of each item of the DLOQ on the seven dimensions were greater than 0.70. Consequently this also indicates that the DLOQ is a valid and applicable measurement in the Rwandan context. Figure 1 presents the factor loadings of the DLOQ.

Figure 1 Factor Loadings of the DLOQ



DISCUSSION

The objective of this study was to validate the DLOQ in the Rwandan context. The hypothesis associated with this objective states that the DLOQ is a valid construct in the Rwandan context, and is fully supported. In brief, the findings of the study indicate that the applicability of the DLOQ in the Rwandan context is supported. The learning organization concept and its measurement instrument (the DLOQ) as proposed by Watkins and Marsick is therefore applicable in Rwanda. In short, if we consider that all the different CFAs undertaken are based on data received from the DLOQ, we realize that they lend themselves to the hypothesized model. Therefore, construct and convergent validity are verified in the Rwandan context. Consequently, the results support the applicability of DLOQ in Rwanda.

Despite this being the first study validating the DLOQ in the Rwandan context, a comparison with similar studies can only be made with studies conducted in other parts of the world. This study in Rwanda helps to support the applicability of the DLOQ in different cultural settings. These findings are consistent with other studies that sought to validate the DLOQ in a different cultural setting from the original cultural environment of the authors. It is compatible with the recent research conducted by Song et al. (2009) as well as other research that used the DLOQ to assess learning organization culture or practice. Zhang et al. (2003) tested and validated the DLOQ in China, Nazari and Zaidatol (2012) reported the applicability of the DLOQ in Iran, and Kim and Marsick (2013) reported that the DLOQ is applicable in Korea.

Comparative fit indices for comparing the DLOQ with related studies using the same instrument are provided in Table 2

Table 2 Fit Indices Comparison with Similar Studies Measuring the DLOQ

Fit Indices	Ellinger et al. (2002)	Yang et al. (2004)	Zhang, Zhang, and Yang (2004)	Lien, Hung, and Li (2006)	Song et al. (2009)	Current study
χ^2 (df)	328.54 (157)	2031.88 (778) 2746.29 (778)	623.57 (167)	830.21 (168)	920.13 (168)	369.817 (168)
RMSEA	.073	.06/.08	.077	.076	.054	.053
RMR	.053	.05/.06	.056	.042	.023	.046
GFI	.87	.82/.75	.89	.89	.95	.93
AGFI	.81	.79/.71	.85	.85	.93	.90
TLI	.91	.87/.81	.85	.92	.99	.98
CFI	.94	.88/.83	.88	.93	.99	.98

Table 2 shows that most of the model fit indices in the current study meet the standards and are within acceptable levels. In most cases, the indices have better results except for the study conducted by Song et al. (2009).

CONCLUSIONS

The findings on internal consistency and reliability, as well as content and construct validity led the researcher to conclude that there is sufficient evidence to support the validity of using DLOQ in the Rwandan context. Therefore, considering all the different CFAs undertaken based on demographic information, the data received from DLOQ lend themselves to the

hypothesized model. Construct and convergent validity were verified in the Rwandan context. Consequently, the results support the applicability of DLOQ in Rwanda.

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